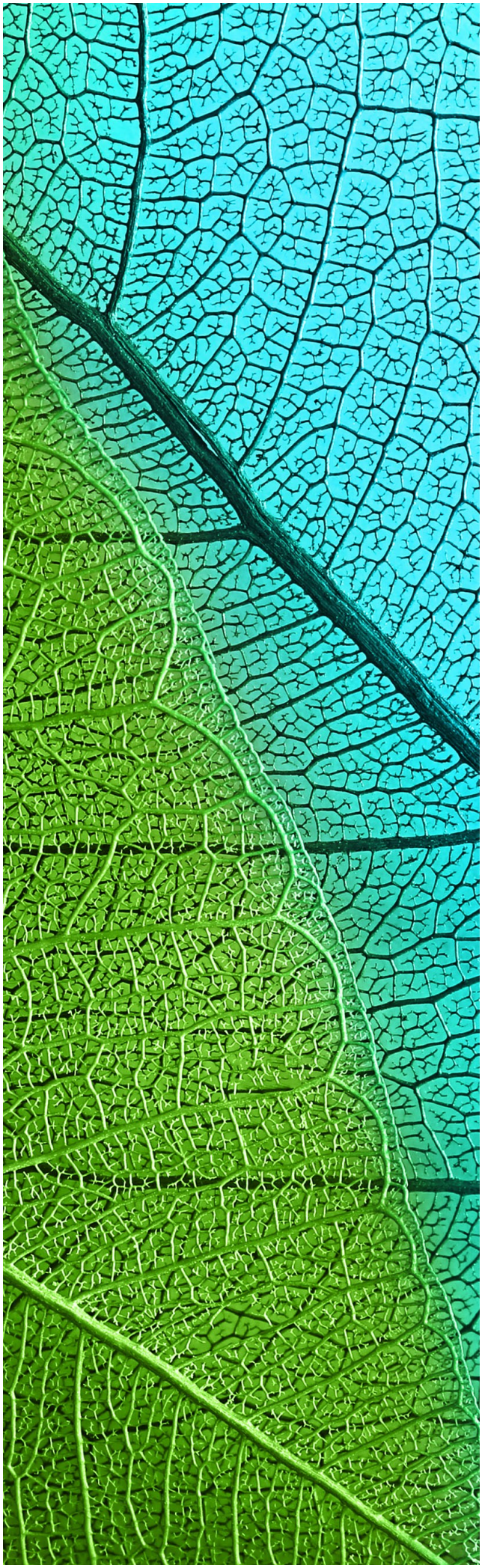


Hexham Wind Farm

Flora and Fauna Assessment

Prepared for

Hexham Wind Farm Pty Ltd

January 2026

Report No. 18088 (11.3)

Nature Advisory

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Executive summary

Hexham Wind Farm Pty Ltd ('the proponent') engaged Nature Advisory Pty Ltd ('Nature Advisory') to conduct a flora and fauna assessment of a 16,104-hectare 'study area' comprising the proposed site for the Hexham Wind Farm ('the project'). The study area is in the Western Victorian localities of Hexham, Caramut, Ellerslie, Minjah and Woolsthorpe.

This investigation was commissioned to provide information on the extent and condition of native vegetation in the project study area as well as any potential impacts on flora, fauna and ecological communities ('biodiversity') listed under the state *Flora and Fauna Guarantee Act 1988* ('FFG Act') and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* ('EPBC Act'). This assessment includes two potential overland wind blade transport routes to Hexham from Geelong and from Portland. An assessment of each route is provided in this report, in addition to a scenario where approval is sought for both options (termed the combined Transport Route).

A temporary on-site quarry has been investigated for the purposes of providing aggregate materials for access tracks and hardstand areas, and to minimise traffic movements on local roads during construction. Potential impacts arising from the quarry have been considered in this report.

A Bat and Avifauna Management Plan (BAMP) has been prepared as part of the EES submission (Report 18088.23 (1.7)).

This report provides information on biodiversity within the study area, outlines any implications under relevant national, state and local legislation and planning policies and will accompany the Environment Effects Statement. Separate reports have been provided on potential impacts from this proposed wind farm on bats (Nature Advisory 2025a) and the state-threatened Brolga (Nature Advisory 2025b).

Hexham Wind Farm proposes to install up to 106 wind turbines with a maximum blade tip height of 260 metres, a minimum blade tip height of 40 metres and a rotor diameter of up to 190 metres.

The following biodiversity investigations have been undertaken:

- Vegetation and flora surveys (Section 5)
- Groundwater Dependent Ecosystems (Section 6)
- Fauna overview assessment (Section 7)
- Bird utilisation survey (Section 8)
- Migratory bird assessment (Section 9)
- Wedge-tailed Eagle nest survey (Section 10)
- Growling Grass Frog assessment (Section 11)
- Fauna Residual Impacts (Section 12)
- Cumulative Impacts (Section 13)
- Matters of National Environmental Significance (Section 14)

For this assessment, the following definitions have been used:

- Project Site: The properties on which the Hexham Wind Farm is proposed.
- Project Study Area: This represents the area in which detailed native vegetation surveys have been undertaken.
- Transport Route Study Areas: This represents the area of investigation around each swept path location along the transport routes which require upgrades to enable transport of wind farm infrastructure. This is further broken down into:

  - Geelong Transport Route: swept path locations along the route from Geelong to Hexham Wind Farm.
  - Portland Transport Route: swept path locations along the route from Portland to Hexham Wind Farm.
- Local road upgrades: locations along local roads which require upgrades such as road widening to facilitate infrastructure transport.

DEECA released the 'Handbook for the development of renewable energy in Victoria' in May 2025 (DEECA 2025c). Under the transitional arrangements the Handbook does not apply if, prior to the commencement of the Handbook, the project has been referred to the Minister or Planning for assessment under the EE Act or an assessment under the EE Act has commenced for the project. Both of these transitional arrangements apply to Hexham Wind Farm and as such, the project will not be assessed under the new guidelines.

Vegetation and Flora Surveys

Existing conditions

Vegetation within the project study area was assessed in accordance with the Victorian *Guidelines for the removal, destruction and lopping of native vegetation*.

This assessment found 87.3 ha of native vegetation in patches consisting of 244 habitat zones from nine Ecological Vegetation Classes within the Project study area, Transport route study areas and Local road upgrades.

During the targeted flora surveys, two listed threatened flora species were recorded; Purple Blown-grass (FFG Act: Endangered), and Spiny Rice Flower (EPBC Act and FFG Act: Critically Endangered).

Additionally, the October 2025 surveys identified a single *Dianella* individual, though this could not be identified to species level due to a lack of suitable floristic characteristics (lack of flowering material). However, it was considered to potentially be Matted Flax-lily (EPBC: Endangered; FFG: Critically Endangered) or Glaucous Flax-lily (FFG: Critically Endangered). This individual was re-examined during surveys in December 2025; however, a lack of flowering material prevented accurate identification. Regardless of its identification, this individual will not be impacted by the proposed footprint.

No other flora species listed as threatened under the EPBC Act or FFG Act were recorded within the survey area.

Two EPBC Act-listed threatened ecological communities were recorded during vegetation surveys:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain; and
- Natural Temperate Grassland of the Victorian Volcanic Plains.

Two FFG Act-listed communities were recorded during vegetation surveys:

- Western (Basalt) Plains Grasslands Community; and
- Western Basalt Plains (River Red Gum) Grassy Woodland.

Impacts based on the proposed project

The proposed development (development footprint, road widening and swept paths combined) will have the following impacts:

- The loss of 7.895 hectares of native vegetation from patches and four large trees in patches (Geelong route), 8.080 hectares of native vegetation from patches and nine large trees in

patches (Portland route) or 8.190 hectares of native vegetation from patches and nine large trees in patches (combined routes); and

- The loss of four large and two small scattered trees (all routes).

The proposed development footprint will result in the following losses:

- 0.586 hectares (Geelong), 0.595 hectares (Portland) or 0.605 hectares (combined) of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) (EPBC Act: Critically Endangered).
- 0.247 hectares of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP) (EPBC Act: Critically Endangered).
- 0.743 hectares (Geelong), 0.806 hectares (Portland) or 0.818 hectares (Combined) of *Western (Basalt) Plains Grasslands Community* (WPGC) (FFG Act: Listed).
- 0.007 hectares (Portland or combined) of *Western Basalt Plains (River Red Gum) Grassy Woodland* (FFG Act: Listed).

Impacts to NTGVVP and GEWVVP would constitute a significant impact under the EPBC Act and will be offset under the EPBC Act Environmental Offsets Policy.

Geelong route: Offsets required to compensate for the proposed removal of native vegetation from the development footprint, Geelong transport route and local road upgrades are provided below.

- 2.8860 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.3494
  - Occur within the Glenelg Hopkins CMA boundary or the Moyne Shire municipal district.
  - Include protection of at least 8 large trees.

Portland route: Offsets required to compensate for the proposed removal of native vegetation from the development footprint, Portland transport route and local road upgrades are provided below.

Moyne Shire LGA

- 2.8830 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.3470
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 8 large trees.

Southern Grampians Shire LGA

- 0.1000 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.4170
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 5 large trees.

Combined routes: Offsets required to compensate for the proposed removal of native vegetation from the development footprint, combined transport route and local road upgrades are provided below.

Moyne Shire LGA

- 2.911 *general habitat units* and must include the following offset attribute requirements:

- Minimum strategic biodiversity value (SBV) of 0.349
- Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
- Include protection of at least 8 large trees.

Southern Grampians Shire LGA

- 0.100 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.417
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 5 large trees.

Removal of 0.181 hectares of native vegetation and 5 large trees associated with the Portland transport route occurs within the Southern Grampians Shire local government area. If this route is chosen or the combined transport route option is pursued, a separate application will be made to Southern Grampians Shire council for this portion of the proposed native vegetation removal.

The following FFG Act-protected flora taxa are susceptible to impacts from the proposed development on public land at the entrance point to the wind farm and from public road reserves:

- Common Onion-orchid (protected under the FFG Act)
- Sun Orchid (member of a genus protected under the FFG Act).
- Purple Blown-grass (protected under the FFG Act)

A Protected Flora Permit would be required from the Department of Environment, Energy & Climate Change (DEECA) to remove the above-mentioned plant taxa and *Western (Basalt) Plains Grasslands Community* (WPGC) from public land.

Groundwater Dependent Ecosystems

An assessment of impact to Groundwater Dependent Ecosystems (GDE) was carried out by Water Technology (2025). All three types of groundwater dependant ecosystems identified in the GDE toolbox (SKM 2011) have the potential to occur within the HWF, including aquifer and cave ecosystems (Type 1), ecosystems dependent on the surface expression of groundwater (Type 2), and ecosystems dependent on subsurface presence of groundwater (Type 3). The Surface Water and Groundwater Impact Assessment determined that the likely effects to GDEs arising from the project is low, with a range of management measures recommended (Water Technology 2025). It is unlikely that the project would detrimentally impact any GDEs within the project site.

Fauna species and habitat

Project Site

Initial fauna assessments were undertaken by Ecology and Heritage Partners (EHP) between 2011 and 2012, with additional native vegetation assessments and targeted surveys for flora and fauna undertaken by Nature Advisory between 2018 and 2025, focusing on species likely or with potential to occur based on desktop review of recent information.

The study site is highly modified and dominated by grazing and cropping land. EHP described seven fauna habitats across the study area, including modified grassland, woodland and scattered trees, planted vegetation, rivers, creeks and drainage lines, swamps and marshes and artificial waterbodies. These were all found to be low, low-moderate, or moderate in habitat quality as confirmed during subsequent field surveys undertaken by Nature Advisory.

Thirteen fauna species listed under the EPBC Act, and 11 species listed under the FFG Act are known to occur, likely to occur or have the potential to occur at the Project Site. One bird species listed as species of interest by Lumsden et al (2019) was also recorded on site.

Targeted surveys have been undertaken to determine the occurrence and extent of habitat for these listed species, including bird utilisation surveys, migratory bird surveys, bat surveys, targeted Grey-headed Flying-fox surveys, White-throated Needletail surveys, fish surveys, Golden Sun Moth surveys and Growling Grass Frog habitat assessments.

Listed avifauna species

Surveys conducted at and around the HWF have recorded 125 bird species to date. Flight-height data indicate that most bird activity occurs below the Rotor Swept Area (RSA; <40 m) within the project site, with 94.4% of observations below RSA height during the 2018–19 BUS and 87.5% during the 2024–25 BUS.

During Migratory Shorebird Surveys, most wetlands within the project study area were considered unsuitable for most migratory shorebirds due to dense vegetation growth, particularly the sections that are expansions of the Mustons Creek. These species require more open shorelines and shallow open water or mud in which to forage. None of the listed migratory shorebird species recorded were in numbers that would be above the threshold levels for an important population.

A total of 10 Wedge-tailed Eagle nests and three potential eagle nests were recorded, with three of these being outside of the study area. The number of nests within the study area suggest that more than one pair utilises the area for breeding. Turbine exclusion zones were applied, and no turbines are located within 500m of any known nests.

Listed threatened avifauna (species known to occur, likely to occur, or with potential to occur), or avifauna species of interest considered susceptible to residual impacts at the Project Site include:

- Australasian Shoveler (FFG Act: Vulnerable)
- Australian Gull-billed Tern (FFG Act: Endangered)
- Black Falcon (FFG Act: Critically Endangered)
- Blue-billed Duck (FFG Act: Vulnerable)
- Blue-winged Parrot (EPBC Act: Vulnerable)
- Eastern Great Egret (FFG Act: Vulnerable)
- Freckled Duck (FFG Act: Endangered)
- Little Eagle (FFG Act: Vulnerable)
- Musk Duck (FFG Act: Vulnerable)
- Spotted Harrier (Species of interest in Lumsden et al. (2019)
- Migratory birds: White-throated Needletail (EPBC Act: Vulnerable, Migratory) and Fork-tailed Swift (EPBC Act: Migratory)
- Migratory shorebirds: Common Greenshank (EPBC Act: Migratory), Common Sandpiper (EPBC Act: Migratory), Curlew Sandpiper (EPBC Act: Critically Endangered, Migratory), Double-banded Plover (EPBC Act: Migratory), Latham's Snipe (EPBC Act: Migratory), Marsh Sandpiper (EPBC Act: Migratory), Red-necked Stint (EPBC Act: Migratory), Sharp-tailed Sandpiper (EPBC Act: Migratory).

The proposed wind farm is considered unlikely to result in a significant impact to any of these species.

For Brolga refer to the *Hexham Wind Farm Brolga Assessment Report 2025* (Nature Advisory 2025b).

Listed avifauna communities:

- Victorian Temperate Woodland Bird Community (FFG Act listed) – The study area and surrounds were assessed against the published description and benchmarks of the community. The study area was found to support very limited remnant woodlands along roadsides and creeklines. Though some of the representative species may occur sporadically, it is considered unlikely that the site supports this community.

Listed mammal species:

- Bats: Grey-headed Flying-fox (EPBC Act: Vulnerable, FFG Act: Vulnerable), Southern Bent-wing Bat (EPBC Act: Critically Endangered; FFG Act: Critically Endangered), Yellow-bellied Sheathtail Bat (FFG Act: Vulnerable)

For bats, refer to the Hexham Wind Farm Bat Assessment Report 2025 (Nature Advisory 2025a).

- Fat-tailed Dunnart (FFG Act: Vulnerable)

This species has potential to occur and it is considered that any impacts to this species would mainly be due to direct loss of habitat, and would be low – moderate dependant on extent of occurrence.

Listed reptiles:

- Striped Legless Lizard (EPBC Act: Vulnerable, FFG Act: Endangered); and Tussock Skink (FFG Act: Endangered).

These species have potential to occur in grassland habitats, predominantly along road reserves. Impacts to grassland habitats suitable for these species largely occur along roadside upgrade areas. Given the extent of habitat removal, there is potential for a significant impact to occur to Striped Legless Lizard.

Listed amphibians:

- Growling Grass Frog (EPBC Act: Vulnerable)

Surveys to map suitable Growling Grass Frog habitat were undertaken in November 2011 and November 2018 across the Project study area. This habitat mapping informed the layout of the wind farm to ensure suitable habitats were avoided wherever possible.

Growling Grass Frog were confirmed in Mustons Creek, which connects to the Hopkins River to the east of the study area and forms a large, contiguous network of habitat. Several smaller tributaries of Mustons Creek within the study area may also provide habitat during the wet season and contribute to wetland habitat network. In addition, a large, vegetated dam (wetland 29405) and associated dams may contribute habitat within the study area, but most dams lack suitable habitat, are impacted by livestock trampling and are of low value for this species.

Provided the known Growling Grass Frog sites are avoided, minimal habitat is altered at creek crossing points, and construction at creek crossing points is undertaken between April and August when activity is low, no significant impact is anticipated to this species.

Listed invertebrates:

- Golden Sun Moth (EPBC Act: Vulnerable, FFG Act: Vulnerable)

Targeted Golden Sun Moth surveys by EHP in 2011 and 2012 did not record the species and determined a low likelihood of occurrence (EHP, 2014). Given the time elapsed since the surveys and using a precautionary approach it is considered that the species has potential to occur in any patches of native vegetation with a native grassy understorey (Plains Grassland and Plains Grassy Woodland). It is considered susceptible to a low level of impact during the construction stage.

- Hairy Burrowing Crayfish (FFG Act: Vulnerable).

This species is known to occur in some areas within the site, associated with watercourses and floodplains. Suitable habitats are largely avoided, however some ephemeral floodplains have been impacted by the development footprint. Impacts are considered low.

Listed fish:

- Yarra Pygmy Perch (EPBC Act: Vulnerable, FFG Act: Endangered)
- Little Galaxias (FFG Act: Endangered)

Targeted surveys for these species were undertaken by EHP between 21 and 24 November 2011 (EHP 2014). None of these species were recorded. Despite the age of these surveys, no impacts to waterways or these species are anticipated.

Transport Route

A desktop assessment of fauna species likely to occur at each of the transport route locations was undertaken. This analysis indicated that six fauna species with potential to occur may be susceptible to residual impacts on the transport route:

- Gang Gang Cockatoo (EPBC Act: Endangered);
- Fat-tailed Dunnart (FFG Act: Vulnerable);
- Growling Grass Frog (EPBC Act: Vulnerable);
- Striped Legless Lizard (EPBC Act: Vulnerable, FFG Act: Endangered);
- Tussock Skink (FFG Act: Endangered);
- Golden Sun Moth (EPBC Act: Vulnerable, FFG Act: Vulnerable).

Impacts to these species may occur due to removal of small areas of habitat at a number of swept path locations along the transport routes, and larger areas of habitat removal in association with road upgrade areas.

A significant impact is not expected for most of these species due to the transport route, however, there is potential for a significant impact to Striped Legless Lizard due to direct habitat removal predominantly along road upgrade areas.

Matters of National Environmental Significance

EPBC Act-listed species and ecological communities considered likely to occur or recorded in the study area were assessed against general or species-specific criteria for significant impacts.

Listed flora and fauna species

It is considered that for the majority of EPBC Act listed flora and fauna species recorded or likely to occur on the wind farm site, there is unlikely to be a significant impact due to the development, given the current development footprint and proposed design and mitigation measures.

One EPBC species listed fauna species, Striped Legless Lizard has potential to be significantly impacted by the development.

Listed ecological communities

Impacts to two EPBC Act listed ecological communities; NTGVVP and GEWVVP would constitute a significant impact under the EPBC Act and will be offset under the EPBC Act Environmental Offsets Policy.

Summary of impacts and conclusions

The Project has been situated in a region which has been extensively modified for farming. Wind Prospect have worked closely with Nature Advisory to reduce the area of native vegetation impacted

within the Project area. A total extent of 7.895 hectares of native vegetation from patches and four large trees in patches (Geelong Transport Route option), 8.080 hectares of native vegetation from patches and four large trees in patches (Portland Transport Route option), 8.190 hectares of native vegetation and nine large trees in patches (Combined Transport Route option) and four large and two small scattered trees (all routes) is proposed to be removed across the entire footprint. The offsets required to compensate for this removal are provided in this report.

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Acronyms/abbreviations

AusWEA	Australian Wind Energy Association
BAM Plan	Bat and Avifauna Management Plan
BoM	Bureau of Meteorology
BUS	Bird Utilisation Survey
C'wth	Commonwealth
CaLP Act	*Catchment and Land Protection Act 1994* (Vic)
CAMBA	China-Australia Migratory Bird Agreement
CEMP	Construction Environmental Management Plan
cm	Centimetre/s
CMA	Catchment Management Authority
CR	Critically Endangered
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water (C'wth)
DEECA	Department of Energy, Environment and Climate Action (Vic)
DELWP	(former) Department of Environment, Land, Water and Planning (Vic)
DEPI	(former) Department of Environment and Primary Industries (Vic)
DEWHA	(former) Department of the Environment, Water, Heritage and the Arts (C'wth)
DNRE	Department of Natural Resources and Environment
DoE	(former Department of Environment
DoEE	(former) Department of the Environment and Energy (C'wth)
DSE	(former) Department of Sustainability and Environment (Vic)
DSEWPaC	(former) Department of Sustainability, Environment, Water, Population and Communities (C'wth)
EES	Environment Effects Statement under the *Environment Effects Act 1978*
EHP	Ecology and Heritage Partners
EN	Endangered
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (C'wth)
EPBC-M	Migratory status under the EPBC Act
EPBC-T	Threatened species under the EPBC Act
EVC	Ecological Vegetation Class
EX	Presumed extinct in the wild
FFG Act	*Flora and Fauna Guarantee Act 1988* (Vic)
FZ	Farming Zone
GDE	Groundwater Dependent Ecosystems

GEWVVP	Grassy Eucalypt Woodland of the Victorian Volcanic Plain
GGF	Growling Grass Frog
GHCMA	Glenelg Hopkins Catchment Management Authority
GIS	Geographic Information Systems
GPS	Global Positioning System
ha	Hectare/s
HWF	Hexham Wind Farm
JAMBA	Japan-Australia Migratory Bird Agreement
km	Kilometre/s
LPP	Local Planning Policy
m	Metre/s
min	Minute/s
MNES	Matters of National Environmental Significance
NTGVVP	Natural Temperate Grasslands of the Victorian Volcanic Plain
NVCR	Native Vegetation Credit Register
NVIM	Native Vegetation Information Management system
PMST	EPBC Act-associated Protected Matters Search Tool
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
RSA	Rotor Swept Area
SAC	Scientific Advisory Committee
SBV	Strategic Biodiversity Value
SHWTLP	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains
TRZ2	Transport Zone Schedule 2
TSSC	Threatened Species Scientific Committee
VBA	Victorian Biodiversity Atlas
Vic	Victoria
VU	Vulnerable
VVP	Victorian Volcanic Plain bioregion
WBPGW	Western Basalt Plains (River Red Gum) Grassy Woodland
WPGC	Western (Basalt) Plains Grasslands Community

1. Introduction

1.1. Background and scope

Hexham Wind Farm Pty Ltd engaged Nature Advisory to conduct a flora and fauna assessment of a 16,104-hectare study area of land in the Western Victorian localities of Hexham, Caramut, Ellerslie, Minjah and Woolsthorpe for the proposed project. The project site is bound by the Hamilton Highway to the north, Woolsthorpe-Hexham and Hexham-Ballangeich roads to the east, Gordons Lane to the south and Warrnambool-Caramut Road to the west.

This Flora and Fauna assessment addresses the scoping requirements for the project that are relevant to biodiversity and habitat impacts as part of an Environment Effects Statement (EES), as required under the *Environment Effects Act 1978*. The report also supports the planning permit application for the project, as required under the *Planning and Environment Act 1987*.

This investigation provides information on the extent and condition of native vegetation in the project study area according to Victoria's *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017), herein referred to as 'the Guidelines', as well as any potential impacts on flora, fauna and ecological communities (biodiversity) listed under the state *Flora and Fauna Guarantee Act 1988* (FFG Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The preliminary findings of the initial investigation identified that a referral was required under the Victorian *Environment Effects Act 1978.* This report details the biodiversity scoping requirements and provides information on the biodiversity of study area as part of the EES submission. Separate reports have been provided on potential impacts on bats (Nature Advisory 2025a) and the Brolga (Nature Advisory 2025b).

This investigation was undertaken by a team from Nature Advisory, comprising Elinor Ebsworth (Senior Botanist), Verity Fyfe (Botanist), Dean Karopoulos (Botanist), Arend Kwak (Botanist), Tessa Doherty (Senior Botanist), Cody Hajnal (Botanist), Ezra Janetzki (Botanist), Kate Thurkle (Botanist), Neassa Fritchley (Botanist), Khalid Al-Dabbagh (Zoologist), Jackson Clerke (Zoologist), Curtis Doughty (Senior Zoologist), Peter Lansley (Zoologist), Emma Wagner (GIS Analyst), Maya Zaeim (GIS Analyst), Inga Kulik (Project Director), Kylie Patrick (Senior Ecologist & Project Manager), Andrew Lewis (Senior Ecologist and Project Manager) and Brett Lane (Principal Consultant).

1.2. Proposed development

The proposed project will comprise up to 106 wind turbines. Each wind turbine will comprise a tower, nacelle and blades with a maximum blade tip height of 260 metres and minimum blade tip height of 40 metres. The maximum and minimum parameters above have been adopted, allowing a 'worst case' assessment of environmental and social impacts. The towers will be mounted onto a concrete foundation and there will be an adjacent hardstand area of up to approximately 50 metres x 60 metres. Turbines will be positioned with a high regard for landscape amenity, existing land use, ecological constraints and cultural heritage values, and in accordance with relevant planning policies and legislation.

Two overland wind blade transport routes from Geelong and Portland to Hexham Wind Farm were also assessed, referred to as the 'Geelong transport route' and the 'Portland transport route'.

For this assessment, the following definitions have been used:

- Project Site: The properties on which the Hexham Wind Farm is proposed.
- Project Study Area: This represents the area in which detailed native vegetation surveys have been undertaken.

- Transport Route Study Areas: This represents the area of investigation around each location along the transport routes which require upgrades to enable transport of wind farm infrastructure. This is further broken down into:
  - Geelong transport Route: locations along the route from Geelong to Hexham Wind Farm.
  - Portland transport Route: locations along the route from Portland to Hexham Wind Farm.
- Local road upgrades: locations along local roads which require upgrades such as road widening.

outlines the planned project infrastructure and associated current design on which this investigation has been based.

Table 1: Project summary

Infrastructure	Current design (approximate dimensions)
Turbine dimensions	The turbine envelope proposed includes: ▪ Overall maximum tip height of up to 260 m ▪ Rotor diameter is up to 190 m ▪ Minimum tip height 40 m
On-site quarry	A 52.3 ha temporary works area located in the west of the wind farm site.
Onsite access tracks	Approximately 131 kilometres of new internal access track and upgrades to approximately 16.5 kilometres of existing access track (i.e., a total of around 147.5 kilometres of access tracks). The final access tracks would be 9 metres wide (inclusive of drainage, where required) and a maximum 120 metre turning radius. The construction footprint of access tracks would be around 20 metres wide.
Turbine footings and crane hardstand and assembly areas	Turbine footings will have a maximum tower base width of between 5 and 6 metres. Each wind turbine would have an adjacent hardstand area of around 6,500 square metres, which equates to 70 hectares for all project wind turbines.
Temporary construction facilities	▪ Seven noise compliant concrete batching plants (around 50m x 100m each) ▪ Main temporary construction compound (8ha) ▪ Four additional temporary construction compounds (200m x 200m)
Staging areas and passing lanes	▪ 24 staging areas up to 300 metres x 15 metres in length. ▪ Several passing lanes of 25 metres in length.
Internal transmission line	A 10 m wide disturbance footprint has been applied. No external transmission line will be required.
Terminal station	Electricity generated by the project would be distributed by underground and overhead cables to the proposed new onsite terminal station located adjacent to the existing Moorabool to Heywood 500 kilovolt transmission line. On-site terminal station with a footprint of approximately 7.3 ha in size.
Operations and maintenance facility	An operations and maintenance facility would be located adjacent to the on-site terminal station and BESS providing office, storage, and maintenance facilities. Nominally 90 m x 200 m.

Battery Energy Storage System (BESS)	An on-site battery energy storage facility is proposed to be located adjacent to the on-site terminal station. The BESS would consist of a series of containerised batteries with transformers, high voltage AC (HVAC) coolers and other electrical plant. The BESS would be sited on a hardstand area of up to 3 hectares (nominally 413 m x 67 m).
On-site cabling	Approximately 85 km of trenches about one metre below the ground. The work area width for the excavator to operate and for stockpiling of soil would be about 8 m wide for all trenches, assuming up to four cables are housed in each trench.
Wind monitoring masts	Up to 5 wind monitoring masts, each up to 170 m high A single-lane access track roughly 4 m wide would be constructed to provide access.
Site access	10 site access points are proposed from two arterial and five local council roads: ▪ One access points from Hamilton Highway ▪ One access point from Warrnambool-Caramut Road and Hamilton lane ▪ Four access points from Woolsthorpe-Hexham Road ▪ One access gate from Immigrants lane ▪ One access point from Keillors Road • Two access points from Hexham-Ballangeich Road
Local road upgrades	▪ Hamiltons Lane, Caramut ▪ Hexham-Ballangeich Road, Hexham & Ellerslie ▪ Keillors Road, Minjah ▪ Woolsthorpe-Hexham Road, Hexham & Woolsthorpe

Agriculture is the predominant land use in the study area consisting mostly of grazing, along with some cropping. These uses will continue after construction. The proposed development footprint consists of approximately 588 hectares, which is 3.65% of the site. Construction of the wind farm is expected to take approximately two years to complete, followed by an operational life of at least 25 years.

1.3. Scope of work and timeline of ecological surveys

The specific area investigated, referred to herein as the 'project study area', comprised the current and previous proposed infrastructure layout plus the following buffers:

- 25 metres each side of the centreline provided by the proponent for vehicle tracks;
- 15 metres each side of the centreline provided by the proponent for cables; and
- 100 metres from the centre point provided by the proponent for turbines.

These buffers were applied to properly assess the potential impacts of the project, including indirect impacts, and to allow for implementation of the avoid and minimise principles. The project study area totalled 2,166 hectares. Table 2 outlines surveys completed to inform this assessment of impacts of the proposed wind farm. Note that Brolga and bat investigations are described in separate reports.

Table 2: Surveys completed (to June 2025)

Survey – field assessment	Date
Flora and vegetation assessments	
Targeted flora surveys and Net Gain Assessment (EHP)	▪ 2011: 7-10 Jun; 2-4 Nov; 7-9 Nov; 5-9 Dec
Updated native vegetation assessments under the Guidelines	▪ 2018: 13-28 Nov ▪ 2021: 8-11 Nov
Targeted surveys for threatened ecological communities and listed flora species	▪ 2018: 28-30 Nov ▪ 2019: 10-11 Jan ▪ 2021: 22-25 Nov
Update native vegetation and threatened ecological community survey within project layout v183.7	▪ 2025: 10-13 June
Native vegetation surveys along transport route	▪ 2025: 4-6 June
Native vegetation surveys along road upgrade areas	▪ 2025: 17-18 June
Targeted flora surveys	▪ 2025: 8 – 10 July (Spiny Rice Flower) ▪ 2025: 27 – 29 October ▪ 2025: 1-5 December
Bird studies	▪
Bird utilisation surveys	▪ Summer 2011: 28 Nov–2 Dec ▪ Summer 2012: 20–22 Feb ▪ Spring 2018: 29 Oct–2 Nov ▪ Late Summer/early Autumn 2019: 4–8 Mar ▪ Winter 2024: 18-25 August ▪ Spring 2024: 25-29 November ▪ Summer 2025: 24-27 February ▪ Autumn 2025: 7-10 April ▪ Winter 2025: 4-7 August ▪ Spring 2025: 16-19 September
Migratory water bird habitat assessment and targeted surveys	▪ 2018: 18–20 Dec ▪ 2019: 9–11 Jan; 30–31 Jan; 26–28 Feb; 27–29 Feb
White-throated Needletail Survey	▪ 2022: 5–9 Dec ▪ 2023: 6–10 Feb; 22–25 Mar
Reptile and mammal studies	▪
Striped Legless Lizard and Fat-tailed Dunnart habitat assessment	▪ 2011: 28 Nov–2 Dec ▪ 2012: 20-22 Feb
Desk-based habitat assessment along Portland and Geelong Transport Route locations	▪ 2025: June
Aquatic fauna studies	▪
Growling Grass Frog habitat assessment	▪ 2011: 21-24 Nov ▪ 2018: 13-28 Nov
Aquatic surveys (fish)	▪ 21-24 Nov 2011
Invertebrate studies	
Golden Sun Moth Surveys	▪ 2011: Dec 16 and 19 Dec ▪ 2012: 6 Jan

2. EES scoping requirements

The *Environment Effects Act 1978* provides for assessment of proposed projects (works) that can have a significant effect on the environment. One or a combination of several criteria may trigger a requirement for a Referral to the Victorian Minister for Planning, who will determine if an EES is required according to the *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DSE 2006). An EES describes a project and its potential environmental effects, enabling stakeholders and decision-makers to understand how the project is proposed to be implemented and the likely environmental effects of doing so.

The proposed project was Referred to the Victorian Minister for Planning on 15 March 2022. On the 19 April 2022, the Minister for Planning decided that an EES was required for the project. The procedures and requirements for the EES assessment process are set out in the Minister's Statement of Decision, the Ministerial Guidelines, and are further detailed in the scoping requirements.

This report addresses Section 4.1 (Biodiversity and habitat) and part of Section 4.2 (Catchment values and hydrology) of the EES scoping requirements, the evaluation objectives and key issues for which are provided below.

The following evaluation objectives are relevant to the flora and fauna assessment:

Section 4.1 (Biodiversity and habitat)

Evaluation objective:

To avoid, and where avoidance is not possible, minimise potential adverse effects on biodiversity values within and near the site including native vegetation, listed threatened species and ecological communities, and habitat for these species. Where relevant, offset requirements are to be addressed consistent with state and Commonwealth policies.

Section 4.2 (Catchment values and hydrology)

Evaluation objective:

To maintain the functions and values of aquatic environments, surface water and groundwater quality and stream flows and avoid adverse effects on protected beneficial uses.

The aspects from the scoping requirements relevant to flora and fauna evaluation objectives are shown in Table 3: EES scoping requirements, as well as the location where these items have been addressed in this report.

Table 3: EES scoping requirements

Category	Requirements relevant to flora and fauna	Report reference
4.1 Biodiversity and habitat		
Key issues	Direct loss or degradation of native vegetation and associated listed ecological communities, including those listed as threatened under the EPBC Act and/or the FFG Act.	Section 5.4
	Direct loss or degradation of habitat for migratory or threatened flora and fauna listed under the EPBC Act and/or the FFG Act.	Section 5.3.3 (listed flora species), 5.3.4 (listed ecological communities) and 7.4.2 (listed fauna).

Category	Requirements relevant to flora and fauna	Report reference
	Disturbance and/or degradation of adjacent or nearby habitat that may support listed threatened or migratory species or other protected flora, fauna or ecological communities.	Section 5.5, 12
	Disturbance and increased mortality risk to flora and fauna species listed under the EPBC Act and/or FFG Act.	Section 5.5, 12
	Indirect habitat loss or degradation resulting from other effects, such as edge effects, surface hydrological changes, groundwater drawdown, noise, vibration, light or the introduction of weeds/ pathogens.	Section 5.5, 12
	Disruption to the movement of fauna between areas of habitat across the broader landscape, including between roosting, breeding and potential foraging sites for the Southern Bent-wing Bat and Grey-headed Flying-fox.	Refer to the Bat Assessment Report
	The availability of suitable offsets for the loss of native vegetation and habitat for listed threatened species under the EPBC Act and/or FFG Act.	Section 5.6.1 and 14.4
	Potential collision risk for protected bird and bat species with project infrastructure, including with wind turbine blades.	Section 12 (birds) and refer to the Bat Assessment Report
	Potential impacts on groundwater dependent ecosystems.	Section 6.5
	Potential cumulative effects on relevant listed threatened and migratory species and communities of flora and/or fauna, in particular, but not limited to, Brolga, Southern Bent-wing Bat, Grey-headed Flying-fox, White-throated Needletail and Black Falcon from the project in combination with the construction and operations of other energy facilities.	See Section 13
Existing environment	Characterise the type, distribution and condition of biodiversity values that could be impacted by the project, including native vegetation, terrestrial and aquatic habitat and habitat corridors or linkages. This should include identifying and characterising any ephemeral wetlands/ habitat for threatened species, groundwater dependent ecosystems and communities listed under the EPBC Act and/or FFG Act. This should also include characterising the use of the site by birds and bats.	Section 5.3 (native vegetation, flora species and listed ecological communities), 4.4 (fauna habitat), 7 (fauna overview) and 6.4 (Groundwater Dependant Ecosystems (GDE)).
	Identify the potential for and presence of roosting, breeding and foraging sites for the Southern Bent-wing Bat and Grey-headed Flying-fox within movement distances from the project site.	Refer to the Bat Assessment Report
	Identify Brolga breeding and flocking sites within movement distances from the project site.	Refer to the Brolga Assessment Report

Category	Requirements relevant to flora and fauna	Report reference
	Identify the presence or likely presence of any species or communities listed under the EPBC Act and/or FFG Act that could be impacted by the project, as well as any declared weeds, pathogens or pest animals.	Section 5.3.3 (listed flora species), 5.3.4 (listed ecological communities), 5.6.5 (declared weeds), 7.4.2 (listed fauna species) and 14 (Matters of National Environmental Significance (MNES)).
	Identify the presence or likely presence of any important populations of threatened species listed under the EPBC Act and/or FFG Act, as described in relevant conservation advice and national recovery plans, and how any important populations may be impacted by the project.	Section 5.3, 12.2, 14.
	Characterisation of the existing environment is to be informed by relevant databases, literature (and published data) and appropriate targeted and/or seasonal surveys and modelling of the potential and actual presence of threatened species and communities consistent with Commonwealth and State survey guidelines, conservation advice and threatened species recovery plans. Where surveys do not identify a listed species or community, but past records and/or habitat analysis suggest that it may occur, a precautionary approach to the further investigation and assessment of its occurrence should be applied.	Details of the databases used are included in Section 5.2.1 (vegetation, flora and ecological communities) and 7.2. (fauna). Details of the surveys undertaken are included in Section 5.2.2 (vegetation, flora and ecological communities) and 7.3 (fauna). The precautionary approach adopted is described in these sections.
	Characterise existing threatening processes, including those listed under the FFG Act and/or EPBC Act, that are likely to be present and could potentially be exacerbated by the project.	Sections 5.4.1, 6.5.1 and 7.5.1
Likely effects	Assess the direct and indirect effects of the project and feasible alternatives on native vegetation, listed ecological communities, and listed threatened, migratory and other protected flora species.	Section 5.4
	Assess the direct and indirect effects of the project and feasible alternatives, on listed threatened, migratory and other protected fauna species under the EPBC Act and/or FFG Act, including, but not limited to, Brolga, Grey-headed Flying-fox, White-throated Needletail, Black Falcon and Southern Bent-wing Bat through collisions with turbines and/or overhead powerlines.	Section 0, 12 and Bat and Brolga Assessment Reports

Category	Requirements relevant to flora and fauna	Report reference
	Assess the direct and indirect effects of the project, including access roads and transmission lines, on biodiversity values, including: • direct removal of individuals or destruction of habitat; • disturbance or alteration of habitat conditions (e.g., habitat fragmentation, severance of wildlife corridors or habitat linkages, changes to water quantity or quality, changes to wetland function, fire hazards etc.); • on the ability of wetlands to support listed species and communities; • on the health and viability of groundwater dependent ecosystems; • threats to mortality of listed threatened fauna; and • the presence and potential spread of any declared weeds, pathogens and pest animals within and in the vicinity of the project area.	Sections 5.4, 5.5, 6.5, 0, and 12 .
	Assess the potential cumulative effects on listed species of fauna, in particular, but not limited to, Brolga, Grey-headed Flying-fox, White-throated Needletail, Black Falcon and Southern Bent-wing Bat from the project in combination with other nearby approved or operating wind energy facilities. Planned projects are also to be considered where possible.	See Section 13
Design and mitigation	Identify, describe and compare potential alternatives and proposed design options and mitigation measures, which could avoid and/or minimise significant effects on any flora, fauna and/or ecological communities listed on the EPBC Act and/or FFG Act, and provide a clear justification for which avoidance and/or mitigation measures will be committed to.	The proposed HWF layout has been designed through an iterative process in which biodiversity information has been incorporated to minimise impacts. Specific examples are provided in Section 5.4.2. Mitigation measures are documented in Sections 5.4.2 (flora and native vegetation), 6.5.2 (GDEs), 12 (fauna) and bats (refer to the Bat Assessment Report).
	Justify and describe the assumptions and level of uncertainty associated with the proposed measures achieving their desired outcomes.	Section 7.5.2 and Bat Assessment Report
	Identify staging or timing options for works that could help to avoid or minimise adverse effects on seasonal values (e.g., migratory species, breeding behaviour).	Section 7.5.2 and Bat Assessment Report
	Describe the application of the three-step approach to avoiding the removal of native vegetation, minimising impacts from removal of native vegetation that cannot be avoided and providing offsets to compensate for the biodiversity impact from the removal of native vegetation.	Section 5.4.2

Category	Requirements relevant to flora and fauna	Report reference
Performance	Describe and evaluate proposed commitments to manage residual effects of the project on biodiversity values, including an offset strategy and outline of an offset management plan that sets out how state and Commonwealth offset policies and requirements will be satisfied, including demonstrating how appropriate offset(s) will be secured.	Sections 5.6.1 and 14.4
	Describe the approach to monitor impacts on biodiversity and habitat values with specific, measurable, attainable, relevant, time-based indicators for monitoring and thresholds for action.	CEMP & BAMP
	Describe contingency measures to be implemented in the event unforeseen adverse residual effects on flora and fauna values are identified requiring further management.	CEMP & BAMP
	Identify any further commitments proposed to monitor and manage risks and effects on biodiversity values and native vegetation.	CEMP
4.2 Catchment values and Hydrology (relevant to this assessment)		
Key issues	Potential for the project to have significant impact on wetland systems, including, but not limited to, Seasonal Herbaceous Wetlands (EPBC Act listed community), and the ability for wetland systems to support habitat for flora species listed under the FFG Act and EPBC Act.	Sections 5.5.3 and 5.5.4
Existing environment	Characterise the wetland systems in and around the project site and the type, distribution and condition of wetlands that could be impacted by the project, having regard to terrestrial and aquatic habitat and habitat corridors or linkages.	Sections 6.4.3, 7.4, 9 and 11.4
Likely effects	Assess the potential effects of the project on surface water and groundwater environments and associated environmental values and use, including on permanent and ephemeral wetland systems (both on-site and adjacent to the proposal), and surface water and groundwater flow and quality. This needs to include consideration of effects associated with establishment of project roads and transmission lines.	Primarily covered in the surface water and groundwater report (Water Technology 2025), referenced in Section 6 of this report (GDEs) and where relevant for Flora and native vegetation in Section 5 and Fauna in Section 7 of this report.
Design and mitigation	Identify proposed measures to mitigate any potential effects, including any relevant design features or preventative techniques to be employed during construction.	Sections 5.4.2, 6.5.2 and 12.1
Performance	Describe proposed measures to manage and monitor effects on catchment values and identify likely residual effects and identify if further management is required.	See surface water and groundwater report (Water Technology 2025).

3. Regulatory context

This section of the report summarises the applicable legislation and planning provisions that apply to this project. Commonwealth, state and local controls are considered.

3.1. Federal legislation and policy

3.1.1. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act protects a range of matters of national environmental significance (MNES) and matters protected by international treaties. These matters include a list of threatened species, ecological communities and migratory species that are considered to be of national conservation significance. Any impact on such species or ecological communities that is considered significant requires the approval of the Federal Minister for the Environment.

The proposed project was referred to the Commonwealth Minister for the Environment (Ref EBPC 2022/09287). On 31 August 2022, the Minister determined that the project would be a Controlled Action that required assessment and approval under the EPBC Act before it can proceed. The relevant controlling provisions are listed threatened species and communities (Section 18 and 18A) and migratory species (Section 20 and 20A). Of particular concern were:

- Southern Bent-wing Bat;
- Grey-headed Flying-fox; and
- White-throated Needletail.

The Minister also decided that the EES will be the accredited process for assessment of the proposed project (the Controlled Action) under the EPBC Act.

Several specific EPBC Act guidelines have been consulted and directions from these applied during surveys and in formulating the investigations of flora and fauna impacts described in this report. These include:

- Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (DoE 2013);
- National Recovery Plan for the Southern Bent-wing Bat *Miniopterus orianae bassani* (DELWP 2020);
- National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (DAWE 2021a);
- EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017); and
- Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia's national environment law – Draft (DCCEEW 2024).
- Significant impact guidelines for the critically endangered spiny rice-flower (*Pimelea spinescens subsp. spinescens*) (DEWHA 2009b)
- Significant impact guidelines for the vulnerable growling grass frog (*Litoria raniformis*) (DEWHA, 2009)
- Referral guidelines for the vulnerable striped legless lizard, *Delma impar* (DSEWPaC, 2011)
- Referral guideline for management actions in Grey-headed and Spectacled flying-fox camps (DoE, 2015)

3.2. State legislation and policy

3.2.1. Planning and Environment Act 1987

State planning provisions are established under the Victorian *Planning and Environment Act 1987*.

Clause 52.17 of all Victorian Planning Schemes states that:

A permit is required to remove, destroy or lop native vegetation, including dead native vegetation.

A permit is not required:

- if an exemption in Table 52.17-7 specifically states that that a permit is not required;
- if a native vegetation precinct plan corresponding to the land is incorporated into the planning scheme and listed in the schedule to Clause 52.16; or
- if the native vegetation is specified in a schedule to Clause 52.17.

Exemptions

Exemptions listed in Table 52.17-7 relevant to the project study area include:

- *Planted vegetation:* Native vegetation that is to be removed, destroyed or lopped that was either planted or grown as a result of direct seeding. This exemption does not apply to native vegetation planted or managed with public funding for the purpose of land protection or enhancing biodiversity.

Application requirements

Any application to remove, destroy or lop native vegetation must comply with the application requirements specified in the Guidelines (DELWP 2017).

When assessing an application, Responsible Authorities are also obligated to refer to Clause 12.01-2 (Native vegetation management) in the Planning Scheme which in addition to the Guidelines, refers to the following:

- Assessor's handbook – applications to remove, destroy or lop native vegetation (DELWP 2018).
- Statewide biodiversity information maintained by DEECA.

Referral to DEECA

Clause 66.02-2 of the planning scheme determines the role of DEECA in the assessment of native vegetation removal permit applications. If an application is referred, DEECA may make certain recommendations to the responsible authority in relation to the permit application.

Any application to remove, destroy or lop native vegetation must be referred to DEECA if:

- The impact to native vegetation is in the Detailed Assessment Pathway;
- A property vegetation plan applies to the site; or
- The native vegetation is on Crown land which is occupied or managed by the responsible authority.

The Secretary to DEECA is a recommending referral authority under section 55 of the *Planning and Environment Act 1987*.

3.2.2. Flora and Fauna Guarantee Act 1988 (FFG Act)

The FFG Act includes:

- a Threatened List (DEECA 2024b)
- a Declared Protected Flora List (DEECA 2024a)

The FFG Act applies to all land in Victoria, with public authorities legally required to consider the impacts on threatened species and communities on all land tenures as part of their decision-making. A permit from DEECA is only required if there are to be impacts on FFG Act-listed values on public land.

Threatened List

The *Flora and Fauna Guarantee Act 1988 Threatened List* represents Victoria's single operational list of threatened flora, fauna and communities. Each species is assigned a threatened status which aligns with the listing categories and criteria for the International Union for the Conservation of Nature (IUCN) Red List.

These values should be avoided wherever possible, in recognition of their threatened status at a state level.

Any application for a planning permit may also be assessed by the responsible or referral authority for potential impacts to FFG Act-listed threatened values as part of broader considerations of impacts to biodiversity regardless of land tenure. Under the FFG Act, the removal of FFG Act-listed threatened flora and communities from public land requires a Protected Flora Permit. Impacts to these species should be avoided wherever possible, in recognition of the species' threatened status at the state level.

Declared Protected Flora List

The *Declared Protected Flora List* includes plants from three sources:

- Plant taxa (species, subspecies or varieties) listed as threatened under the FFG Act
- Plant taxa belonging to communities listed as threatened under the FFG Act
- Plant taxa which are not threatened but require protection for other reasons. For example, some species which are attractive or highly sought after, such as orchids, and grass trees, are protected so that the removal of these species from the wild can be controlled (DEECA 2024a).

Under the FFG Act, the removal of protected flora from public land requires a Protected Flora Permit. The FFG Act provides two different categories for protected flora species - 'restricted use protected flora', and all other protected flora (referred to as 'generally protected flora'). Removal of 'restricted use protected flora' species only requires a permit when it is impacted by take for commercial or personal use, and as such this list is not relevant to this investigation.

However, a Protected Flora Permit must be obtained from a regional DEECA office for impacts to any 'generally protected flora' on public land for any reason other than commercial or personal use, including impacts arising from this proposal. This permit can only be obtained after the removal of this flora is approved as part of a planning permit.

3.2.3. Environment Effects Act 1978 (EE Act)

A Referral to the Victorian Minister for Planning has been submitted and it was decided that an EES is required according to the *Ministerial Guidelines for Assessment of Environmental Effects under the* Environment Effects Act 1978 (DSE 2006).

The procedures and requirements for the EES assessment process are set out in the Minister's Statement of Decision, the Ministerial Guidelines and are further detailed in the scoping requirements (see Section 2).

3.2.4. *Catchment and Land Protection Act 1994 (CaLP Act)*

The *Catchment and Land Protection Act 1994* (CaLP Act) requires that landowners (or a third party to whom responsibilities have been legally transferred) must take all reasonable steps on their land to:

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

3.3. Local laws and regulations

The study area is located within the Moyne Shire local government area. It is currently zoned Farm Zone (FZ) in the Moyne Planning Scheme, with Transport Zone Schedule 2 (TRZ2) along the Hamilton Highway and the Warrnambool-Caramut Road.

The transport route study area locations occur within the Moyne Shire and Southern Grampians Shire local government areas. These areas are zoned either Farm Zone (FZ) in the Moyne Planning Scheme, Transport Zone Schedule 2 (TRZ2) in both the Moyne and Southern Grampians Planning Scheme and/or Transport Zone Schedule 1 (TRZ1) in the Southern Grampians Planning Scheme.

Local planning provisions apply under the Victorian *Planning and Environment Act 1987*.

3.3.1. *Planning policy framework*

Clause 12.01 - Biodiversity

Clause 12.01 of all Victorian Planning Schemes provides an overarching framework to protect and enhance Victoria's biodiversity. The responsible authority is obligated to refer to Clause 12.01-1S – *Protection of biodiversity* and Cl. 12.01-2S – *Native vegetation management*. The objectives and strategies relating to the current proposal for each of these relevant Clauses are outlined below.

Clause 12.01-1S – *Protection of biodiversity*

The objective of this Clause is to protect and enhance Victoria's biodiversity through the following strategies:

- Use biodiversity information to identify important areas of biodiversity, including key habitat for rare or threatened species and communities, and strategically valuable biodiversity sites.
- Strategically plan for the protection and conservation of Victoria's important areas of biodiversity.
- Ensure that decision making takes into account the impacts of land use and development on Victoria's biodiversity, including consideration of:
    - Cumulative impacts.
    - Fragmentation of habitat.
    - The spread of pest plants, animals and pathogens into natural ecosystems.

- Avoid impacts of land use and development on important areas of biodiversity.
- Consider impacts of any change in land use or development that may affect the biodiversity value of national parks and conservation reserves or nationally and internationally significant sites; including wetlands and wetland wildlife habitat designated under the Convention on Wetlands of International Importance (the Ramsar Convention) and sites utilised by species listed under the Japan-Australia Migratory Birds Agreement (JAMBA), the China-Australia Migratory Birds Agreement (CAMBA), or the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).
- Assist in the identification, protection and management of important areas of biodiversity.
- Assist in the establishment, protection and re-establishment of links between important areas of biodiversity, including through a network of green spaces and large-scale native vegetation corridor projects.
- Support land use and development that contributes to protecting and enhancing habitat for indigenous plants and animals in urban areas.

Clause 12.01-2S – *Native vegetation management*

The objective of this Clause is to ensure there is no net loss to biodiversity as a result of removal, destruction or lopping of native vegetation through the following strategies:

- Ensure decisions that involve, or will lead to, the removal, destruction or lopping of native vegetation, apply the three-step approach in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017; 'the Guidelines'):
    - Avoid the removal, destruction or lopping of native vegetation.
    - Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
    - Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation.

A response of how this application addresses the relevant Clauses is provided in Section 5.6.2.

Clause 12.03 – Water bodies and wetlands

Clause 12.03 of all Victorian planning schemes provides an overarching framework to protect and enhance waterway systems. The responsible authority is obligated to refer to Clause 12.03-1S - *River and riparian corridors, waterways, lakes, wetlands and billabongs*. The objectives and strategies relating to the current proposal for the relevant Clause is outlined below.

Clause 12.03-1S – *River and riparian corridors, waterways, lakes, wetlands and billabongs*

The objective of this clause is to protect and enhance waterway systems including river and riparian corridors, waterways, lakes, wetlands and billabongs through the following strategies relevant to this investigation:

- Protect the environmental, cultural, landscape values of all waterway systems as significant economic, environmental and cultural assets.
- Conserve waterway systems and the landscapes and environmental values surrounding them by protecting ecological values, indigenous vegetation, terrestrial and aquatic habitats and encouraging biodiversity.
- Sensitively design and site development to maintain and enhance the waterway system and the surrounding landscape setting, environmental assets, and ecological and hydrological systems.

- Protect geomorphology, bank stability and flood management capacity to strengthen the environmental value and health of waterway systems by:
  - Retaining, enhancing and re-establishing indigenous riparian vegetation along waterway systems, ensuring it responds to the bushfire risk of a location.
  - Enhancing and re-establishing both terrestrial and aquatic habitats and their linkages along and surrounding waterway systems.
  - Limiting earthworks in proximity to waterway systems to minimise alterations to geomorphology, natural drainage, natural flows and water quality.
  - Facilitating the restoration of waterway systems through the removal of weeds, invasive species and pests.

A response of how this application addresses the relevant clauses is provided in Section 5.6.2.

3.3.2. Overlays

No overlays relevant to this investigation cover the project study area.

Along the Portland transport route, the intersection of Mt Baimbridge Rd and Portland Rd, Hamilton is covered by the Environmental Significance Overlay – Schedule 1 (ESO1) [Southern Grampians].

The intersection of the Hamilton Highway and Penshurst-Dunkeld Road, Penshurst is covered by the Heritage Overlay (HO452) [Southern Grampians], which includes protection of surviving trees and road reserves. No native vegetation is anticipated to be impacted here, but any removal of non-native trees and roadside vegetation may need to be considered, which is beyond the scope of this assessment.

Any permit requirements, relevant application requirements, decision guidelines and implications under these overlays are addressed in Section 5.6.2.

3.4. Other guidelines

In addition to the foregoing policy and legislative instruments, several wind farm-specific guidelines have been consulted and key directions from these applied in formulating the investigations of flora and fauna impacts described in this report. These include:

- Wind Farms and Birds: Interim Standards for Risk Assessment (AusWEA 2005);
- Planning Guidelines for Development of Wind Energy Facilities (DTP 2023);
- Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (CEC 2018); and
- Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia's national environment law – Draft (DCCEEW 2024).

DEECA released the 'Handbook for the development of renewable energy in Victoria' in May 2025 (DEECA 2025). Under the transitional arrangements the Handbook does not apply if, prior to the commencement of the Handbook, the project has been referred to the Minister or Planning for assessment under the EE Act or an assessment under the EE Act has commenced for the project. Both of these transitional arrangements apply to Hexham Wind Farm and as such, the project will not be assessed under the new guidelines.

4. Site description

4.1. Location

The proposed HWF comprises 16,104 hectares of land in the Western Victorian localities of Hexham, Caramut, Ellerslie, Minjah and Woolsthorpe, approximately 20 kilometres west of Mortlake and 200 kilometres west of Melbourne's CBD. The wind farm site is bound by Hamilton Highway to the north, Woolsthorpe-Hexham and Hexham-Ballangeich roads to the east, Gordons Lane to the south and Warrnambool-Caramut Road to the west. The proposed HWF site is referred to herein as the 'study area'.

Two overland wind blade transport routes from Geelong and Portland to HWF were also assessed (Figure 2), which comprised locations that require road widening and/or trimming of vegetation to accommodate turbine blade swept paths.

4.2. Geology and hydrology

The study area supported basaltic soils derived from newer volcanic flows, with alluvium associated with watercourses. The landscape was gently undulating with several permanent watercourses, the most major of which is Mustons Creek in the northern portion of the site, which flows into the Hopkins River to the east of the study area, and Drysdale Creek in the south, which continues to the coast near Warrnambool. Numerous tributaries (many unnamed) of Mustons and Drysdale creeks occur within the study area.

4.3. Vegetation

The study area and surrounding land supports agriculture, including dryland cropping and sheep and cattle grazing, with a relatively low density of associated residences. Widespread historical clearing of the study area and surrounds for agriculture has resulted in remnant native vegetation being largely restricted to roadside reserves and watercourses.

Vegetation in the project study area consisted primarily of exotic pasture or dryland crops, with several planted windbreaks on the edge of paddocks, some of which included native species. Within private property native vegetation comprised small patches of species depauperate grassland, wetland and woodland along the edges of farm tracks, in lower-lying areas in pasture and along watercourses. Most (if not all) woody vegetation had been removed in these patches. Patches of native vegetation along roadsides included grassland and woodland, which lacked canopy species but did support some woody species (primarily wattles, including Black Wattle and Blackwood). The highest quality native vegetation was found along the wide road reserve of the Hexham-Ballangeich Road.

4.4. Fauna habitat

Most of the study area has been highly modified by past and ongoing agricultural practices. Most private properties have been cleared of original native vegetation to facilitate grazing and cropping planted windbreaks occurred on the margins of many paddocks.

Native vegetation was primarily restricted to roadsides, waterways and wetland areas. Many of these are also highly modified and some contained a high abundance of invasive species.

The habitat assessment below is based on Nature Advisory field visits described in this report and extrapolated from Ecology and Heritage Partners (EHP 2014).

The project study area supported seven general fauna habitat types described below.

Modified native grasslands

Native grasslands occurred in various forms throughout the study area, such as grasslands of moderate to high quality in patches along roadsides and farming tracks, in remnant patches within grazing lands, in some native woodland windbreak areas where agricultural practices are limited and disturbance does not occur as frequently, and in wetland areas of riparian vegetation or swamps/marshes.

These grasslands varied greatly in habitat quality and structure between sites, depending on the ecosystems they existed in and the level of disturbance and modification they experience. These grasslands may provide habitat to some grassland specialists and foraging opportunities to other fauna.

Modified woodland and scattered trees

Modified woodland patches are scattered throughout the study area and generally support highly modified understoreys for agricultural purposes. They consist typically of open woodlands with trees approximately 20 metres tall. These areas occur along roadsides, riparian zones and in patches within agricultural areas. They have limited connectivity but provide an important source of habitat in an otherwise highly modified landscape.

Scattered River Red-gum (*Eucalyptus camaldulensis*) also occur throughout the study area providing limited habitat and foraging opportunities. Many of these however provide hollows, an essential habitat component for many fauna species.

Planted vegetation

Linear shelter belts, or windbreaks, have been planted throughout the study area, typically bordering paddocks used for agricultural purposes. These consist of a mix of native species, some endemic to the area and others not, and non-native species. Though these typically lack the ecological structure required for high quality habitat such as understorey and mid-storey or hollows, they provide some shelter and foraging opportunities for Grey-headed Flying Fox, bird and microbat species.

Rivers, creek and drainage lines

Waterways occurred throughout the study area. Major waterways include Hopkins River to the east of the project site, Mustons Creek and Salt Creek while minor waterways occurred throughout private property consisting of small highly modified drainage lines serving to drain water from naturally occurring wetlands and depressions.

Some of these areas would hold water year-round while others are ephemeral. They support limited and modified wetland and riparian vegetation but could provide essential habitat for some fauna species, such as water birds, microbats and aquatic species.

Swamps and marshes

These habitats are of moderate value to fauna where they still exist, particularly as much of the original comparable habitat has been modified or drained. Typically lacking floristic diversity, but the hydrology of the habitat still supports many fauna species. Characterised by the growth of sedges and rushes, and the low-lying areas are typically inundated during the wetter months. These areas are mostly grazed when possible.

Artificial waterbodies

Many dams occur throughout private property across the study area, supplying water for stock and agricultural purposes. As such many of these lack vegetation, are highly impacted by frequent stock use and therefore provide low-quality habitat for native fauna. Some provide limited fringing and

emergent vegetation and may still be used by bird life and microbat species occasionally. These are typically surrounded by agricultural land and lack connectivity with other habitats.

Exotic pasture and crops

Of low value for fauna, this habitat is largely grazed for farming purposes and provides little habitat or shelter for fauna. This habitat covers much of the study area and consists mostly of pasture and cereal crops.

4.5. Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) are defined as *ecosystems that require access to groundwater to meet all or some of their water requirements to maintain the communities of plants and animals, ecological processes they support, and ecosystem services they provide* (SKM 2011).

GDEs can be further divided into three types (SKM 2011):

- **Aquifer and cave ecosystems (Type 1)** including karst aquifer systems, fractured rock, saturated sedimentary environments and the hyporheic zones of rivers, floodplains and coastal environments.
- **Ecosystems dependent on the surface expression of groundwater (Type 2)** include wetlands, lakes, seeps, springs, river baseflow, coastal areas and estuaries that constitute brackish water and marine ecosystems. In these cases, the groundwater extends above the earth surface, as a visible expression.
- **Ecosystems dependent on subsurface presence of groundwater (Type 3)** (via the capillary fringe) include terrestrial vegetation that depends on groundwater fully or on a seasonal or episodic basis to prevent water stress and generally avoid adverse impacts to their condition.

All three types of GDEs have the potential to occur within the project area.

The Surface Water and Groundwater impact assessment for the project (Water Technology 2025) recognises the presence of aquifers within the project area. Sampling of one of these aquifers indicated the presence of Stygofauna (Bold et al. 2020), suggesting that Type 1 GDEs are likely to be present within the project area; however, their extent is not known.

The relatively high rainfall at the site, ephemeral nature of wetlands and smaller watercourses, and fluctuation of waterbodies with rainfall weighs against the presence of Type 2 and Type 3 GDEs. It is, however, recognised that wetland and terrestrial vegetation types may benefit from access to groundwater over summer and during drought if it is available at that time. The *Groundwater Dependent Ecosystems Atlas* (BoM 2023) indicates that potential aquatic GDEs are focussed along Mustons, Tea-tree and Drysdale Creeks, Black Swamp in the west, and several unnamed wetlands.

Terrestrial GDEs in the GDE atlas within and near the project site include ten terrestrial vegetation wetland and woodland communities typically in isolated fragments or along major watercourses. These areas have been based on broad-scale EVC modelling. Field investigations of native vegetation present within and near the project site (see Section 5) have been used to accurately describe the presence of potential terrestrial GDEs.

4.6. Land-use history

Most of the study area has been used for sheep and cattle farming for over 150 years. The site has been subject to extensive removal of native vegetation in the past. Fertiliser has been extensively applied for many years on the site and, in places, the site has been cultivated for pasture improvement and cropping.

5. Vegetation and Flora Surveys

EY FINDINGS

1. The assessment found 244 habitat zones from nine Ecological Vegetation Classes (EVCs), totalling 87.3 hectares of native vegetation in patches.
2. One threatened flora species listed under both the EPBC Act and FFG Act – Spiny Rice-flower *Pimelea spinescens subsp. spinescens* – was recorded during native vegetation surveys in June 2025.
3. One threatened flora species listed under the FFG Act – Purple Blown-grass *Lachnagrostis semibarbata* var. *filifolia* – was recorded during targeted surveys in November 2021.
   Two EPBC Act-listed ecological communities – *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP) and *Natural Temperate Grassland of the Victorian Volcanic Plains* (NTGVVP) were recorded within the project study area.

Two FFG Act-listed community – *Western (Basalt) Plains Grasslands Community* (WPGC) and *Western Basalt Plains (River Red Gum) Grassy Woodland* (WBPGW) – were recorded in the project study area.

4. No other threatened ecological communities listed under the EPBC Act or FFG Act are considered to have the potential to occur within the proposed development footprint.
5. The proposed HWF development footprint will have the following impacts:
   - The loss of 7.895 hectares of native vegetation from patches and four large trees in patches (Geelong Transport Route option), 8.080 hectares of native vegetation from patches and nine large trees in patches (Portland Transport Route option) or 8.190 hectares of native vegetation from patches and nine large trees in patches (combined Transport Route option); and
   - The loss of four large and two small scattered trees (all route options).
   - 0.586 hectares (Geelong), 0.595 hectares (Portland) or 0.605 hectares (combined) of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) (EPBC Act: Critically Endangered).
   - 0.247 hectares of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP) (EPBC Act: Critically Endangered).
   - 0.743 hectares (Geelong),0.806 hectares (Portland) or 0.818 hectares (combined) of Western (Basalt) Plains Grasslands Community (WPGC) (FFG Act: Listed).
6. Impacts to NTGVVP and GEWVVP would constitute a significant impact under the EPBC Act and will be offset under the EPBC Act Environmental Offsets Policy.

5.1. Introduction

The vegetation surveys aimed to identify native vegetation and ascertain whether EPBC Act and FFG Act-listed threatened flora species and ecological communities have the potential to be present in the HWF development footprint. The information from these surveys has been used to inform the proposed wind farm layout by applying the 'avoid' and 'minimise' principles in accordance with the guidelines.

The vegetation surveys covered a 1,586-hectare project study area that was larger than and contained the proposed development footprint. This also informed the occurrence of habitats for threatened flora species on and near the development footprint.

Targeted flora surveys were undertaken during the appropriate seasons in areas of the previous (2019) development footprint identified as suitable habitat for threatened flora species. These provide greater certainty on the presence or otherwise of these species. Targeted surveys for spring-flowering threatened species were undertaken in areas of suitable habitat as defined for each species in Table 5 during October 2018 (to coincide with the flowering time for these species). Targeted surveys for Trailing Hop-bush were undertaken in areas of suitable habitat during January

2019 (to coincide with the flowering time for this species). Areas of proposed impacts to suitable habitat falling outside the 2019 development footprint, as well as within the Roadside Upgrades and Transport Route footprints, were also surveyed during the appropriate season, as documented in Table 5.

Spiny Rice-flower was recorded incidentally during the native vegetation surveys in June 2025. Following this, suitably timed targeted surveys for this species (i.e., April to August; DEWHA 2009b) were undertaken from 8 to 10 July 2025 in areas of suitable habitat along roadsides and within swept path impact areas. This species was deemed unlikely to occur within impact areas on private land due to a lack of suitable habitat, as much of the ground layer was highly modified and dominated by introduced pasture grasses. Spiny Rice-flower was recorded within Habitat Zone 1N along the Hamilton Highway. This population consisted of approximately 158 individuals.

This section of the report presents the results of the vegetation and flora surveys. The methods used and sources of information are considered first. The native vegetation that lies within the project study area is then described. The impacts on vegetation and potential impacts to threatened species are considered next, followed by mitigation measures for reducing the impacts of the project. Implications of the project under applicable legislation and planning policies are also summarised.

To assess the impacts of the project on vegetation and threatened flora species, the layout described in Section 1.2 was used.

Table 4 summarises the compliance of the information in this report with the application requirements of the Guidelines (DELWP 2017).

Table 4: Application requirements under the guidelines

Application requirement		Response
1.	Information about the native vegetation to be removed	See Section 5.5.1
2.	Topographic and land information relating to the native vegetation to be removed	See Section 4.2
3.	Recent, dated photographs of the native vegetation to be removed	See Appendix 4
4.	Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five-year period before the application for a permit is lodged	It is understood that no native vegetation has been removed in relation to the current project within the last five years
5.	An avoid and minimise statement	Please see Section 5.4.2
6.	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* that applies to the native vegetation to be removed	It is understood that no Property Vegetation Plan applies to any of the native vegetation proposed for removal
7.	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	The removal of native vegetation is not to create defendable space

Application requirement		Response
8.	If the application is under Clause 52.16 of the Planning Scheme (in accordance with the *Planning and Environment Act 1987*) , a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations (at decision guideline 8).	The application is not being made under Clause 52.16
9.	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.	See Appendix 7
Additional requirements for applications in the Detailed Assessment Pathway		
10.	A site assessment report of the native vegetation to be removed, including: ▪ A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status. ▪ The location, number, circumference (in centimetres measured at 1.3 m above ground level) and species of any large trees within patches. ▪ The location, number, circumference (in centimetres measured at 1.3 m above ground level) and species of any scattered trees, and whether each tree is small or large.	See Section 5.5.1, Appendix 1 and Appendix 2
11.	Information about impacts on rare or threatened species habitat, including: ▪ The relevant section of the Habitat importance map for each rare or threatened species requiring a species offset. ▪ For each rare or threatened species that the native vegetation to be removed is habitat for, according to the habitat importance maps: ▫ the species' conservation status ▫ the proportional impact of the removal of native vegetation on the total habitat for that species ▫ whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat.	See Appendix 6 and Section 5.6.1

5.2. Methods

This section describes the methods used for the vegetation surveys and determination of the presence of habitat for listed flora species, including sources of information reviewed to ensure a comprehensive consideration of native vegetation and flora species was undertaken.

5.2.1. Existing information

Existing information used for this investigation is described below.

Existing reporting and documentation

The existing documentation below was reviewed.

- Moyne Planning Scheme

- Southern Grampians Planning Scheme
- Hexham Wind Farm – Detailed Flora and Fauna Investigations (EHP 2014).

Native vegetation

Pre-1750 (pre-European settlement) vegetation mapping administered by DEECA was reviewed to determine the type of native vegetation likely to occur in the project study area and surrounds. Information on EVCs was obtained from published EVC benchmarks. These sources included:

- Relevant EVC benchmarks for the Victorian Volcanic Plains and Dundas Tablelands bioregions[1] (DSE 2004a)
- NatureKit (DEECA 2025a).

Listed matters

Existing flora species records and information regarding the potential occurrence of listed matters were obtained for the 'search region', defined here as the area within 10 km of the project study area boundary and the boundaries of the swept path intersections.

A list of the flora species recorded in the search region was obtained from the *Victorian Biodiversity Atlas* (DEECA 2025b).

The online EPBC Act-associated *Protected Matters Search Tool* (PMST; DCCEEW 2025) was consulted to determine whether nationally listed species or communities may potentially occur in the search region. This is based on a habitat modelling process.

5.2.2. Field methods

Native vegetation assessment 2018-2021

Native vegetation assessments were conducted from 13 to 28 November 2018 and 8 to 11 November 2021. During these assessments, the project study area was surveyed initially by vehicle and areas supporting native vegetation were inspected in more detail on foot.

Sites in the project study area found to support native vegetation or with potential to support listed matters were mapped through a combination of aerial photograph interpretation and ground-truthing using a hand-held GPS (accurate to approximately 5 metres). Species and ecological communities listed as threatened under the EPBC Act or FFG Act (where they occurred on public land) were also mapped using the same method.

Native vegetation assessment 2025

In accordance with the Assessor's handbook (DELWP 2018), site assessments must have been completed within the last three years for grassy ecosystems, including grasslands and grassy woodlands, such as are found within the project study area. Therefore, updated native vegetation assessments were conducted from 4 – 18 June 2025 within the project study area (Figure 1)

Native vegetation assessments were undertaken from 4 – 6 June 2025 at the locations along the Portland and Geelong transport routes (Figure 1).

Native vegetation assessments for four roadsides proposed to be upgraded as part of the project were undertaken from 4 – 18 June 2025 (Figure 1). These included the roadsides of:

- Hamiltons Lane, Caramut

[1] A bioregion is defined as "a geographic region that captures the patterns of ecological characteristics in the landscape, providing a natural framework for recognising and responding to biodiversity values". In general bioregions reflect underlying environmental features of the landscape (DNRE 1997).

- Hexham-Ballangeich Road, Hexham & Ellerslie
- Keillors Road, Minjah
- Woolsthorpe-Hexham Road, Hexham & Woolsthorpe

Sites in the project study area, roadside upgrade study area and transport route study areas found to support native vegetation or with potential to support listed matters were mapped using a combination of aerial-photograph interpretation and ground-truthing. Records were made using ArcGIS Field Maps® (Esri) on a hand-held device.

Determination of EVCs in the field was based on DEECA's pre-European modelled native vegetation (DEECA 2025a) within or nearby the study area and the methodology outlined in the habitat hectare method (DSE 2004b).

Native vegetation

Native vegetation is currently defined in Clause 73.01 of all Victorian Planning Schemes as '*plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses*'. The Guidelines (DELWP 2017) further classify two categories of native vegetation: patches and scattered trees.

The definitions of these categories are provided below, along with the prescribed DEECA methods of assessment.

Patch

A *patch* of native vegetation belongs to an *Ecological Vegetation Class* (EVC) characterised in a DEECA-published benchmark, and defined as one of the following:

- An area of vegetation where at least 25% of the total perennial understorey plant cover is native
- Any area with three or more native canopy trees[2] where the drip line[3] of each tree touches the drip line of at least one other tree, forming a continuous canopy
- Any mapped wetland included in the *Current Wetlands Map*, available at *MapShareVic* (DEECA 2025a)

Patch condition is assessed using the *habitat hectare* method (Parkes et al. 2003; DSE 2004b) whereby components of the patch (e.g., tree canopy, understorey and ground cover) are assessed against an EVC benchmark. The score effectively measures the percentage resemblance of the vegetation to the original condition.

The *Native Vegetation Regulation Map* (NVR Map) system (DEECA 2025b) provides modelled condition scores for native vegetation to be used in certain circumstances.

Scattered trees

A *scattered tree* may be defined as a native canopy tree that does not form part of a patch. A scattered tree can be classified as *large* or *small* according to its *diameter at breast height* (DBH, measured 1.3 m above ground level) in the relevant EVC benchmark. A scattered tree with a DBH less than the large tree DBH is a *small scattered tree*. A *large tree* is defined as a native canopy

[2] A native canopy tree is a mature (i.e., able to flower) tree taller than 3 m and normally found in the upper layer of the relevant vegetation type.

[3] The drip line is the outermost boundary of a tree canopy (leaves and/or branches) where the water drips onto the ground.

tree with a DBH greater than or equal to the large tree benchmark for the local EVC. A large tree can be a large scattered tree or a large tree within a patch of native vegetation.

Incidental native vegetation

Incidental native vegetation includes native species that do not qualify as a patch or scattered tree as per the definitions in the Guidelines.

Australian native

Vegetation that is native to Australia, but not necessarily native to Victoria. Several Australian native plants may be declared a noxious weed when growing outside of their natural range.

Locally indigenous

Plants that are native to the region of this study and growing within their natural range.

Victorian native

Vegetation that is native to Victoria but is not locally indigenous to the region of this study. Several Victorian native plants may be declared a noxious weed when growing outside of their natural range.

Planted

Planted vegetation refers to vegetation that has been planted or has grown as a result of direct seeding.

Exotic

Exotic vegetation refers to vegetation that is not native to Australia.

Flora species and habitats

Records of flora species were made in conjunction with sampling methods used to undertake habitat hectare assessments of native vegetation described above. Specimens requiring identification using laboratory techniques were collected.

Species protected under the FFG Act were determined by crosschecking against the FFG Act Threatened List (DEECA 2024b) and Protected Flora List (DEECA 2024a).

The potential for habitats to support listed flora species was assessed based on the criteria outlined below:

- The presence of suitable habitat for flora species such as soil type, floristic associations and landscape context; and
- The level of disturbance of suitable habitats by anthropogenic disturbances and invasions by pest plants and animals.

Wherever appropriate, a precautionary approach was adopted in determining the likelihood of occurrence or flora listed under the EPBC Act and/or FFG Act. That is, where insufficient evidence was available on the potential occurrence of a listed species, it is assumed that it could be in an area of suitable habitat.

Threatened ecological communities

EPBC Act-listed threatened communities

The likelihood of EPBC Act-listed threatened ecological communities occurring in the study area was determined by the following process:

- Review of the communities modelled to potentially occur in the study area by the EPBC Act *Protected Matters Search Tool* (PMST; DCCEEW 2025a)

- Checking field observations of mapped native vegetation against published descriptions of these communities and assessment against the identification criteria and condition thresholds from the relevant listing advice

Potential SHWTLP occurrences were assessed in December 2025, following a period of sufficient rainfall (spring [September – November] rainfall at Mortlake racecourse was 173mm, above the mean of 162mm; BoM 2025). This enabled assessment under the typical pattern of seasonal wetting and drying, required by wetland flora typical of this community (TSSC 2012). It was determined that the relevant habitat zones (XAH and 3AH) failed to fulfill key condition thresholds in accordance with the listing advice (TSSC 2012), as detailed in Section 5.3.4.

FFG Act-listed threatened communities

The likelihood of FFG Act-listed threatened ecological communities occurring in the study area was determined by the following process:

- Review of the communities modelled to potentially occur within 5 km of the study area (DELWP 2018)
- Review of any communities without modelled distribution habitat mapping
- Checking field observations against published descriptions of the identified communities (SAC 2015) project study area.

Targeted flora surveys

Based on the results of the vegetation assessments, it was determined that 27 flora species listed under the EPBC Act or FFG Act had the potential to occur within areas of suitable habitat in the project study area. These species are listed in Table 5.

Table 5: Listed flora species with potential to occur

Common Name	Scientific name	EPBC	FFG	Suitable habitat	Detection period	Project component
Casterton Wattle	*Acacia exudans*		Endangered	EVC 55_61	Sep-Oct; identifiable at other times of year	Swept path: Dunkeld-Cavendish Road, Cavendish
Half-bearded Spear-grass	*Austrostipa hemipogon*		Vulnerable	EVC 55_61	Oct-Dec	Swept path: Dunkeld-Cavendish Road, Cavendish
Cut-leaf Burr-daisy	*Calotis anthemoides*		Critically Endangered	EVCs 132_61 and 55	Sep-Dec	All
Curly Sedge	*Carex tasmanica*		Endangered	Along drainage lines in EVCs 125, 641 and 821.	Sep-Nov; identifiable at other times of year	All
Small Milkwort	*Comesperma polygaloides*		Critically Endangered	EVCs 132_61 and 55.	Nov-Feb	All
Pale Swamp Everlasting	*Coronidium gunnianum*		Critically Endangered	EVCs 55, 125, 132_61 and 654.	Nov-Apr	All

Common Name	Scientific name	EPBC	FFG	Suitable habitat	Detection period	Project component
Matted Flax-lily	*Dianella amoena*	Endangered	Critically Endangered	EVCs 55 and 132_61.	Dec-Feb	All
Swamp Flax-lily	*Dianella callicarpa*		Endangered	EVC 55_61	Oct-Feb	All
Glaucous Flax-lily	*Dianella longifolia var. grandis*		Critically Endangered	EVCs 55 and 132_61.	Nov-Dec	All
Golden Cowslips	*Diuris behrii*		Endangered	EVCs 55 and 132_61.	Sep-Oct	All
Western Purple Diuris	*Diuris daltonii*		Critically Endangered	EVC 55_61	Oct-Dec	Swept path: Dunkeld-Cavendish Road, Cavendish
Clumping Golden Moths	*Diuris gregaria*		Critically Endangered	Suitable habitat in several patches of EVC 132_61, particularly in roadside patches which are more commonly dominated by Kangaroo Grass.	Sep-Oct	All
Trailing Hop-bush	*Dodonaea procumbens*	Vulnerable		EVCs 132_61 and 55.	Oct-Dec	All
Austral Crane's-bill	*Geranium solanderi var. solanderi s.s.*		Endangered	EVC 55_61	Oct-Jan	Swept path: Dunkeld-Cavendish Road, Cavendish
Pale-flower Crane's-bill	*Geranium sp. 3*		Endangered	EVC 55.	Sep-Jan	All
Clover Glycine	*Glycine latrobeana*	Vulnerable	Vulnerable	EVCs 132_61 and 55.	Sep-Dec	All
Adamson's Blown-grass	*Lachnagrostis adamsonii*	Endangered	Endangered	Suitable habitat along drainage lines. Potential to occur in EVCs 125, 641 and 821.	Nov-Feb	All

Common Name	Scientific name	EPBC	FFG	Suitable habitat	Detection period	Project component
Purple Blown-grass	*Lachnagrostis semibarbata var. filifolia*		Endangered	Suitable habitat along drainage lines. Potential to occur in EVCs 125, 641 and 821. **Recorded during targeted surveys in previous layout; does occur.**	Oct-Feb	All
White Sunray	*Leucochrysum albicans subsp. tricolor*	Endangered	Endangered	EVCs 132_61 and 55.	Nov-Dec	All
Plains Yam-daisy	*Microseris scapigera s.s.*		Critically Endangered	EVCs 132_61 and 55.	Spring-Summer	All
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	Critically Endangered	Critically Endangered	EVC 132_61. **Recorded during targeted surveys in habitat zone 1N; does occur.**	Apr-Aug	All
Western Gaping Leek-orchid	*Prasophyllum sp. aff. correctum (Mortlake)*		Critically Endangered	EVC 132_61.	Oct-Nov	All
Clumping Leek-orchid	*Prasophyllum sp. aff. occidentale E*		Critically Endangered	EVC 132_61.	Oct-Nov	All
Fragrant Leek-orchid	*Prasophyllum suaveolens*	Endangered	Critically Endangered	EVC 132_61, particularly in roadside remnants dominated by Kangaroo Grass.	Oct-Nov	All
Hairy Tails	*Ptilotus erubescens*		Critically Endangered	EVCs 132_61 and 55.	Oct-Feb	All
Brackish Plains Buttercup	*Ranunculus diminutus*		Endangered	Suitable habitat occurs along	Sep-Feb	Project study area.

Common Name	Scientific name	EPBC	FFG	Suitable habitat	Detection period	Project component
				Mustons Creek and Drysdale Creek, and in EVCs 125, 641 and 654.		
Basalt Sun-orchid	*Thelymitra gregaria*		Critically Endangered	EVC 132_61.	Sep-Nov (requires sunny weather)	All

Targeted surveys for most of these flora species were undertaken across six separate surveys (November 2018, January 2019, November 2021, July 2025, October 2025 and December 2025) to coincide with the published flowering times for the target species. Targeted surveys for threatened flora were undertaken only in parts of the layout where native vegetation supporting suitable habitat for those species is proposed to be removed (i.e. where native vegetation supporting suitable habitat intersected with the works area). Habitat suitability for each species was determined in Table 5 based on the EVCs these species have the potential to occur in. As such, most areas included in the targeted surveys were small, linear, narrow bands of habitat, allowing thorough visual searching of these areas to be undertaken.

This method, combined with the timing of the surveys (within the published flowering times for species) was considered appropriate to determine whether the targeted species were present or absent in the impact areas.

Appendix 6 of this report outlines the areas considered to be suitable habitat for each listed flora species.

Targeted surveys for threatened flora were conducted as described below.

- November targeted flora surveys: 28 to 30 November 2018 and 22 to 25 November 2021. During these assessments, the following areas were surveyed:
  - All areas of proposed removal of Plains Grassy Wetland (EVC 125) within the 2019 layout;
  - All areas of proposed removal of Plains Grassy Woodland (EVC 55_61 and 55_63) that supported a native ground layer within the 2019 layout; and
  - All areas of proposed removal of *Heavier-soils* Plains Grassland (EVC 132_61) within the 2019 layout.
- January targeted flora survey: 10 and 11 January 2019. During this assessment, the following areas were surveyed:
  - Areas of proposed removal of Plains Grassy Woodland (EVC 55_61 and EVC 55_63) that supported a native ground layer under 2019 layout; and
  - Areas of proposed removal of *Heavier-soils* Plains Grassland (EVC 132_61) with sufficient species and structural diversity to support Trailing Hop-bush and/or Matted Flax-lily within the 2019 layout.
- Spiny Rice-flower targeted survey: 8 to 10 July 2025. During this assessment, the following areas were surveyed:

- Areas of proposed removal of *Heavier-soils* Plains Grassland (EVC 132_61) with sufficient species and structural diversity to support Spiny Rice-flower within the HWF layout (v183.7), swept path areas and local road upgrades impact areas (v002).

- October 2025 targeted surveys for spring-flowering orchid species. During this assessment, the following areas were surveyed:
  - Areas of proposed removal of Plains Grassy Woodland (EVC 55_61 and EVC 55_63) that support a native ground layer; and
  - Areas of proposed removal of Heavier-soils Plains Grassland (EVC 132_61) with sufficient species and structural diversity to support orchid species.

Due to layout changes, as of spring 2025, 7.497 hectares of potential habitat within the current layout (v183.7) had not yet undergone early-summer targeted flora surveys. These were undertaken as follows:

- December 2025 targeted flora surveys for early-summer flowering species. During this assessment, the following areas were surveyed:
  - All areas of proposed removal of Plains Grassy Wetland (EVC 125);
  - All areas of proposed removal of Plains Grassy Woodland (EVC 55_61 and 55_63) that support a native ground layer; and
  - All areas of proposed removal of *Heavier-soils* Plains Grassland (EVC 132_61).

All the above detailed targeted surveying for threatened flora involved visual searching on foot by qualified and experienced botanists along transects spaced five metres apart. Where any threatened flora species were observed, the location was recorded using a handheld GPS.

Limitations of native vegetation assessment

The site assessments were carried out in late spring (2021) and winter (2025). The short duration and seasonal timing of field assessments can result in some species not being detected when they may occur at other times. Additionally, some flora species and life forms may be undetectable at the time of the survey or unidentifiable due to a lack of flowers or fruit. To overcome this, targeted surveys for listed flora species at an appropriate time of year have been undertaken in all areas of suitable habitat proposed to be impacted.

The 2025 assessment was conducted during a drought that was occurring across much of south-western Victoria. The extent of native vegetation was able to be adequately recorded primarily based on the extent of perennial tussock grasses and shrubs; however, the condition of the vegetation was less than optimal as many seasonal lifeforms were absent. Where native vegetation that was recorded during the 2021 assessment was unclear during the 2025 assessment, a precautionary approach (based on the field conditions) was adopted and it was assumed that these patches of native vegetation were present and were assigned the condition score determined in the 2021 assessment.

During the 2025 assessment, some grassland areas along Woolsthorpe-Hexham Road had recently been burnt. Where this was the case, it was assumed that these areas contained patches of native vegetation and were assigned DEECA's pre-European modelled EVC (DEECA 2025a) and assigned the score of contiguous patches. Any impacts to these areas have been accounted for in the current impact assessment.

These limitations were not considered to compromise the validity of the current investigation, which was designed to address the relevant policies and decision guidelines.

Identification of EVCs considers vegetation types that would have naturally occupied the landscape prior to European impacts. Significant past alteration of the project study area's hydrology as well as past vegetation clearance has resulted in the emergence of the establishment of vegetation in some areas that is likely to be notably different to what would have naturally occupied the project study area. Identification of EVCs in altered areas was therefore based upon consideration of:

- Modelled EVC mapping (DEECA 2025a);
- Observations of adjacent landforms that had not been significantly altered;
- Observations of nearby natural vegetation;
- Any observed indigenous flora species that are useful for determining EVCs; and
- Relevant published EVC benchmark descriptions.

If the above information was not sufficient to allow for a reasonable conclusion to be made on which EVC would have naturally occurred, and the observed vegetation resembled an EVC which is likely to have naturally occurred in the region, EVC identification was based upon the modelled EVC mapping.

5.3. Existing conditions

5.3.1. Patches of native vegetation

Project study area

Pre–European EVC mapping (DEECA 2025a) indicated that the project study area and surrounds would have supported Plains Grassy Woodland (EVC 55), Plains Grassy Wetland (EVC 125), Plains Grassland (EVC 132), Creekline Grassy Woodland (EVC 68), Swampy Riparian Woodland (EVC 83), Riparian Woodland (EVC 641) and Plains Swampy Woodland (EVC 651) prior to European settlement based on modelling of factors including rainfall, aspect, soils and remaining vegetation.

Evidence on site, including floristic composition and soil characteristics, suggested that Plains Grassy Woodland (EVC 55_61), Higher Rainfall Plains Grassy Woodland (EVC 55_63), Plains Grassy Wetland (EVC 125), *Heavier-soils* Plains Grassland (EVC 132_61), Creekline Grassy Woodland (EVC 68), Plains Sedgy Wetland (EVC 647) and Aquatic Herbland (EVC 653) were present within the project study area (Table 6).

90 patches (referred to herein as habitat zones) comprising the abovementioned EVCs, were identified in the project study area (Table 6). This totalled an area of 53.712 hectares of native vegetation in patches and included 10 large trees in patches (Appendix 1). The average condition score across all patches was 21/100, with only 7% of patches scoring ≥40/100.

In addition, 1.590 hectares of DEECA-mapped wetlands occurred within the project study area. These areas have been treated here as patches of native vegetation in accordance with the Guidelines.

Therefore, the total area of native vegetation (patches and DEECA-mapped wetlands) that has been recorded within the project study area was 55.302 hectares.

Table 6: Description of EVCs in the project study area

EVC	Description within the project study area	Area (ha) within the project study area
Plains Grassy Woodland (EVC 55_61) - endangered	Plains Grassy Woodland occurred as patches along roadsides and within wind-breaks on private property in the north and east of the site, which receive between 500 mm and 700 mm rainfall annually (BoM 2018a,b). It generally lacked a canopy and large trees, but where these occurred,	9.317

EVC	Description within the project study area	Area (ha) within the project study area
	they were River Red-gums. The understory tree layer (where present) was Black Wattle, Silver Wattle and Blackwood. In most patches, the ground layer was species depauperate and dominated by exotic grasses. Native species in the ground layer (where they occurred) included spear grasses, wallaby grasses and Sheep's Burr. The most common weeds were pasture grasses including Phalaris, Barley-grass, Cocksfoot and Yorkshire Fog. Three patches along Hexham-Ballangeich Road, totalling 5.113 ha, qualified as the EPBC Act-listed GEWVVP. These areas would also qualify as the FFG Act-listed WBPGW.	
Heavier-soils Plains Grassland (EVC 132_61) - endangered	Plains Grassland occurred as species and structurally depauperate patches along farm tracks on private property, and as species and structurally rich patches along roadsides. Patches on private land were dominated by wallaby grasses, while patches along roadsides also supported Kangaroo Grass, spear grasses and Common Wheat-grass as well as Blue Devils, Sheep's Burr, Woodland Sorrell and Wiry Dock. The most common weeds were pasture grasses including Phalaris, Barley-grass, Cocksfoot and Yorkshire Fog. Seven patches along numerous roadsides, totalling 3.288 ha, qualified as the EPBC Act-listed Natural Temperate Grassland of the Victorian Volcanic Plain. These areas would also qualify as the FFG Act-listed WPGC.	4.926
Plains Grassy Wetland (EVC 125) - endangered	Plains Grassy Wetland occurred in low-lying paddocks and along watercourses on roadsides and public land, ranging from ephemeral to permanent. Patches included native grasses such as Common Tussock-grass, Australian Sweet-grass and Common Blown-grass and native herbs including Poison Lobelia, Swamp Starwort and Creeping Monkey-flower. The most common weeds were moisture-loving grasses including Phalaris, Yorkshire Fog and Annual Beard-grass.	35.369
Higher Rainfall Plains Grassy Woodland (EVC 55_63) - endangered	Higher Rainfall Plains Grassy Woodland occurred on private land as windbreaks east of Grassmere-Hexham Road in the south-west of the site (district of Woolsthorpe), which receives an average of over 700 mm rainfall per year (BoM 2018c). Higher Rainfall Plains Grassy Woodland supported a canopy of River Red-gum, with the ground layer being dominated by weedy species, including pasture grasses such as Phalaris, Yorkshire Fog and Cocksfoot.	1.795

EVC	Description within the project study area	Area (ha) within the project study area
Creekline Grassy Woodland (EVC 68) - endangered	Creekline Grassy Woodland occurred as three patches along an unnamed creek on private land. All patches lacked a canopy and were dominated by aquatic natives including Cumbungi, Common Reed and Water Ribbons. Slow-moving water was observed within the creekline of all patches of Creekline Grassy Woodland at the time of survey.	0.755
Aquatic Herbland (EVC 653) - endangered	Aquatic Herbland occurred throughout the study area as aquatic vegetation in creeks and large drainage lines with flowing water. It was dominated by Water Ribbons and Grey Spike-rush, with variable covers of Common Duckweed, Azolla and Swamp Wallaby-grass. Weed cover in the water was very low, although fringing vegetation tended to be heavily invaded by Toowoomba Canary Grass and other pasture grasses.	0.278
Plains Sedgy Wetland (EVC 647) - endangered	Plains Sedgy Wetland occurred throughout the study area in roadside depressions, low-lying pastureland and ephemeral drainage lines and ponds. Vegetation was often species-poor, consisting of Common Spike-rush, Swamp Wallaby-grass, Short-stem Sedge and Knob Sedge. Weed cover was often high and consisted of pasture grasses and Club-rush.	0.423
Mapped Wetlands	Mapped Wetlands occurred on private property and have been treated as native vegetation in accordance with the Guidelines. Areas of Mapped Wetlands have been given the modelled score in accordance with the Guidelines.	1.590
TOTAL		**55.302**

The habitat hectare assessment results for these habitat zones are provided in Appendix 1. Details of large trees in patches are provided in Appendix 2.

Transport route study area

Evidence on site, including floristic composition and soil characteristics, suggested that Plains Grassy Woodland (EVC 55_61), Plains Grassy Wetland (EVC 125), *Heavier-soils* Plains Grassland (EVC 132_61) and Creekline Grassy Woodland (EVC 68) were present within the transport route study area.

59 patches (referred to herein as habitat zones) comprising the abovementioned EVCs, were identified in the transport route study area. This totalled an area of 19.514 hectares of native vegetation in patches and included 13 large trees in patches (Table 7).

Table 7: Area of each EVC in the transport route study area

EVC	Area (ha) within the transport route study area
Heavier-soils Plains Grassland (EVC 132_61) - endangered	10.641
Plains Grassy Woodland (EVC 55_61) - endangered	8.837
Creekline Grassy Woodland (EVC 68) - endangered	0.028
Plains Grassy Wetland (EVC 125) - endangered	0.008
TOTAL	**19.514**

Road widening study area

Evidence on site, including floristic composition and soil characteristics, suggested that Plains Grassy Woodland (EVC 55_61), Plains Grassy Wetland (EVC 125), *Heavier-soils* Plains Grassland (EVC 132_61) and Creekline Grassy Woodland (EVC 68) were present within the road widening study area.

131 patches (referred to herein as habitat zones) comprising the abovementioned EVCs, were identified in the road widening study area. This totalled an area of 36.816 hectares of native vegetation in patches and included one large tree in a patch (Table 8).

Table 8: Area of each EVC in the road widening study area

EVC	Area (ha) within the road widening study area
Heavier-soils Plains Grassland (EVC 132_61) - endangered	19.317
Plains Grassy Woodland (EVC 55_61) - endangered	17.419
Plains Grassy Wetland (EVC 125) - endangered	0.052
Creekline Grassy Woodland (EVC 68) - endangered	0.028
TOTAL	**36.816**

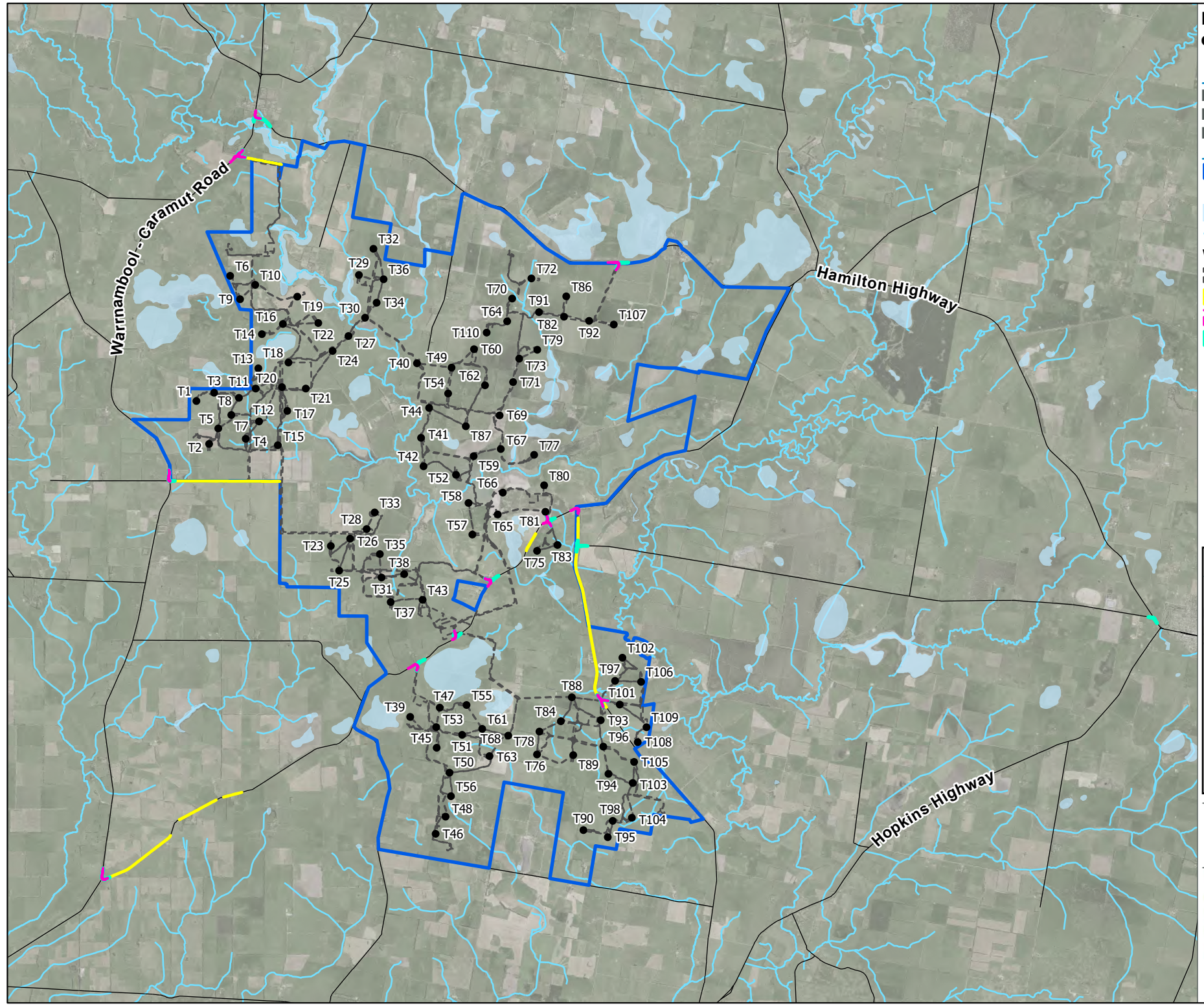


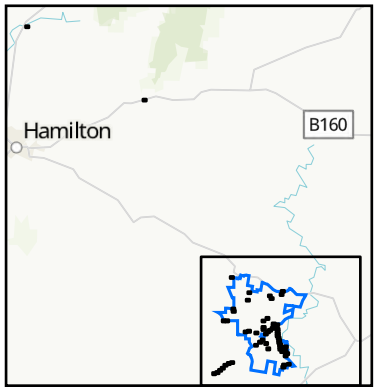
Figure 1: Wind farm overview

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 11/09/2025

- Wind farm boundary
- Proposed turbine - v183.7
- DEECA wetland
- Watercourse

Works area

- Development footprint - v183.7
- Local road upgrades
- Portland transport route
- Geelong transport route



N

Kilometres
0 1 2 3 4

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5.3.2. Scattered trees

Project study area

Scattered trees recorded in the project study area would have once comprised the canopy component of Plains Grassy Woodland (EVC 55_61).

31 scattered trees occurred in the project study area (Appendix 2), including:

- 15 large scattered trees (≥ 80 centimetres DBH, two of which are dead); and
- 16 small scattered trees (< 80 centimetres DBH).

Details of all scattered trees recorded are listed in Appendix 2.

Transport route

No scattered trees were recorded within the transport route study area.

Road widening

No scattered trees were recorded within the road widening study area.



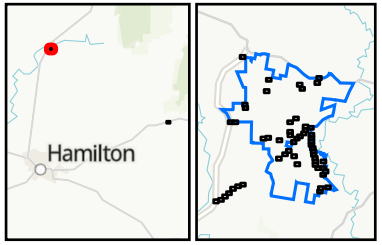
Figure 2-1: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Works area
- Portland transport route

Native vegetation
- Large Tree in Patch
- Large Scattered Tree
- TPZ
- Plains Grassy Woodland

Removal
- Tree to be removed by Portland transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-2: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

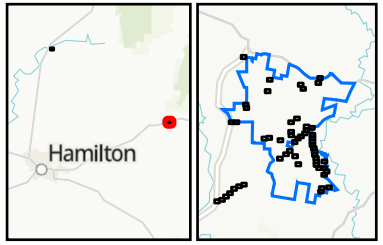
Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Works area
- Portland transport route

Native vegetation
- Large Tree in Patch
- Large Scattered Tree
- Small Scattered Tree
- TPZ
- Plains Grassy Woodland

FFG community
- Western Basalt Plains (River Red Gum) Grassy Woodland

Removal
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-3: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

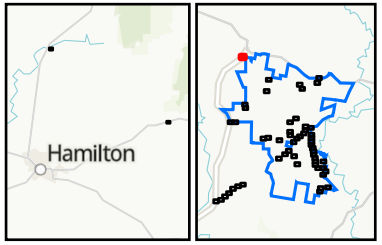
Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Works area
- Development footprint - v183.7
- Local road upgrades
- Geelong transport route
- Portland transport route

Native vegetation
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

Removal
- Native vegetation to be removed by Geelong transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-4: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Geelong transport route

Portland transport route

Native vegetation

Plains Grassland

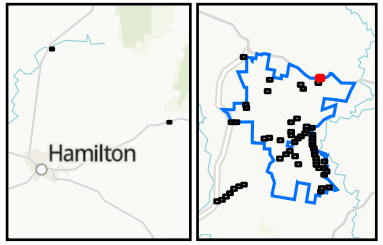
FFG community

Western (Basalt) Plains Grasslands Community

EPBC community

Natural Temperate Grassland of the Victorian Volcanic Plain

DEECA wetland



N

Metres

0 20 40 60 80

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Figure 2-5: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Native vegetation

Large Tree in Patch

Large Scattered Tree

Small Scattered Tree

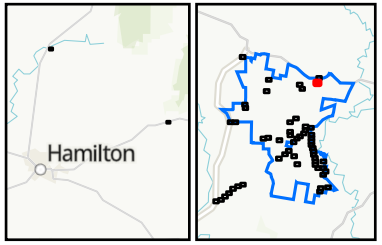
TPZ

Plains Grassy Woodland

Removal

Tree to be removed by Development footprint

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-6: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

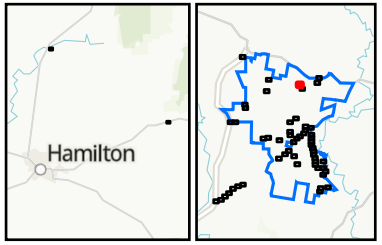
Proposed turbine - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-7: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

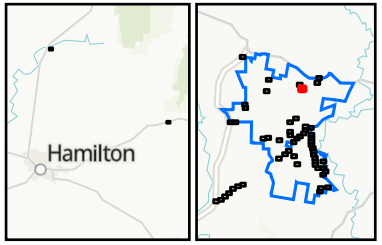
Proposed turbine - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-8: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Proposed turbine - v183.7

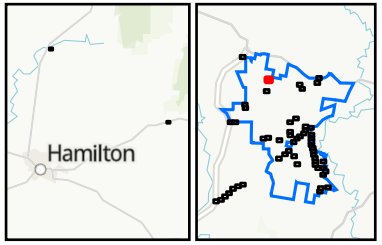
Native vegetation

Plains Grassland

Plains Grassy Woodland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-9: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Proposed turbine - v183.7

Native vegetation

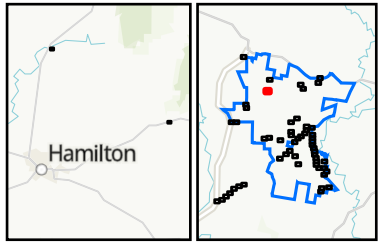
Plains Sedgy Wetland

Riparian Woodland

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-10: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

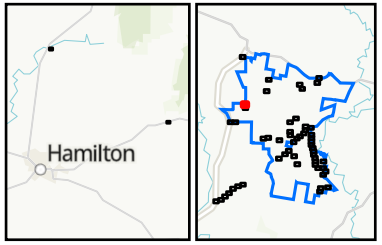
Proposed turbine - v183.7

Native vegetation

Creekline Grassy Woodland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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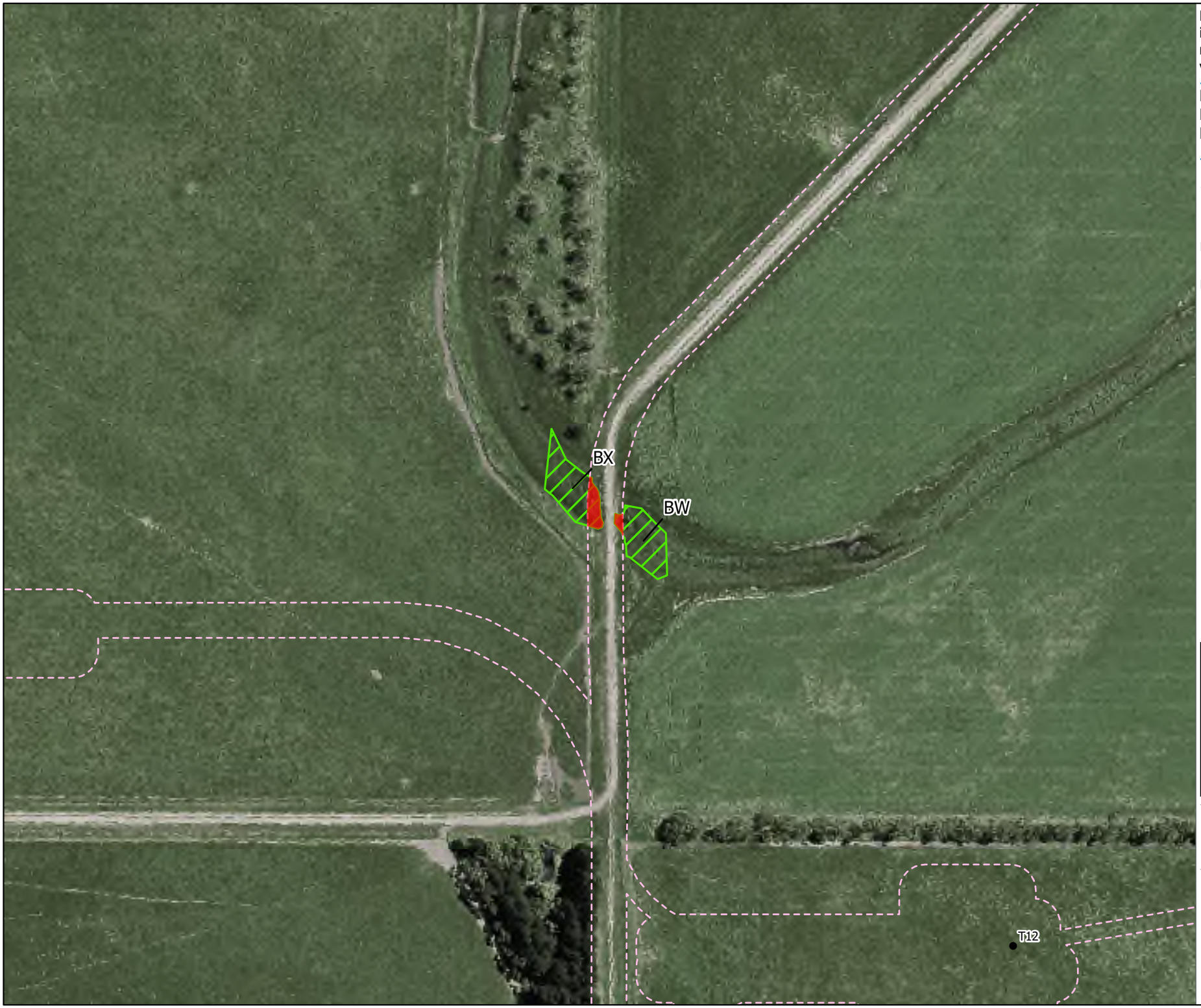


Figure 2-11: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

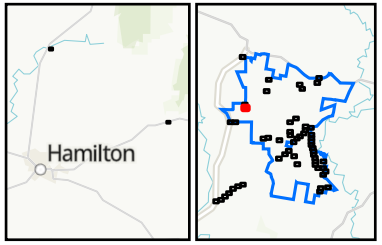
Proposed turbine - v183.7

Native vegetation

Creekline Grassy Woodland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-12: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

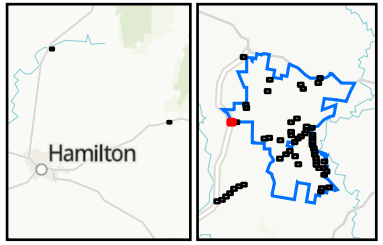
Works area
- Local road upgrades
- Geelong transport route
- Portland transport route

Native vegetation
- Plains Grassland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
- Native vegetation to be removed by Local road upgrades
- Native vegetation to be removed by Geelong transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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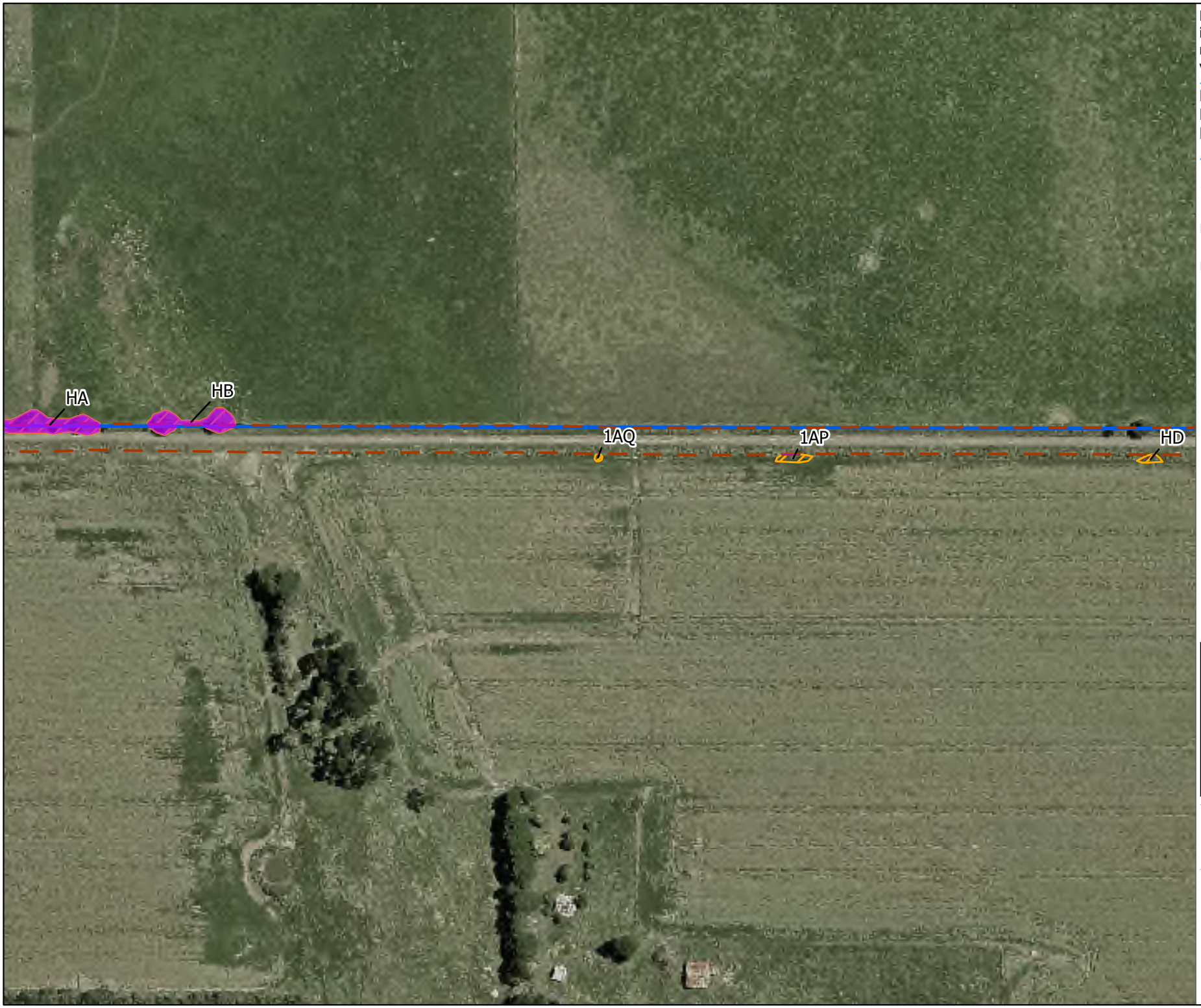


Figure 2-13: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

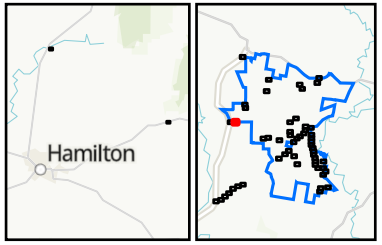
Local road upgrades

Native vegetation

Plains Grassy Woodland

Removal

Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-14: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Native vegetation

Small Scattered Tree

TPZ

Aquatic Herbland

Riparian Woodland

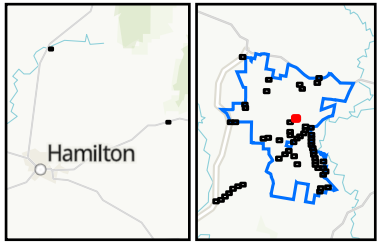
FFG community

Western Basalt Plains (River Red Gum) Grassy Woodland

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-15: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Native vegetation

Small Scattered Tree

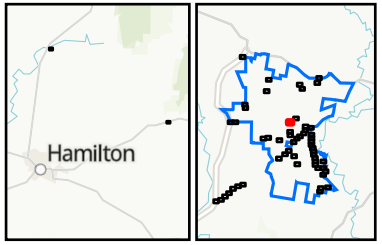
TPZ

Aquatic Herbland

Removal

Tree to be removed by Development footprint

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-16: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

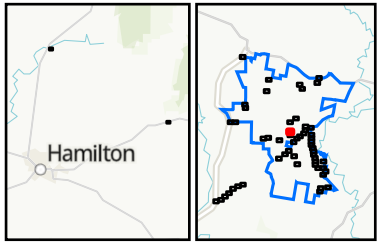
Proposed turbine - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-17: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

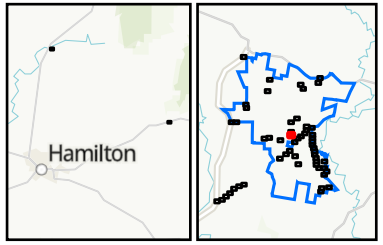
Development footprint - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-18: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

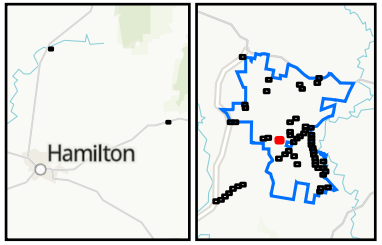
Development footprint - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-19: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

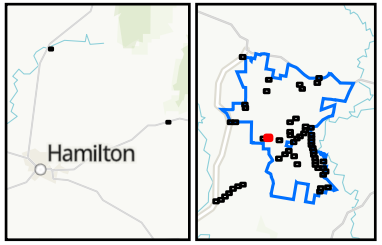
Native vegetation

Small Scattered Tree

TPZ

Removal

Tree to be removed by Development footprint



N

Metres

0 20 40 60 80

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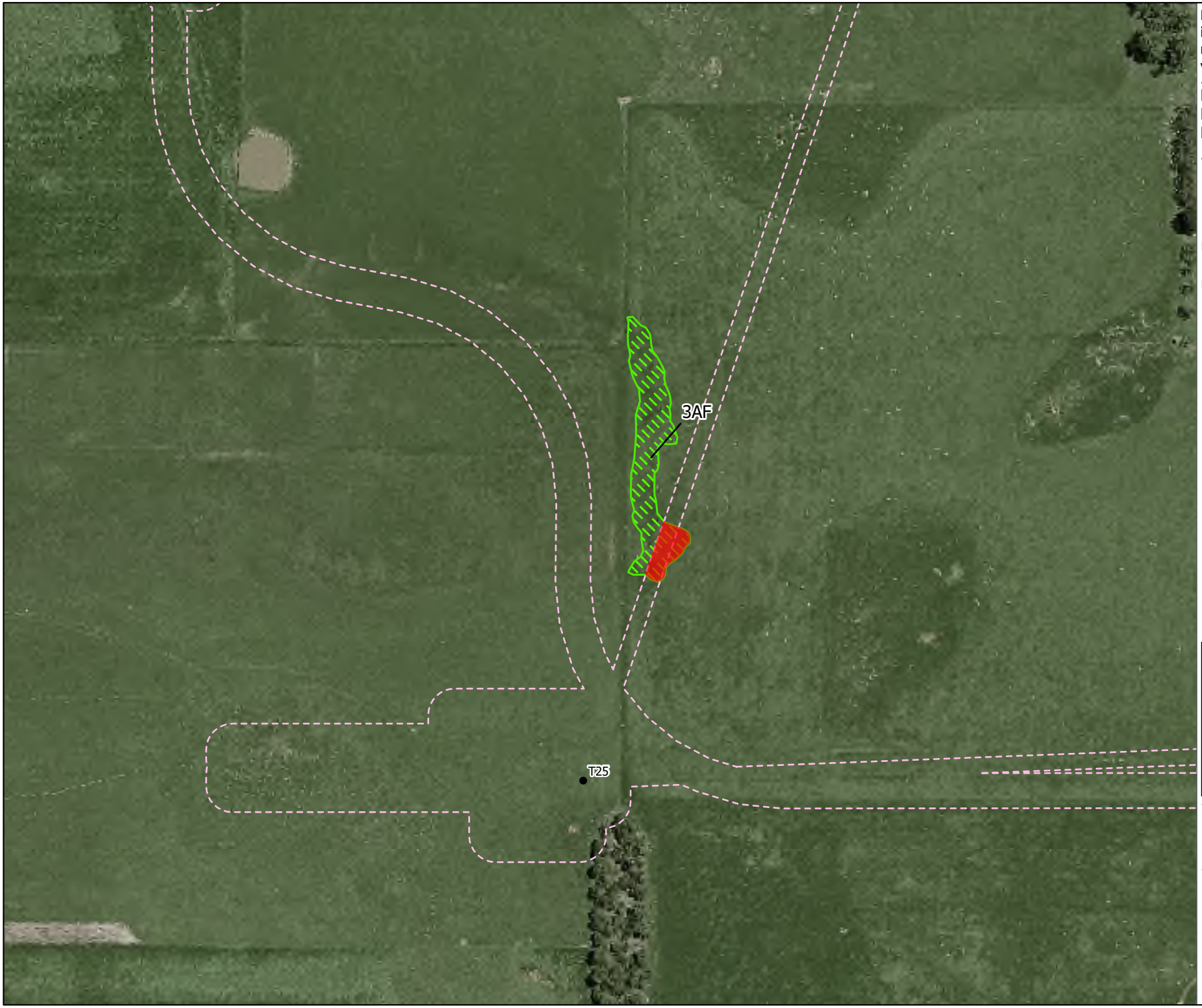


Figure 2-20: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

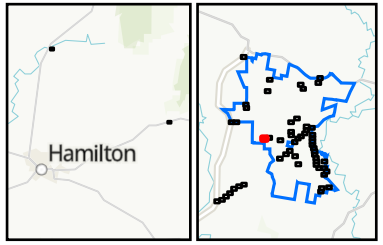
Proposed turbine - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-21: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

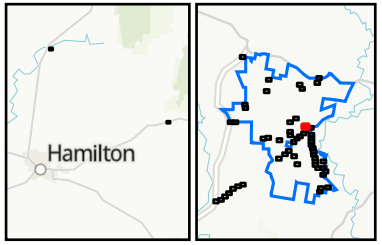
Wind farm boundary

Works area
Development footprint - v183.7
Geelong transport route
Portland transport route
Proposed turbine - v183.7

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

Removal
Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-22: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

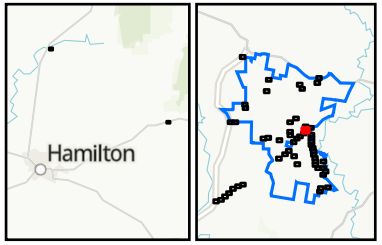
Development footprint - v183.7
Geelong transport route
Portland transport route
Proposed turbine - v183.7

Native vegetation

Large Tree in Patch
Large Scattered Tree
TPZ
Plains Grassy Woodland

Removal

Native vegetation to be removed by Geelong transport route



N

Metres
0 20 40 60 80

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Figure 2-23: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Local road upgrades

Native vegetation

Large Tree in Patch

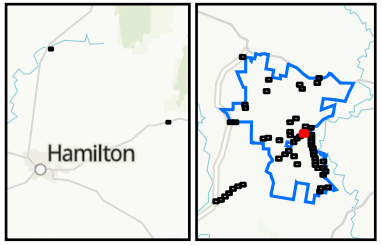
TPZ

Plains Grassy Woodland

DEECA wetland

Removal

Native vegetation to be removed by Local road upgrades



N

Metres

0 20 40 60 80

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Figure 2-24: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Local road upgrades

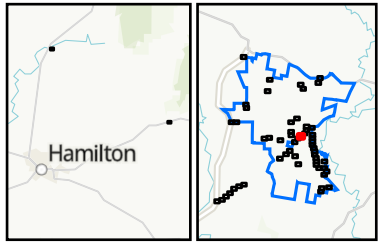
Native vegetation

Plains Grassy Woodland

DEECA wetland

Removal

Native vegetation to be removed by Local road upgrades



N

Metres

0 20 40 60 80

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Figure 2-25: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Native vegetation

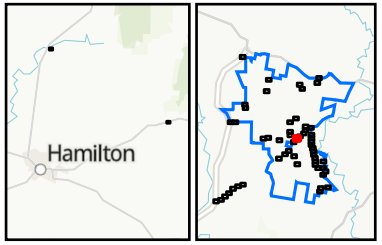
Plains Grassy Wetland

Plains Grassy Woodland

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-26: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

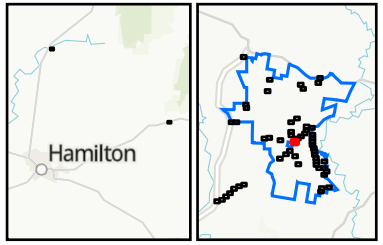
Wind farm boundary

Works area
- Development footprint - v183.7
- Geelong transport route
- Portland transport route

Native vegetation
- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

Removal
- Native vegetation to be removed by Geelong transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-27: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

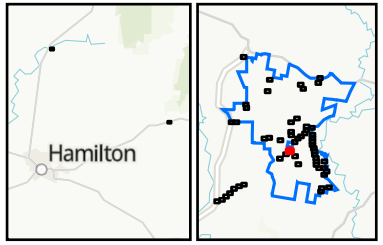
Works area
Development footprint - v183.7
Geelong transport route
Portland transport route

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-28: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

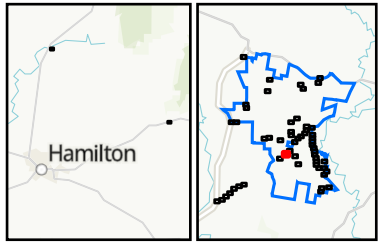
Works area
Development footprint - v183.7
Geelong transport route
Portland transport route

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain
DEECA wetland

Removal
Native vegetation to be removed by Geelong transport route
Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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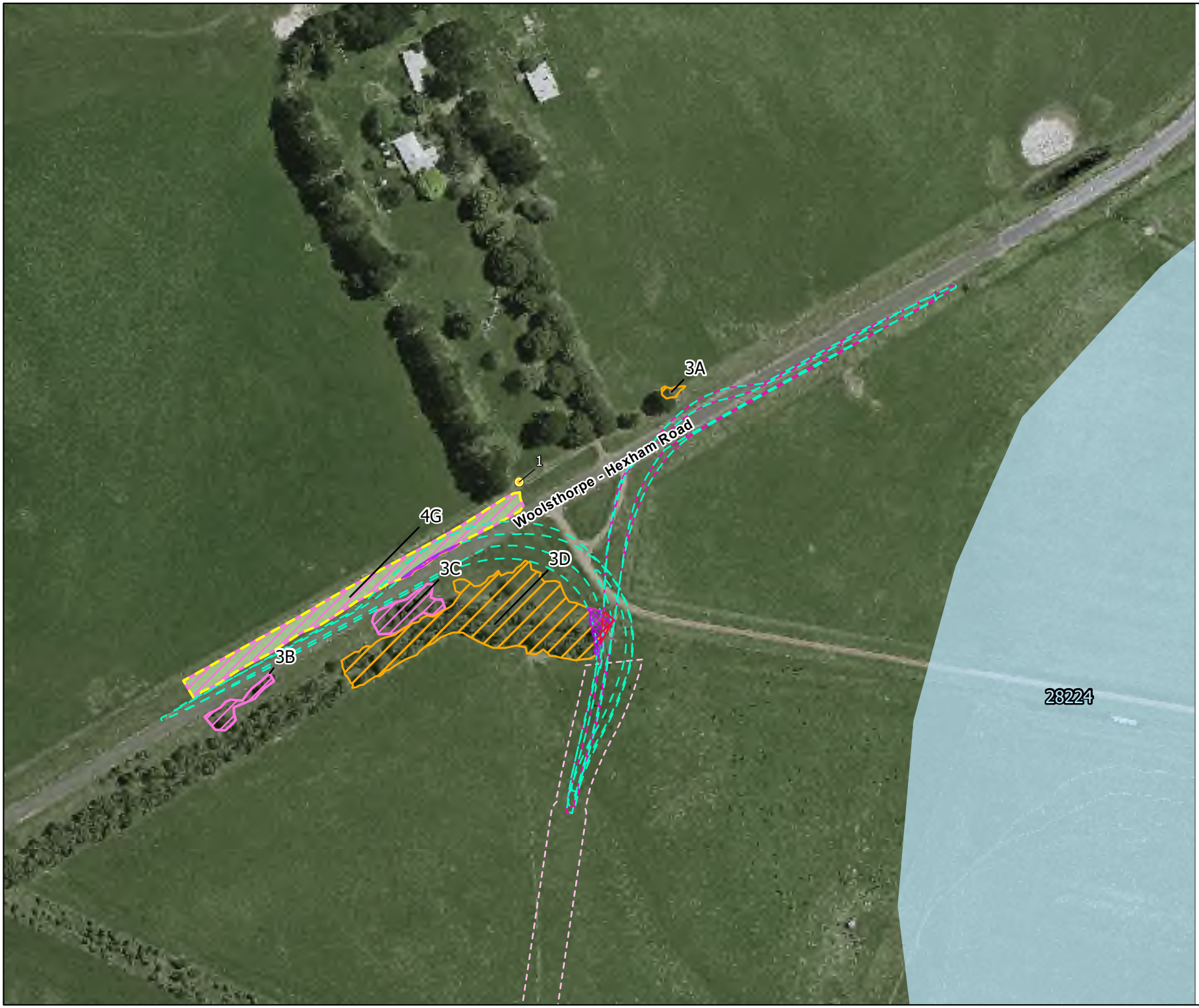


Figure 2-29: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

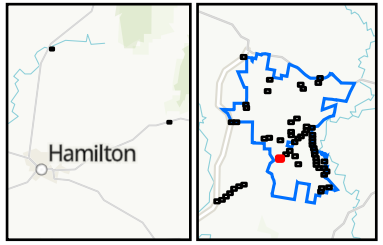
Works area
- Development footprint - v183.7
- Geelong transport route
- Portland transport route

Native vegetation
- Small Scattered Tree
- TPZ
- Plains Grassland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Natural Temperate Grassland of the Victorian Volcanic Plain
- DEECA wetland

Removal
- Native vegetation to be removed by Geelong transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-30: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

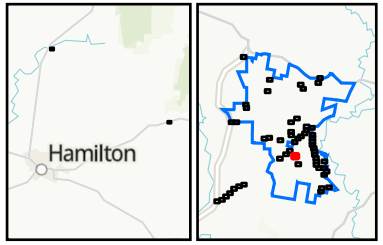
Works area

Development footprint - v183.7

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-31: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

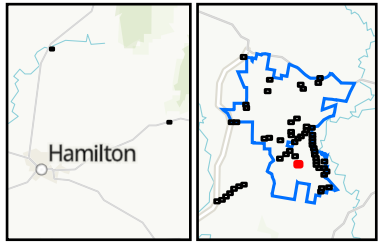
Native vegetation

Plains Grassy Woodland

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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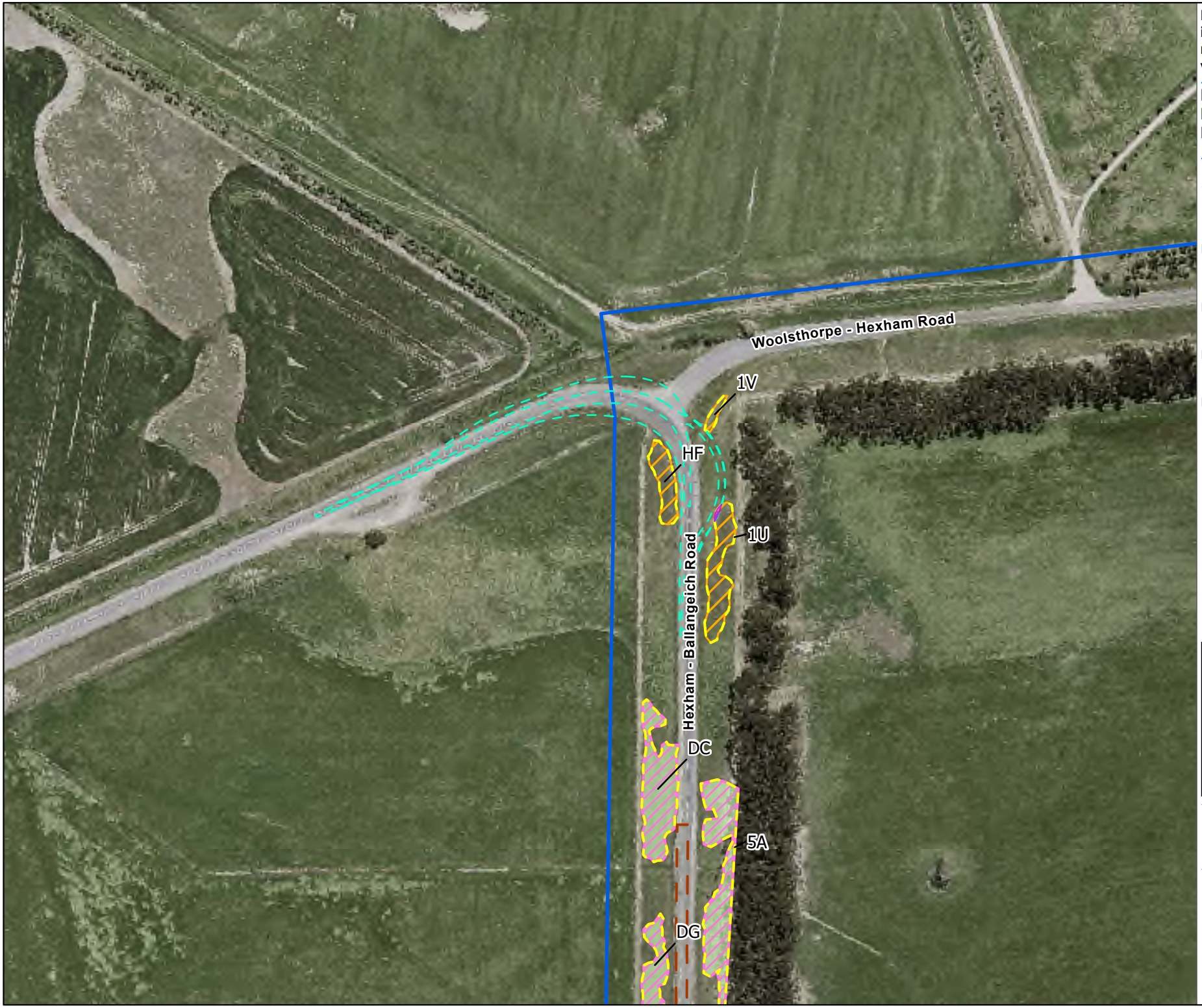


Figure 2-32: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

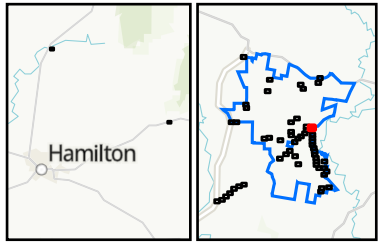
Works area
Local road upgrades
Portland transport route

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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Figure 2-33: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

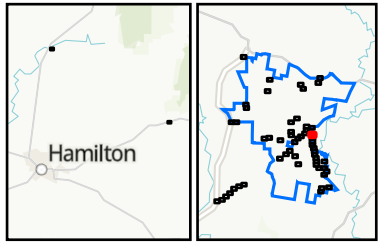
Works area
Local road upgrades
Geelong transport route
Portland transport route

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades
Native vegetation to be removed by Geelong transport route



N

Metres
0 20 40 60 80

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Figure 2-34: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

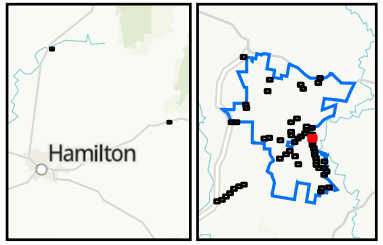
Works area
- Local road upgrades
- Geelong transport route
- Portland transport route

Native vegetation
- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Natural Temperate Grassland of the Victorian Volcanic Plain
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
- Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-35: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

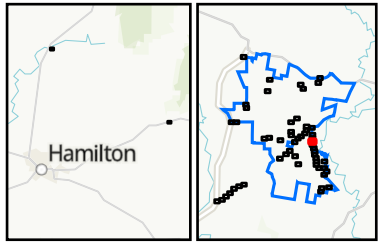
Works area
Local road upgrades

Native vegetation
Plains Grassy Wetland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-36: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

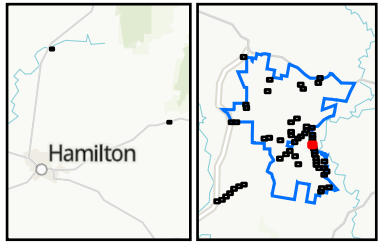
Works area
Local road upgrades

Native vegetation
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-37: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

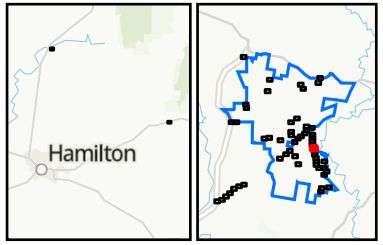
Works area
Local road upgrades

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-38: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

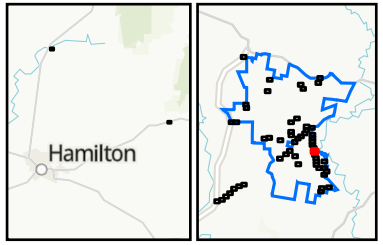
Works area
Local road upgrades

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-39: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

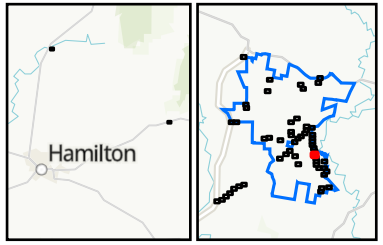
Works area
Local road upgrades

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-40: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

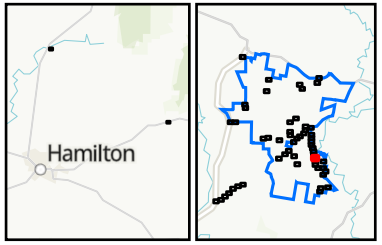
Wind farm boundary

Works area
Local road upgrades

Native vegetation
Plains Grassy Woodland

EPBC community
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-41: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

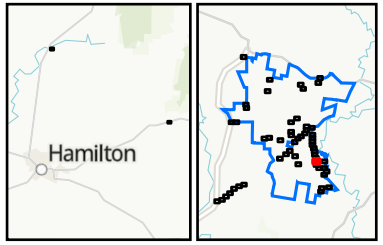
Works area
Development footprint - v183.7
Local road upgrades

Native vegetation
Large Tree in Patch
TPZ
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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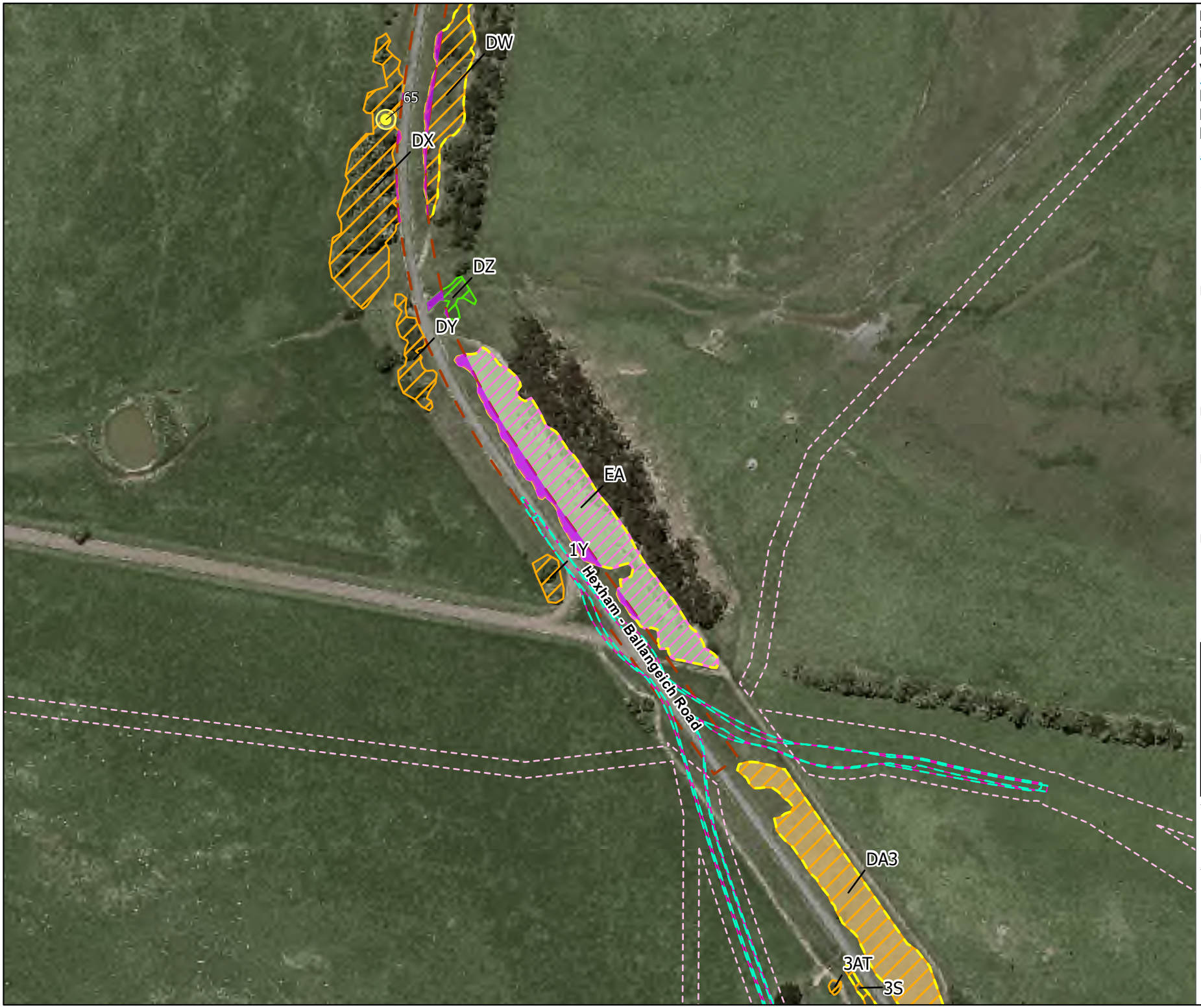


Figure 2-42: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

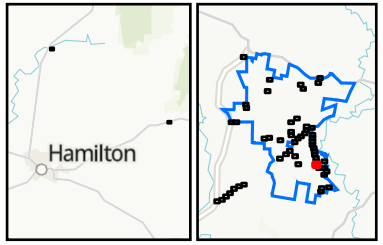
Works area
- Development footprint - v183.7
- Local road upgrades
- Geelong transport route
- Portland transport route

Native vegetation
- Large Tree in Patch
- TPZ
- Creekline Grassy Woodland
- Plains Grassland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Natural Temperate Grassland of the Victorian Volcanic Plain
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
- Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-43: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Proposed turbine - v183.7

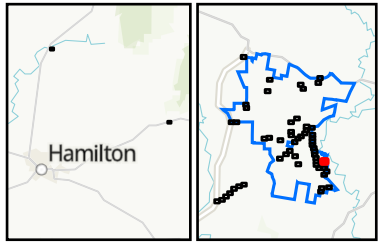
Native vegetation

Large Scattered Tree

TPZ

Removal

Tree to be removed by Development footprint



N

Metres
0 20 40 60 80

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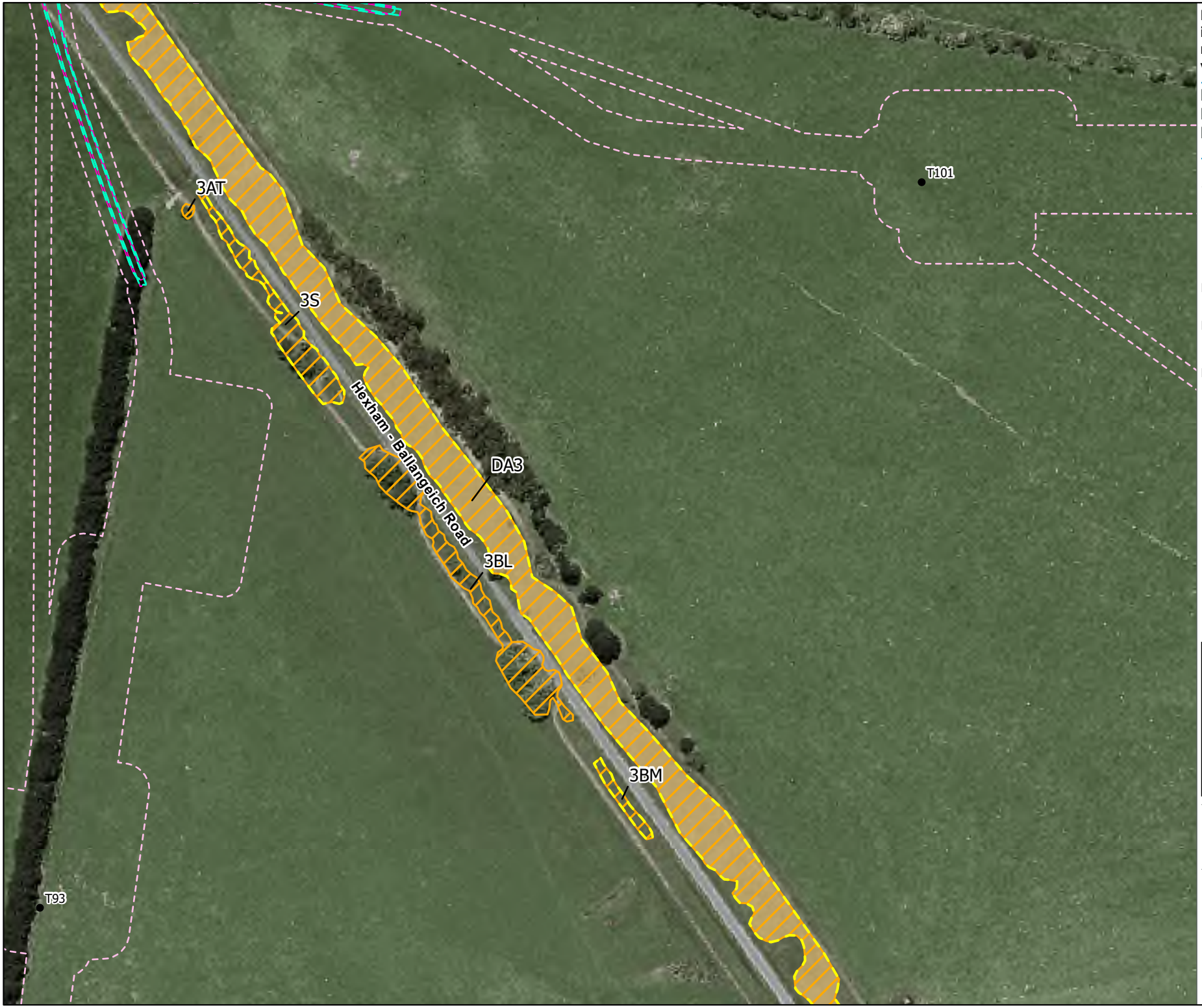


Figure 2-44: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

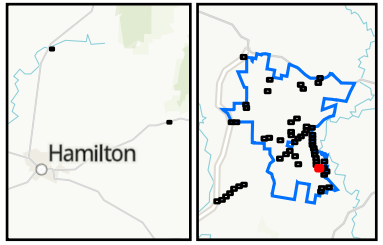
- Wind farm boundary

Works area
- Development footprint - v183.7
- Geelong transport route
- Portland transport route
- Proposed turbine - v183.7

Native vegetation
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain



N

Metres
0 20 40 60 80

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Figure 2-45: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

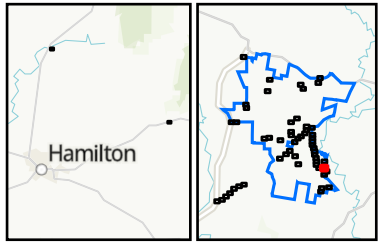
Native vegetation

Plains Grassland

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-46: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Proposed turbine - v183.7

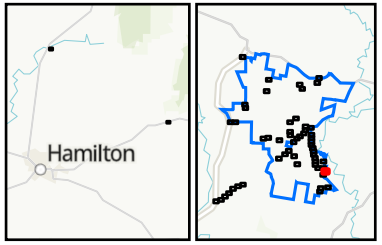
Native vegetation

Plains Grassy Wetland

DEECA wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-47: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

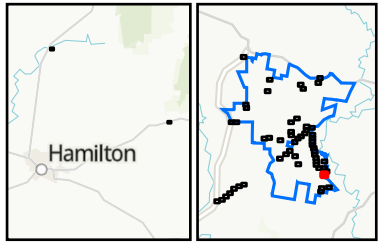
Works area
Development footprint - v183.7
Proposed turbine - v183.7

Native vegetation
Plains Grassy Wetland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Development footprint



N

Metres
0 20 40 60 80

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Figure 2-48: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

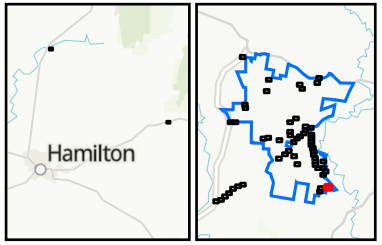
Native vegetation

Plains Grassland

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-49: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

Proposed turbine - v183.7

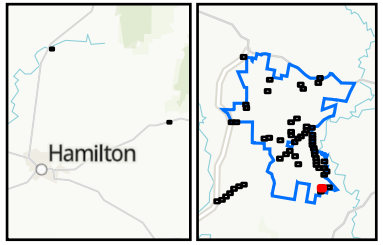
Native vegetation

Plains Grassy Wetland

Plains Sedgy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-50: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

Wind farm boundary

Works area

Development footprint - v183.7

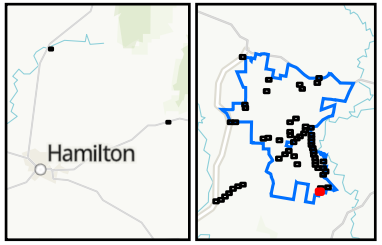
Proposed turbine - v183.7

Native vegetation

Plains Grassy Wetland

Removal

Native vegetation to be removed by Development footprint



N

Metres

0 20 40 60 80

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Figure 2-51: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

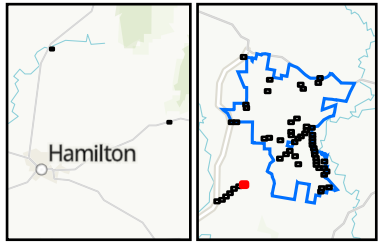
Works area
Local road upgrades

Native vegetation
Plains Grassland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-52: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

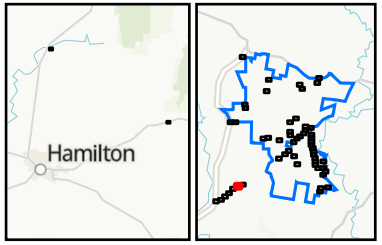
Works area
Local road upgrades

Native vegetation
Plains Grassland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-53: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

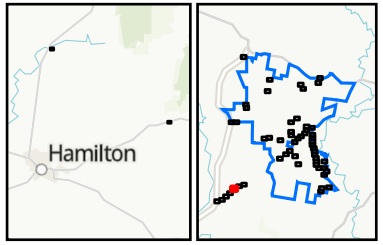
Works area
Local road upgrades

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N
Metres
0 20 40 60 80

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Figure 2-54: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

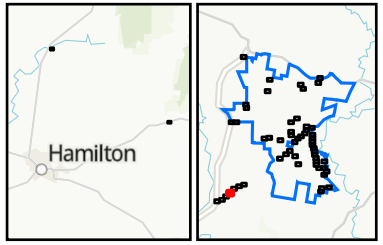
Works area
Local road upgrades

Native vegetation
Plains Grassland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-55: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

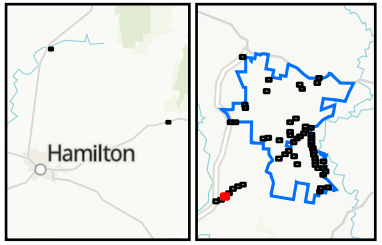
Works area
Local road upgrades

Native vegetation
Plains Grassland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-56: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

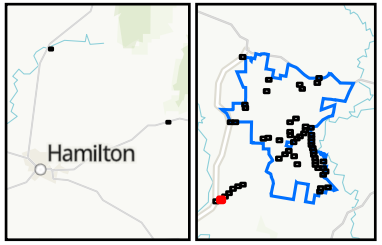
Works area
Local road upgrades

Native vegetation
Plains Grassland
Plains Grassy Woodland

FFG community
Western (Basalt) Plains Grasslands Community

EPBC community
Natural Temperate Grassland of the Victorian Volcanic Plain

Removal
Native vegetation to be removed by Local road upgrades



N

Metres
0 20 40 60 80

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Figure 2-57: Native vegetation impacted by Swept path, Public road, and Development plan v183.7

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 10/12/2025

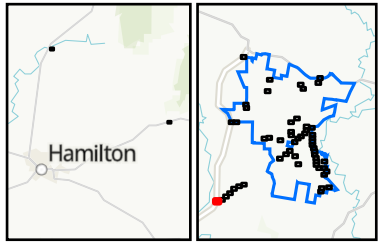
Works area
- Local road upgrades
- Geelong transport route
- Portland transport route

Native vegetation
- Plains Grassland
- Plains Grassy Woodland

FFG community
- Western (Basalt) Plains Grasslands Community

EPBC community
- Natural Temperate Grassland of the Victorian Volcanic Plain
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Removal
- Native vegetation to be removed by Local road upgrades
- Native vegetation to be removed by Geelong transport route
- Native vegetation to be removed by Portland transport route



N

Metres
0 20 40 60 80

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5.3.3. Flora species

Species recorded

During the field assessments, 148 plant species were recorded. Of these, 93 (63 %) were indigenous and 55 (37 %) were introduced or non-indigenous native in origin (Appendix 3).

Listed species

Victorian Biodiversity Atlas (VBA) records (DEECA 2025b) and the EPBC PMST (DCCEEW 2025) indicated that within the search region there were records of, or there occurred potential suitable habitat for, 31 species listed under the Commonwealth EPBC Act and 99 listed under the state FFG Act, including 26 listed under both Acts. One flora species listed under the EPBC Act, Spiny Rice-flower, was recorded incidentally during vegetation surveys and confirmed during targeted surveys. One flora species listed under the FFG Act, Purple Blown-grass, was recorded in the road reserve of Woolsthorpe-Hexham Road during targeted surveys in November 2021.

The likelihood of occurrence in the project study area of species listed under the EPBC Act and FFG Act is addressed in Appendix 5. Species considered 'likely to occur' are those that have a very high chance of being in the project study area based on numerous records in the search region and suitable habitat in the project study area. Species considered to have the 'potential to occur' are those where suitable habitat exists, but recent records are scarce.

This analysis indicates that the following 23 listed flora species were considered likely to occur or considered to have the potential to occur within the project study area, road widening study area and swept path study area (Table 5).

Four additional species were considered to potentially occur within the swept path study area along Dunkeld-Cavendish Road, Cavendish only (Table 5).

Targeted surveys for November-flowering flora species were undertaken between 28 and 30 November 2018 and 22 to 25 November 2021. A targeted survey for Trailing Hop-bush was undertaken on the 10 and 11 January 2019. The survey timing and areas targeted were also adequate to detect Matted Flax-lily. During these surveys, areas identified to support suitable habitat for these species that were proposed to be impacted under the 2019 layout were inspected thoroughly along transects spaced 5 metres apart. This transect spacing was chosen based on the lifeform of the targeted species and the visibility within areas of suitable habitat.

Targeted surveys for Spiny Rice-flower were undertaken on 8 to 10 July, 2025. During these surveys, areas identified to support suitable habitat for Spiny Rice-flower (i.e. *Heavier-soils* Plains Grassland (EVC 132_61) with sufficient species and structural diversity to support Spiny Rice-flower) that are proposed to be impacted under the current (v183.7) layout were inspected thoroughly along transects spaced 5 metres apart. This transect spacing was chosen based on the lifeform of the targeted species and the visibility within areas of suitable habitat.

Targeted surveys for spring-flowering orchids were undertaken on 27-31 October, 2025. These surveys assessed areas of suitable habitat, comprising *Heavier-soils* Plains Grassland (EVC 132_61) and areas of Plains Grassy Woodland (EVC 55_61 and EVC 55_63) supporting a native ground layer. Areas proposed to be impacted under the current (v183.7) layout were inspected thoroughly along transects spaced 5 metres apart. This transect spacing was chosen based on the lifeform of the targeted species and the visibility within areas of suitable habitat.

Results

Two listed species have been recorded. One threatened flora species – Spiny Rice-flower – listed as Critically Endangered under both the EPBC Act and FFG Act was recorded during native vegetation surveys in June 2025. Following this, targeted surveys were conducted in all areas of

suitable habitat that have potential to be impacted. The targeted surveys identified 158 individuals in HZ 1N within the Hamilton Highway road reserve (Figure 3; Photograph 1).



Photograph 1: Spiny Rice-flower within the Hamilton Highway Road reserve

Purple Blown-grass (var. *filifolia*), listed as Endangered under the FFG Act, was recorded during targeted surveys in November 2021 in patches of native vegetation (HZ 3G, II and XAJ) within the road reserve along Woolsthorpe-Hexham Road. A total of 27 individuals were recorded (Figure 3).

Additionally, during the October 2025 surveys, a *Dianella* individual was identified in Habitat Zone 3BO. This species shared morphological characteristics with Matted Flax-lily (EPBC: Endangered; FFG: Critically Endangered) and Glaucous Flax-lily (FFG: Critically Endangered). However, due to a lack of suitable floristic characteristics (i.e. lack of flowering material), the species identification could not be confirmed. This individual was revisited during the December 2025 surveys and was again found to lack suitable floristic characteristics to enable accurate identification to species level. However, regardless of the species identification, this record falls outside the proposed footprint and will not be impacted.



Figure 3-1: Targeted flora to be impacted

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 11/09/2025

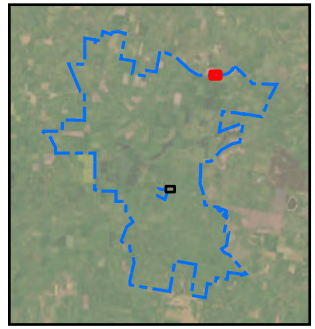
- Wind farm boundary
- Development plan - v183.7
- DEECA wetland
- Portland transport route
- Geelong transport route

Native vegetation

- Plains Grassland

Threatened flora

- Pimelea spinescens subsp. spinescens



N

Metres
0 20 40 60 80 100

GDA2020 MGA Zone 54

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Figure 3-2: Targeted flora to be impacted

Project No: 18088_28
Project: Hexham Wind Farm, VIC
Date: 11/09/2025

- Wind farm boundary
- Development plan - v183.7
- Portland transport route
- Geelong transport route

Native vegetation

- Plains Grassland
- Plains Grassy Wetland
- Plains Grassy Woodland

Threatened flora

- Purple Blown-grass
- Threatend flora to be impacted

N

Metres
0 20 40 60 80 100

GDA2020 MGA Zone 54

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5.3.4. Threatened Ecological Communities (TEC)

Project study area

EPBC Act listed TEC

The EPBC PMST (DCCEEW 2025a) indicated that five ecological communities listed under the EPBC Act had the potential to occur in the project study area (Table 9). Two of these ecological communities were found to occur within the study area.

Table 9: EPBC Act listed ecological communities and likelihood of occurrence in the project study area

Ecological community	EPBC	Occurrence in the project study area
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	CR	Areas of Plains Grassy Woodland (EVC 55_61) and High Rainfall Plains Grassy Woodland (EVC 55_63) were considered to potentially qualify. Occurs in the project study area along Hexham-Ballangeich Road. Habitat zones 1D, DA3, EB. **5.113 ha** in total.
Natural Temperate Grassland of the Victorian Volcanic Plain	CR	Areas of *Heavier-soils* Plains Grassland (EVC 132_61) were considered to potentially qualify. Occurs in the project study area along Woolsthorpe-Hexham Road, Cooramook Lane and Hamilton Highway. Habitat zones 1N, 4A, 4G, EA, GB, GE and HI. **3.288 ha** in total.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	CR	Areas of Plains Grassy Wetland (EVC 125) were considered to potentially qualify, however, no patches met the condition thresholds, and this community therefore does not occur in the project study area.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EN	Does not occur in the project study area.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CR	Does not occur in the project study area.

Notes: Status under the EPBC Act: EN = Endangered; CR = critically endangered.

Based on an assessment of native vegetation in the project study area against published descriptions and condition thresholds for these communities, the following listed ecological communities were recorded in the project study area:

- **Grassy Eucalypt Woodland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (1D, DA3, EB). Plains Grassy Woodland (EVC 55_61) and High Rainfall Plains Grassy Woodland (EVC 55_63) mapped within the project study area would potentially meet the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are present such that the projective foliage cover of native trees is more than 5 % and the tree canopy is generally dominated by River Red Gum (*Eucalyptus camaldulensis*) or associated These were Habitat Zones 1D, DA3 and EB, all of which were patches bigger than or equal to 0.5 hectares in which 50 % or more of the perennial ground layer vegetation comprises native species (TSSC 2008a). All patches of High Rainfall Plains Grassy Woodland (EVC 55_63), and all other patches of Plains Grassy Woodland (EVC 55_61) within the project study area

were found not to meet the condition thresholds for this community, either as they were too small, because 50 % or more of the perennial ground layer vegetation was not native species or because there were not more than ten native perennial species and at least three big trees per hectare (TSSC 2008a).

- **Natural Temperate Grassland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (1N, 4A, 4G, EA, GB, GE and HI). Patches of Heavier-soils Plains Grassland (EVC 132_61) within the project study area would potentially meet the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are absent or sparse such that the projective foliage cover of native trees is less than 5 % and the ground vegetation layer is dominated by native grasses and/or other native herbs. Seven patches of Heavier-soils Plains Grassland (EVC 132_61) within the project study area, along the Woolsthorpe-Hexham Road, Cooramook Lane and the Hamilton Highway, were found to meet the condition thresholds for this community (TSSC 2008b). These were Habitat Zones 1N, 4A, 4G, EA, GB, GE and HI, all of which were patches bigger than or equal to 0.05 hectares in which the dominant native species represented at least 50 % of the native species and the perennial tussock cover (TSSC 2008b). All other patches of Heavier-soils Plains Grassland (EVC 132_61) within the project study area were found not to meet the condition thresholds for this community, either as they were too small or because the dominant native species did not represent at least 50 % of the native species and the perennial tussock cover (TSSC 2008b).

Based on an assessment of native vegetation in the project study area against published descriptions and condition thresholds, the following communities were found not to occur in the project study area based on the factors described below.

- **Seasonal Herbaceous Wetland of the Temperate Lowland Plain** – listed as Critically Endangered under the EPBC Act. Patches of Plains Grassy Wetland (EVC 125) within the project study area were considered for their potential to meet the key diagnostic criteria and condition thresholds for this community. This related to two patches of Plains Grassy Wetland (Habitat Zone 3AH and XAH) on private land, located north of the Hexham-Ballangeich Road and west of the Woolsthorpe-Hexham Road. These Habitat Zones were assessed in December 2025 against the listing advice for this community (TSSC 2012), following sufficient rainfall (spring [September – November] rainfall at Mortlake racecourse was 173mm, above the mean of 162mm; BoM 2025) and the typical pattern of seasonal wetting and drying observed in late spring to early summer.

  It was determined that these habitat zones did not qualify as the SHWTLP community, due to <50% of the vegetative cover in the ground layer being attributed to native wetland flora species. Both 3AH and XAH were dominated by Soft Brome and Rye. The total vegetative cover was 95% (3AH) and 90% (XAH), of which natives accounted for 15% (3AH; relative cover 16%) and 20% (XAH; relative cover 22%).

- **Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia** – listed as Endangered under the EPBC Act. No vegetation within the study area met the third key diagnostic criterion for this community, namely that at least one of the most common overstorey species is/was Grey Box (TSSC 2010).

- **White Box-Yellow-Box-Blakeley's Red Gum Grassy Woodland and Derived Native Grassland** – listed as Critically Endangered under the EPBC Act. No vegetation within the study area met the first key diagnostic criterion for this community, namely that at least one of the most common overstorey species is/was White Box, Yellow Box or Blakely's Red Gum (TSSC 2006).

FFG Act listed TEC

Two TEC listed under the FFG Act were recorded in the project study area:

- **Western (Basalt) Plains Grasslands Community**. 15 patches, totalling 9.135 hectares (Habitat Zones 1D, 1M, 1N, 3AL, 3G, 3S, 4A, 4D, 4G, DA3, EA, EB, GB, GE, HI) aligned with the description of this community (SAC 2015), which is described as *an open grassland community found mainly on undisturbed, poorly-drained heavy clay soils on the basalt plains of western Victoria. These soils are usually waterlogged in winter and very hard, dry and cracking in summer. The vegetation is characteristically dominated by perennial native grasses, with very few eucalypts and shrubs.* These zones included both Plains Grassland (EVC 132_61) and derived grassland forms of Plains Grassy Woodland (EVC 55_61).
- **Western Basalt Plain (River Red-gum) Grassy Woodland.** One patch, totalling 0.024 hectares (Habitat Zone 3AG) aligned with the description of this community (SAC 2015), which is described as having *an open canopy of River Red Gum (Eucalyptus camaldulensis), a middle layer chiefly of scattered wattles … but including a few other shrubs as well, and a ground layer dominated by grasses.* This Riparian Woodland patch (EVC 641) zones was located on private property along Mustons Creek.

Transport route

EPBC Act-listed TEC

Two ecological communities listed under the EPBC Act were found to occur within the transport route study area:

- **Grassy Eucalypt Woodland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (1D, 3P, 3Q, EB, DA3). Five patches of Plains Grassy Woodland (EVC 55_61) mapped within the transport route study area and totalling 5.559 ha met the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are present (or would have been present) such that the projective foliage cover of native trees is more than 5 % and the tree canopy is generally dominated by River Red Gum (*Eucalyptus camaldulensis*) or associated eucalypts. These were Habitat Zones 1D, 3P, 3Q, EB and DA3, all of which were patches bigger than or equal to 0.5 hectares in which 50 % or more of the perennial ground layer vegetation comprises native species (TSSC 2008a).
- **Natural Temperate Grassland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (3E, 1N, HI, 1Q, EA, 3BO and 4G). Seven patches of Heavier-soils Plains Grassland (EVC 132_61) within the transport route study area and totalling 9.279 ha met the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are absent or sparse such that the projective foliage cover of native trees is less than 5 % and the ground vegetation layer is dominated by native grasses and/or other native herbs. These were Habitat Zones 3E, 1N, HI, 1Q, EA, 3BO and 4G, all of which were patches bigger than or equal to 0.05 hectares in which the dominant native species represented at least 50 % of the native species and the perennial tussock cover (TSSC 2008b).

FFG Act listed TEC

Two TEC listed under the FFG Act were recorded in the transport route study area:

- **Western (Basalt) Plains Grasslands Community.** 25 patches, totalling 16.331 hectares (Habitat Zones 1D, 1M, 1N, 3AL, 3G, 3S, 4A, 4D, 4G, DA3, EA, EB, GB, GE, HI) aligned with the description of this community (SAC 2015), which is described as *an open grassland community found mainly on undisturbed, poorly-drained heavy clay soils on the basalt plains of western Victoria. These soils are usually waterlogged in winter and very hard, dry and cracking in summer. The vegetation is characteristically dominated by perennial native*

grasses, with very few eucalypts and shrubs. These zones included both Plains Grassland (EVC 132_61) and derived grassland forms of Plains Grassy Woodland (EVC 55_61).

- **Western Basalt Plain (River Red-gum) Grassy Woodland.** Three patches, totalling 0.235 hectares (Habitat Zones 1J, 1K, 1L) aligned with the description of this community (SAC 2015), which is described as having *an open canopy of River Red Gum (Eucalyptus camaldulensis), a middle layer chiefly of scattered wattles … but including a few other shrubs as well, and a ground layer dominated by grasses.* These three Plains Grassy Woodland (EVC 55_61) zones were located at the intersection of the Dunkeld-Cavendish Road and the Glenelg Highway, associated with the Portland Transport Route.

Road Upgrade Areas

EPBC Act-listed TEC

Two ecological communities listed under the EPBC Act were found to occur within the local road upgrade study area:

- **Grassy Eucalypt Woodland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (1D, 3P, 3Q, 3BG, 3BH, EB, 5J, 5I, 5H, 5G, DV and DA3). 12 patches of Plains Grassy Woodland (EVC 55_61) mapped within the road widening study area and totalling 11.138 ha met the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are present (or would have been present) such that the projective foliage cover of native trees is more than 5 % and the tree canopy is generally dominated by River Red Gum (*Eucalyptus camaldulensis*) or associated eucalypts. These were Habitat Zones 1D, 3P, 3Q, 3BG, 3BH, EB, 5J, 5I, 5H, 5G, DV and DA3, all of which were patches bigger than or equal to 0.5 hectares in which 50 % or more of the perennial ground layer vegetation comprises native species (TSSC 2008a).
- **Natural Temperate Grassland of the Victorian Volcanic Plain** – listed as Critically Endangered under the EPBC Act (1N, HI, 4A, EA, 3AU, 3BF, DG, 5D, DC, 5A, DE, 3BO, 3BP, 5F, 5L, 3BZ, 5X, 5K and 4G). 19 patches of Heavier-soils Plains Grassland (EVC 132_61) within the road widening study area and totalling 17.878 ha met the key diagnostic criteria for this community (TSSC 2008a), namely remnant native vegetation within the Victorian Volcanic Plain where trees are absent or sparse such that the projective foliage cover of native trees is less than 5 % and the ground vegetation layer is dominated by native grasses and/or other native herbs. These were Habitat Zones 1N, HI, 4A, EA, 3AU, 3BF, DG, 5D, DC, 5A, DE, 3BO, 3BP, 5F, 5L, 3BZ, 5X, 5K and 4G, all of which were patches bigger than or equal to 0.05 hectares in which the dominant native species represented at least 50 % of the native species and the perennial tussock cover (TSSC 2008b).

FFG Act listed TEC

One TEC listed under the FFG Act, *Western (Basalt) Plains Grasslands Community*, was recorded in the road widening study area. 50 patches, totalling 29.658 hectares aligned with the description of this community (SAC 2015), which is described as *an open grassland community found mainly on undisturbed, poorly-drained heavy clay soils on the basalt plains of western Victoria. These soils are usually waterlogged in winter and very hard, dry and cracking in summer. The vegetation is characteristically dominated by perennial native grasses, with very few eucalypts and shrubs.* These zones included both Plains Grassland (EVC 132_61) and derived grassland forms of Plains Grassy Woodland (EVC 55_61).

5.4. Impact Assessment

The current proposal will involve the construction and operation of the HWF, as described in Section 1.2.

The extent of the area of impact for the current proposal was considered to include the outermost boundaries of the proposed development layout presented in Figure 2. This area has been referred to as the 'development footprint'.

5.4.1. Impact pathways

Construction impact pathways are grouped into two types of impact pathways. These are:

- Direct vegetation and habitat loss from clearance, earthworks and physical disturbance.
- Habitat and vegetation degradation from direct and indirect pathways including introduction or spread of invasive species or pathogens, edge effects, barrier effects, surface hydrological changes, groundwater drawdown, deposition of eroded sediments or from contamination caused by accidental spills of hazardous materials.

The key activity during construction with the potential to impact on native vegetation and listed flora values is physical disturbance and earthworks. Physical disturbance includes vegetation clearance, excavation, trenching and earthworks such as stockpiling or cut-and-fill material movements required to construct Project infrastructure. The shape, size and duration of physical disturbance (i.e., temporary or permanent) influences the degree to which vegetation and listed flora may be impacted. Physical disturbance will primarily occur during construction, although a small amount of physical disturbance is expected during decommissioning of the Project.

In comparison to other large infrastructure developments, the construction of wind farms is characterised by comparatively small footprints at any one location, but those areas are spread out over a broad landscape, connected by tracks and cables. Wind farms are constructed progressively so construction activities in any location would be temporary over several weeks except the quarry and construction site compounds, which would be used for the entirety of the two-year construction period.

Physical disturbance for the construction of project infrastructure will result in the clearance of some native vegetation, and this may cause direct mortality to individual plants during earthwork activities.

Clearing of native vegetation can result in habitat fragmentation, whereby previously contiguous areas of habitat are separated into smaller patches. A feature of wind farm developments is that physical disturbance is not concentrated in a single location, with turbines occupying a relatively small footprint. A large proportion of physical disturbance is contributed from accessways and cable trenches that provide vehicle access and enables electricity transmission.

Weeds and pathogens may be lodged and transported in construction plant and equipment and then driven through the project area. Plant and equipment used within the project site also can spread weeds and pathogens to other areas causing potential infestations further afield. Three declared noxious weed species (listed under the CaLP Act) were recorded in the project including African Box-thorn, Blackberry and Sweet Briar.

Where Project activities are close to watercourses or watercourses are downslope of earthworks and construction activities, sediment-laden runoff can enter watercourses because of erosion. As a result, water quality of watercourses can be reduced due to higher turbidity. Microhabitats within the watercourse may be smothered from the settling of sediment and there is also potential to influence riparian habitats.

Water Technology has undertaken hydraulic modelling of the wind farm under developed conditions, assuming access tracks and hardstands are raised by 300 mm. Indicative locations along access tracks are provided where culverts are likely to be required to mitigate changes to drainage patterns and flow pathways, which in turn may have impacts on vegetation. Flow rates at these locations are available as a product of the modelling which will enable the exact location and sizing of these structures to be completed during detailed design based on the modelled flows. As

such, impacts occurring in large wetland areas have been considered to be confined to the construction footprint (including any necessary batters) and it has been assumed that the pre-existing hydrology of the wetland will persist.

Operation of the on-site quarry would result in groundwater dewatering. Construction of turbine foundations also has the potential to intercept shallow groundwater and require dewatering for a short period. These activities would reduce groundwater levels, potentially influencing groundwater availability at these locations.

5.4.2. Avoid and minimise statement

In accordance with the Guidelines, all applications to remove native vegetation must provide an avoid and minimise statement which details any efforts undertaken to avoid the removal of, and minimise the impacts on, biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value. Efforts to avoid and minimise impacts to native vegetation in the current application are presented below.

Design response to avoid and minimise impacts on flora and fauna

Several measures have been incorporated into the project design to avoid and minimise impacts on native vegetation, threatened ecological communities and listed flora species. These include:

- A placement of a 100-metre buffer around all DEECA-mapped wetlands to exclude WTG. This area was selected as a means of:
  - Avoiding physical disturbance to wetlands and their fringes; and
  - Limiting surface water runoff, and entrained sediment loads reaching these ephemeral wetlands from construction works zones.
- Inclusion of a 100-metre buffer around watercourses including Mustons Creek, Drysdale Creek and smaller drainages to:
  - Prevent unnecessary disturbance to the watercourses or their banks; and
  - Limit potential downstream effects from construction activities such as sedimentation of water.
- Ephemeral drainage lines were buffered by 30 metres to:
  - Limit physical disturbance to the drainage line; and
  - Limit surface water runoff and entrained sediment loads reaching these ephemeral drainages from construction work zones.
- Watercourse crossings have been minimised through the siting of the accessways. The proposed crossings are necessary to provide access to infrastructure and will prevent vehicles being diverted onto public roads. Other key design measures for watercourse crossings include:
  - Permanent surface structures designed to maintain existing overland flow paths and not cause increased upstream flood levels; and
  - Waterway crossings will be designed to accommodate a 1 in 10 ARI design criteria.
- Re-alignment and micro-siting of infrastructure has avoided most of the native vegetation within the development footprint; and
- Re-alignment and micro-siting of infrastructure has avoided much of the GEWVVP and NTGVVP within the development footprint.
- Re-alignment and micro-siting of infrastructure in the v183.7 layout avoids impacts to all but one individual (Geelong transport route option) or five individuals (Portland transport

route option) of Purple Blown-grass that were proposed in the 2019 layout impact area. The additional four individuals of Purple Blown-grass proposed to be impacted by the Portland transport route could be avoided by implementing the Geelong transport route.

- After updated surveys of all native vegetation within the Project study area in June 2025, following updates to the Wind Farm layout (v183.6), some new impacts to native vegetation were noted. Wind Prospect adjusted the footprint (v183.7) to avoid most new occurrences of native vegetation and TECs.
- After initial native vegetation and threatened flora assessments along the Transport Routes and road upgrade locations in June 2025, Wind Prospect revised each location where possible to further avoid and minimise impacts to native vegetation, trees or threatened flora. As a result, only small areas of roadside habitats are anticipated to be impacted. These impacted areas were located immediately adjacent to roadsides and therefore were generally more disturbed and degraded compared to retained vegetation located further within patches, which was generally more protected from disturbance and therefore higher quality.
- During early design iterations, road upgrades proposed along Hexham-Ballangeich Road were projected to incur a high level of impact to NTGVVP and GEWVVP.. Wind Prospect, along with Ratio Traffic Consultants, re-examined the road upgrade requirements, in particular regarding width of stormwater drains, and necessity of certain site entrances along this road. In August 2025, as a result, two site access locations which crossed areas of NTGVVP and GEWVVP were removed, with a new access location sited to avoid native vegetation. As a result, impacts to NTGVVP and GEWVVP have been reduced along Hexham-Ballangeich Road, by avoiding approximately 3km of roadside. Road upgrade area width could not be reduced.
- Local road upgrades to Immigrants Lane, Gordon Lane and Ross Lane were initially considered by Wind Prospect but were ultimately decided against, which avoided and minimised impacts to native vegetation in these areas.
- Opportunities to move turbines 57, 108 and 109 out of Plains Grassy Wetland (associated with Habitat Zone 3AH and XAH) were explored. Impacts to Plains Grassy Wetland in Habitat Zone 3AH and XAH has been reduced by removing two laydown areas and co-locating cables and tracks. Moving the turbines was not considered practical as it would compromise turbine spacing, impacting turbine efficiency, and necessitate substantial redesign of access tracks and electrical cabling. This was considered disproportionate given the assessed low risk to shorebirds. The residual risk to shorebirds will be managed through the BAMP, whereby if a shorebird collision is recorded, this will be immediately investigated. If it is determined not to be a one-off event (e.g. if a flooding event has occurred and attracts increased shorebird activity), then temporary turbine shutdowns would be implemented. Further avoidance and minimisation efforts will be explored during the detailed design process.
- Where the internal transmission line crosses patches of native vegetation without trees or shrubs, the line will be strung from either end, avoiding impacts to native vegetation.
- If the Geelong Transport Route option is ultimately decided on as the preferred OD route, this would avoid impacts to 0.166 ha of native vegetation and 5 large trees in patches. Additionally, 0.009 ha of NTGVVP, 0.063 ha of WPGC and 0.007 ha WBPGW would be avoided.
- Where practicable, Wind Prospect commits to further avoidance and minimisation efforts during the detailed design process.

Native vegetation surveys have progressively refined the understanding of native vegetation coverage and habitat for threatened flora and fauna across the site. Throughout the design process there have been significant efforts made to avoid the clearance of native vegetation.

Mitigation of indirect impacts

Commitments to mitigate indirect impacts to vegetation and habitat during construction are provided below:

- Appropriate vegetation protection zones will be established around areas of native vegetation to be retained prior to works (2 m from native vegetation patches), where these occur within 20 m of works.
- Appropriate tree protection zones will be established around scattered native trees to be retained prior to works (two times the trunk diameter at breast height (DBH) up to 15 m), where these occur within 20 m of works.
- All construction personnel will be appropriately briefed prior to works, and no construction personnel, machinery or equipment will be placed inside vegetation/tree protection zones as defined in the Construction Environmental Management Plan (CEMP).
- Where essential wind farm infrastructure (e.g. access tracks) crosses a waterway, measures for avoiding and minimising impacts will be documented in the CEMP including avoiding permanent disturbance of banks, channels and nearby vegetation and restoring temporarily disturbed waterway banks and vegetation to at least its pre-construction condition.
- Bridges and culverts will be designed to allow flow beneath the roads along their natural flow paths. The watercourse crossings construction method will be dependent on the site conditions of the crossing location. All waterway crossings and culvert and bridge designs would conform to the relevant local Council, Glenelg Hopkins Catchment Management Authority (CMA) and DEECA guidelines.
- Sediment fencing will be installed during construction to protect riparian zones if works are to be undertaken within 30 m of waterways.
- Access tracks throughout the site will be designed with culverts to divert flow paths beneath the roads.
- Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows.

- A CEMP will be prepared for the project, which includes:
  - Designated entry and exit points from each property;
  - Biosecurity signage, with clear instructions and contact details at all entry points;
  - Defined routed for entry and exit of all machinery;
  - A site induction for all employees and visitors;
  - Decontamination bays at all site entries and between properties, where necessary to prevent the spread of weeds across the site;
  - Decontamination procedures, including record keeping of all decontaminations undertaken;
  - Methods to avoid and minimise impacts to waterways;
  - Measures to ensure any materials imported to the site are free from biosecurity risks, including record keeping of all materials; and

- Management methods to avoid and minimise impacts to waterways.

5.5. Residual impacts

Following the application of avoid and minimise measures, an assessment of residual effects and impacts was completed describing the likely changes to vegetation, listed ecological communities, and changes to populations of listed flora brought about by the construction, operation and eventual decommissioning of the project. The significance of these effects has been described in Sections 5.5.1 for Native vegetation, Section 5.5.3 for listed communities, and Section 5.5.4 for listed flora species. Table 10 documents the impact criteria for biodiversity impacts, giving consideration to the magnitude, duration, and extent of the impact.

A significance of impact assessment in accordance with the EES scoping requirements for native vegetation, listed ecological communities and listed flora species is included Table 10.

Table 10: Impact criteria for biodiversity impacts

Rating	Criteria
Very high	The effects on ecological values extend beyond the study area across its entire range. Major loss or alteration to ecological value and/or loss of a significant proportion of the known population or range of the value with the viability of the biological value reduced.
High	The effects on ecological values extend beyond the study area within the region. Loss or alteration to ecological value and/or loss of a proportion of the known population or range of the value with the viability of the biological value reduced. The effects are contained within the bioregion.
Moderate	Loss or alteration to ecological value that is readily detectible with respect to natural variability, and/or loss of a moderate proportion of the known population or range of the value with limited overall reduction in the viability of the value. The effects are contained within the project site.
Low	Minor effect from existing baseline conditions. Effects unlikely to reduce the overall viability of the ecological value. The effects contained within the project disturbance area.
Very low	Effects likely to be very low or barely detectable and reduction in the viability of the ecological value is highly unlikely. The effects are limited to areas within the project footprint.

5.5.1. Native vegetation

The primary impact pathway resulting in the direct loss and/or degradation of native vegetation is from vegetation clearance, earthworks and physical disturbance. The project also has the potential to indirectly degrade native vegetation via the introduction or spread of weeds and pathogens, changes to hydrology and deposition of eroded sediments.

The proposed footprint consists of 612 (Geelong route) to 614 (Portland route) hectares, of which 588 hectares constitutes the development footprint (wind farm). This is 3.65% of the 16,104-hectare project site and 27.15% of the 2,166-hectare project study area. As the development footprint has been derived in accordance with the 'avoid' and 'minimise' principles, most of the native vegetation has been avoided and will be retained.

The entirety of the project will result in impacts to either 8.238 ha (Geelong transport route option), 8.423 ha (Portland transport route option) or 8.533 ha (Combined transport route) of native vegetation as represented in Figure 2 and documented in the Native Vegetation Removal (NVR) reports provided by DEECA (Appendix 6). Note that for the Portland route, in order to generate offset requirements per LGA, two NVR reports were run: One NVR with removal in Moyne LGA as proposed

removal, and removal in Southern Grampians LGA as past removal; and one with Southern Grampians LGA as proposed removal, and Moyne as past removal. Past removal is considered when creating several NVRs for a project as part of the extent of native vegetation removal to determine the assessment pathway and type of offset requirements (general offset vs specific offsets).

The contributions to this total from each of the three project components are detailed in Table 11.

For the entirety of the project using the Geelong route this is comprised of:

- 7.895 hectares of native vegetation in patches (including 4 large trees in patches); and
- 6 scattered trees (namely 4 large scattered trees and 2 small scattered tree), equating to an area loss of 0.343 hectares.

For the entirety of the project using the Portland route this is comprised of:

- 8.080hectares of native vegetation in patches (including 9 large trees in patches); and
- 6 scattered trees (namely 4 large scattered trees and 2 small scattered tree), equating to an area loss of 0.343 hectares.

For the entirety of the project using the combined route this is comprised of:

- 8.190 hectares of native vegetation in patches (including 9 large trees in patches); and
- 6 scattered trees (namely 4 large scattered trees and 2 small scattered tree), equating to an area loss of 0.343 hectares.

Table 11: Impacts to native vegetation from each project component

Project component	Native vegetation patches (ha)			Large trees in patches			Scattered trees		
Project study area (wind farm)	6.466			4			4 large, 2 small (0.343 ha)		
Road upgrades	1.180			0			0		
Transport Route swept paths	Geelong	Portland	Combined	Geelong	Portland	Combined	Geelong	Portland	Combined
	0.249	0.432	0.542	0	5 (Southern Grampians Shire)	5 (Southern Grampians Shire)	0	0	0
TOTAL	**7.895**	**8.080** (including 0.181 in Southern Grampians Shire)	**8.190** (including 0.181 in Southern Grampians Shire)	**4**	**9** (including 5 in Southern Grampians Shire).	**9** (including 5 in Southern Grampians Shire).	**4 large, 2 small (0.343 ha)**		

Notes: All impacts occur in Moyne Shire unless stated otherwise (i.e. where they instead occur in Southern Grampians Shire). There is some overlap between the Portland and Geelong transport route impacts where the two routes meet at the Project Site.

It is understood that no native vegetation has been approved for removal associated with the project within the last five years.

- Photographs of native vegetation proposed for removal are provided in Appendix 4.

Regardless of which Transport Route is chosen, native vegetation removal (8.238 ha, 8.423 ha or 8.533 ha) represents approximately 10% of all native vegetation mapped (i.e., 87.334 ha) and only 1.4% of the total area within the 612-hectare or 614-hectare footprint.

The removal of 8.238 – 8.533 ha (1.4%) within a 612-614-hectare footprint demonstrates a considerable effort to avoid and minimise impacts to vegetation. The amount of native vegetation within the broader 16,104-hectare project site is not known; however, if it is assumed to be similar to that in the project study area (i.e. 2.47% of 16,104 hectares, or 397 hectares), then removal of 88.238 – 8.405 ha would constitute 2.1 – 2.2%.

Impacts to native vegetation have been assessed as **low**, given that:

- Approximately 10 % of all native vegetation mapped will be impacted;
- This removal will occur as small occurrences across the 16,104-hectare site;
- Direct and indirect impacts will be contained within the project disturbance area; and
- The average condition score of native vegetation to be impacted is 21/100.

5.5.2. Modelled species important habitat

The current proposal footprint will not have a significant impact on any habitat for any rare or threatened species as determined in Appendix 6.

5.5.3. Listed communities

The proposed development footprint will result in the following losses as represented in Figure 2 and Figure 3:

- 0.586 hectares (Geelong), 0.595 hectares (Portland) or 0.605 hectares (combined) of *Natural Temperate Grassland of the Victorian Volcanic Plain* (NTGVVP) (EPBC Act: Critically Endangered).
- 0.247 hectares of *Grassy Eucalypt Woodland of the Victorian Volcanic Plain* (GEWVVP) (EPBC Act: Critically Endangered).
- 0.743 hectares (Geelong), 0.806 hectares (Portland) or 0.816 (combined) hectares of *Western (Basalt) Plains Grasslands Community* (WPGC) (FFG Act: Listed).
- 0.007 hectares (Portland or combined) of *Western Basalt Plains (River Red Gum) Grassy Woodland* (FFG Act: Listed).

The contributions to this total from each of the three project components are detailed in Table 12.

Table 12: Impacts (ha) to TEC from each project component

Project component	NTGVVP			GEWVVP			WPGC			WBPGW		
Project study area (wind farm)	0			0			0			0		
Road widening	0.570			0.247			0.723			0		
Transport Route	Geelong	Portland	Combined	Geelong	Portland	Combined	Geelong	Portland	Combined	Geelong	Portland	Combined
	0.016	0.021	0.025	0	0	0	0.020	0.083	0.095	0	0.007	0.007
TOTAL	**0.586**	**0.595**	**0.605**	**0.247**			**0.743**	**0.806**	**0.818**	**0**	**0.007**	**0.007**

Grassy Eucalypt Woodland of the Victorian Volcanic Plain (EPBC Act)

A total of 11.318 hectares of GEWVVP was recorded across the project study area, transport route study area and road widening study area. The project will impact 0.247 hectares of GEWVVP.

Overall, the predicted impacts to GEWVVP have been assessed as **low**, given that:

- 2.2% of mapped GEWVVP will be impacted;
- In each case, while a portion of the patch may be impacted these are unlikely to affect the overall viability of each habitat patch with proposed management measures implemented; and
- Direct and indirect impacts will be contained within the project disturbance area.

An assessment of proposed impacts to GEWVVP against the EPBC Act significant impact guidelines is included in Section 14.1.

Natural Temperate Grassland of the Victorian Volcanic Plain (EPBC Act)

A total of 20.596 hectares of NTGVVP was recorded across the project study area, transport route study area and road widening study area. The project will impact 0.586 hectares (Geelong), 0.595 hectares (Portland) or 0.605 hectares (combined) of NTGVVP.

Overall, the predicted impacts to NTGVVP have been assessed as **low**, given that:

- 2.8% (Geelong), 2.9% (Portland or combined) of mapped NTGVVP will be impacted;
- In each case, while a portion of the patch may be impacted these are unlikely to affect the overall viability of each habitat patch with proposed management measures implemented; and
- Direct and indirect impacts will be contained within the project disturbance area.

An assessment of proposed impacts to NTGVVP against the EPBC Act significant impact guidelines is included in Section 14.1.

Western (Basalt) Plains Grasslands Community (FFG Act)

A total of 33.093 hectares of WPGC was recorded across the project study area, transport route study area and road widening study area. The project will impact 0.743 hectares (Geelong), 0.806 hectares (Portland) or 0.818 (combined) of WPGC.

Overall, the predicted impacts to WPGC have been assessed as **low**, given that:

- Only 2.2% (Geelong), 2.4% (Portland) or 2.5% (combined) of mapped WPGC will be impacted;
- In each case, while a portion of the patch may be impacted these are unlikely to affect the overall viability of each habitat patch with proposed management measures implemented; and
- Direct and indirect impacts will be contained within the project disturbance area.

Western Basalt Plains (River Red-gum) Grassy Woodland Community (FFG Act)

A total of 0.259 hectares of WBPGWC was recorded across the project study area and transport route study area. The project will impact 0.007 hectares (Portland or combined) of WPGC.

Overall, the predicted impacts to WPGC have been assessed as **low**, given that:

- Only 2.7% (Portland or combined) of mapped WBPGWC will be impacted;

- This constitutes only the smallest patch of this community recorded, with all other patches avoided; and
- Direct and indirect impacts will be contained within the project disturbance area.
-

5.5.4. Listed flora species

The following listed flora species recorded during this investigation is proposed to be impacted:

- Purple Blown-grass (FFG Act: Endangered)
  - 1 individual impacted along the Geelong Transport Route
  - 5 individuals impacted along the Portland Transport Route
  - 6 individuals impacted along the Combined Transport Route

Targeted surveys, as detailed in Section 5.2.2, will be undertaken to determine the susceptibility of other listed species to impacts.

During targeted flora surveys in October 2025, one individual of the genus *Dianella* was recorded. Due to a lack of flowering material it was not possible to identify to species level, but it may be Matted-flax Lily (EPBC: Endangered; FFG: Critically Endangered) or Glaucous Flax Lily (FFG: Critically Endangered). The individual was re-examined in December 2025 to confirm the species, however, floristic characteristics were still unsuitable for accurate identification. Regardless of the species identification, this record falls outside the proposed footprint and will not be impacted.

The proposed development has avoided all recorded individuals of Spiny Rice-flower, and this species is therefore not anticipated to be impacted.

A total of 27 Purple Blown-grass were recorded across the project study area, transport route study area and road widening study area. The project will impact one individual (Geelong),five individuals (Portland) or six individuals (combined) of this species. Overall, the predicted impacts to Purple Blown-grass have been assessed as **low** (Geelong) or **moderate** (Portland and combined), given that:

- 3.7% (Geelong), 18.5% (Portland) or 22.2% (combined) of recorded Purple Blown-grass individuals will be impacted; and
- Direct and indirect impacts will be contained within the project disturbance area.

Targeted surveys, as detailed in Section 5.2.2, will be undertaken to determine the susceptibility of other listed species to impacts.

Table 13: Impact rating for native vegetation, listed ecological communities and flora species

Value	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
Native vegetation	Direct vegetation and habitat loss from clearance, earthworks and physical disturbance.	Construction	▪ Application of the avoid and minimise principles. ▪ Show native vegetation to be removed and retained on all plans. ▪ Proper induction of construction contractors.	Removal of 8.238 – 8.533 ha of native vegetation.	**Low**, given that: ▪ Approximately 10% of all mapped native vegetation mapped will be impacted; ▪ This removal will occur as small occurrences across the 16,104-ha site; ▪ Direct and indirect impacts will be contained within the project disturbance area; and ▪ The average condition score of native vegetation to be impacted is 21.
	Habitat and vegetation degradation from indirect pathway including introduction or spread of invasive species or pathogens, edge effects, barrier effects, surface hydrological changes, groundwater drawdown, deposition of eroded sediments or from contamination caused by accidental spills of hazardous materials.	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Waterway protection documented in a CEMP including avoiding permanent disturbance of banks, channels and nearby vegetation and restoring temporarily disturbed waterway banks and vegetation to at least its pre-construction condition. ▪ Bridges and culverts designed to allow flow beneath the roads along their natural flow paths. ▪ Sediment fencing installed during construction to protect riparian zones if works are to be undertaken within 30 m of waterways. ▪ Access tracks throughout the site will be designed with culverts to divert flow paths beneath the roads. ▪ Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows.	None anticipated.	**Very low**, given that mitigation and management measures will protect native vegetation from indirect impacts.

Value	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
			▪ Preparation of and adherence to a CEMP		
GEWVVP, NTGVVP,WPGC and WBPGWC	Direct loss from clearance, earthworks and physical disturbance.	Construction	▪ Application of the avoid and minimise principles. ▪ Show native vegetation to be removed and retained on all plans. ▪ Proper induction of construction contractors.	Removal of 0.247ha GEWVVP, 0.586-0.605ha of NTGVVP, 0.743-0.818 ha of WPGC and 0.0-0.007 ha WBPGWC	**Low**, given that: ▪ Only 2.2% GEWVVP will be impacted; ▪ Only 2.8 – 2.9% of NTGVVP will be impacted; ▪ Only 2.2 - 2.54% of WPGC will be impacted; ▪ Only 0-2.7% of WBPGWC will be impacted; ▪ In each case, while a portion of the patch may be impacted these are unlikely to affect the overall viability of each habitat patch with proposed management measures implemented. ▪ Direct and indirect impacts will be contained within the project disturbance area.
	Degradation from indirect pathway including introduction or spread of invasive species or pathogens, edge effects, barrier effects, surface hydrological changes, groundwater drawdown, deposition of eroded sediments or from contamination caused by accidental spills of hazardous materials.	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows. ▪ Preparation of and adherence to a CEMP.	None anticipated.	**Very low**, given that mitigation and management measures will protect listed ecological communities from indirect impacts
Purple Blown-grass	Direct loss from clearance, earthworks and physical disturbance.	Construction	▪ Application of the avoid and minimise principles. ▪ Show native vegetation to be removed and retained on all plans. ▪ Proper induction of construction contractors.	Removal of one to six Purple Blown-grass plants	**Low to moderate** given the small number of individuals to be impacted, the number to be retained and the remaining availability of suitable habitat.
Listed flora species	Habitat and vegetation degradation from indirect pathway including introduction or spread of invasive species or pathogens, edge effects, barrier effects, surface hydrological changes, groundwater drawdown,	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Waterway protection documented in a CEMP	None anticipated	**Very low**, given that mitigation and management measures will protect listed flora species from indirect impacts.

Value	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
	deposition of eroded sediments or from contamination caused by accidental spills of hazardous materials.		including avoiding permanent disturbance of banks, channels and nearby vegetation and restoring temporarily disturbed waterway banks and vegetation to at least its pre-construction condition. ▪ Bridges and culverts designed to allow flow beneath the roads along their natural flow paths. ▪ Sediment fencing installed during construction to protect riparian zones if works are to be undertaken within 30 m of waterways. ▪ Access tracks throughout the site will be designed with culverts to divert flow paths beneath the roads. ▪ Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows. ▪ Preparation of and adherence to a CEMP.		

5.6. Implications of the proposed development

5.6.1. Implications under the Guidelines

Assessment pathway

The assessment pathway is determined by the location category and the extent of native vegetation.

Geelong route

The assessment pathway for the development footprint, Geelong transport route and local road upgrades is as follows:

- Location category: Location 3
- Extent of native vegetation: A total of 8.238 hectares of native vegetation (including 8 large trees).

Portland route

The assessment pathway for the development footprint, Portland transport route and local road upgrades is as follows:

- Location category: Location 3
- Extent of native vegetation: A total of 8.423 hectares of native vegetation (including 13 large trees).

Combined routes

The assessment pathway for the development footprint, Combined transport route and local road upgrades is as follows:

- Location category: Location 3
- Extent of native vegetation: A total of 8.533 hectares of native vegetation (including 13 large trees).

Based on these details, the Guidelines stipulate that each proposal is to be assessed under the **Detailed** assessment pathway.

Either proposal **would** trigger a referral to DEECA based on the criteria specified in Section 3.2.1.

Removal of 0.181 hectares of native vegetation and 5 large trees associated with the Portland or combined transport routes occurs within the Southern Grampians Shire local government area. If either of these routes are chosen, a separate application will be made to Southern Grampians Shire council for this portion of the propose native vegetation removal.

Offset requirements

Geelong route

Offsets required to compensate for the proposed removal of native vegetation from the development footprint, Geelong transport route and local road upgrades are provided below.

- 2.8860 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.3494
  - Occur within the Glenelg Hopkins CMA boundary or the Moyne Shire municipal district.
  - Include protection of at least 8 large trees.

Portland route

Offsets required to compensate for the proposed removal of native vegetation from the development footprint, Portland transport route and local road upgrades are provided below.

Moyne Shire LGA

- 2.8830 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.3470
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 8 large trees.

Southern Grampians Shire LGA

- 0.1000 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.4170
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 5 large trees.

Under the Guidelines all offsets must be secured prior to the removal of native vegetation.

Combined routes

Offsets required to compensate for the proposed removal of native vegetation from the development footprint, Combined transport route and local road upgrades are provided below.

Moyne Shire LGA

- 2.9110 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.3490
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 8 large trees.

Southern Grampians Shire LGA

- 0.100 *general habitat units* and must include the following offset attribute requirements:
  - Minimum strategic biodiversity value (SBV) of 0.4170
  - Occur within the Glenelg Hopkins CMA boundary, the Moyne Shire municipal district or Southern Grampians Shire municipal district.
  - Include protection of at least 5 large trees.

Under the Guidelines all offsets must be secured prior to the removal of native vegetation.

Offset statement

The offset requirements for the proposal will be met via purchase of a third-party offset through DEECA's Native Vegetation Credit Register (NVCR). Evidence that the required offset is currently available through the NVCR is provided in Appendix 7.

The FFG Act has no offset requirements, but proportional impacts to habitat for FFG Act listed species are covered through specific offsets under the Guidelines.

5.6.2. Implications under other planning provisions

Clause 12.01 - Biodiversity

The objectives and strategies of Clause 12.01 (outlined in Section 3.3.1) are, in general, achieved by the Guidelines and the *avoid, minimise and offset* obligations detailed within this report (see Section 5.4.2).

Clause 12.03 – Water bodies and wetlands

The objectives and strategies of Clause 12.03 (outlined in Section 3.3.1) are, in general, achieved by the Guidelines and the avoid, minimise and offset obligations as detailed within this report (see Section 5.4.2).

5.6.3. EPBC Act

The EPBC Act protects several threatened species and ecological communities that are considered to be of national conservation significance. Any significant impacts on these species require the approval of the Australian Minister for the Environment.

If there is a possibility of a significant impact on nationally threatened species or communities or listed migratory species, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'controlled action' under the EPBC Act, in which case it cannot be undertaken without the approval of the Minister. This approval depends on a further assessment and approval process (lasting between three and nine months, depending on the level of assessment).

Based on the relevant guidelines, the proposed development is likely to result in a significant impact on EPBC Act listed values presented below:

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain
- Natural Temperate Grassland of the Victorian Volcanic Plain

A Referral under the EPBC Act has been submitted for the project. The project has been determined to be a controlled action (EPBC 2022/09287), assessed under the bilateral agreement.

5.6.4. FFG Act

The Victorian FFG Act lists threatened and protected species and ecological communities (DEECA 2024b, DELWP 2019). Any removal of threatened flora species or communities (or protected flora) listed under the FFG Act from public land requires a Protected Flora Permit under the Act, obtained from DEECA.

The following FFG Act listed flora species will be impacted from the proposed development on public land:

- Purple Blown-grass (FFG Act: Endangered) – one to six individuals proposed to be removed

The following FFG Act value listed as protected is susceptible to impacts from the proposed development on public land:

- 0.743 to 0.818 ha of Western (Basalt) Plains Grasslands community
- 0.0 to 0.007 ha of Western Basalt Plains (River Red-gum) Grassy Woodland community

Presence within removal areas on public land will be estimated and a protected flora permit will be obtained from DEECA to remove the plant taxa comprising the abovementioned listed threatened community, listed threatened flora species or otherwise protected values from public land.

5.6.5. CaLP Act

The *Catchment and Land Protection Act 1994* (CaLP Act) requires that landowners (or a third party to whom responsibilities have been legally transferred) must prevent the growth and spread of regionally controlled weeds.

In accordance with the CaLP Act, the noxious weed species listed below, which were recorded in the project study area, must be controlled.

- African Box-thorn
- Blackberry
- Sweet Briar

Precision control methods that minimise off-target kills (e.g. spot spraying) should be used in environmentally sensitive areas (e.g. within or near native vegetation, waterways, etc.).

6. Groundwater dependent ecosystems

KEY FINDINGS

1. All three types of groundwater dependant ecosystems (GDE) identified in the toolbox (SKM 2011) have the potential to occur within the HWF, including *aquifer and cave ecosystems (Type 1), ecosystems dependent on the surface expression of groundwater (Type 2),* and *ecosystems dependent on subsurface presence of groundwater (Type 3)*.
2. The Surface Water and Groundwater Impact Assessment (Water Technology 2025) recognises the presence of aquifers within HWF. Aquifer sampling indicated the presence of Stygofauna (Bold et al. 2020), suggesting that Type 1 GDEs are likely to be present within the HWF; however, their extent is not known.
3. GDE dependence on groundwater is highly variable, ranging from partially and infrequently to continually and wholly dependent (DPI 2010).
4. There is a moderate to high likelihood that terrestrial and aquatic ecosystems receive groundwater inflows in addition to rainfall, however Water Technology (2025) concluded that effects to these as a result of the project were likely to be very low to low.
5. The temporary on-site quarry is designed to be a 'zero discharge' site with all surface water and groundwater managed within the quarry site using retention basins (Water Technology, 2025).
6. Water Technology (2025) assessed the risk of accidental release of fuels and chemicals stored at the project site impacting GDEs, with preventative measures in place, as low.
7. The Surface Water and Groundwater Impact Assessment determined that the likely effects to GDEs arising from the project is low, with a range of management measures recommended (Water Technology 2025).
8. It is unlikely that the project would detrimentally impact any GDEs within the project site.

6.1. Introduction

This investigation was commissioned to provide information on the likelihood of occurrence of GDEs at the project site in accordance with the GDEs toolbox (SKM 2011).

The potential occurrence of GDEs at the project site is indicated in the Bureau of Meteorology's *Groundwater Dependent Ecosystems Atlas* (BoM 2023) and reported on in the surface water and groundwater impact assessment for the project (Water Technology 2025). The EES scoping requirements include consideration of potential impacts to GDEs arising from the development of the project. This assessment aims to determine the likelihood that GDEs occur within the project site using existing vegetation, habitat and the surface water and groundwater impact assessment of Water Technology (2025) to assess the potential for impacts to them from the proposed project.

Specifically, the scope of the investigation included:

- Review of potential GDEs mapping including those prepared by BOM and the Victorian Government;

Identification of potential sites for GDEs within the project site;

- A desktop assessment of these sites, including:
  - EVC mapping; and
  - Status of the habitats in the dry season.

6.2. Existing information and methods

6.2.1. *Existing information*

Existing information used for this investigation is described below.

- Groundwater Dependent Ecosystems Atlas (BoM 2023)
- Australian groundwater-dependent ecosystems toolbox part 1: assessment framework (SKM 2011)
- Hexham Wind Farm Surface Water and Groundwater Impact Assessment (Water Technology 2025).

6.2.2. *Definitions*

In accordance with the GDEs toolbox (SKM 2011), groundwater is defined as *subsurface water located in the zone of saturation in pores, fractures in rocks and cavities*. Groundwater dependent ecosystems (GDEs) are defined as *ecosystems that require access to groundwater to meet all or some of their water requirements so as to maintain the communities of plants and animals, ecological processes they support, and ecosystem services they provide.*

The toolbox (SKM 2011) further divides GDEs into three types:

- **Aquifer and cave ecosystems (Type 1)** typically include karst aquifer systems, fractured rock, saturated sedimentary environments and the hyporheic zones of rivers, floodplains and coastal environments. The deep subsurface groundwater environment provides relatively stable, lightless environmental conditions with restricted inputs of energy and low productivity which supports a particular suite of subsurface ecosystems.
- **Ecosystems dependent on the surface expression of groundwater (Type 2)** include wetlands, lakes, seeps, springs, river baseflow, coastal areas and estuaries that constitute brackish water and marine ecosystems. In these cases, the groundwater extends above the earth surface, as a visible expression. In these situations, groundwater provides water to support aquatic biodiversity by providing access to habitat (especially when surface runoff is low) and regulation of water chemistry and temperature.
- **Ecosystems dependent on subsurface presence of groundwater (Type 3)** (via the capillary fringe) include terrestrial vegetation that depends on groundwater fully or on a seasonal or episodic basis in order to prevent water stress and generally avoid adverse impacts to their condition. In these cases, and unlike the situation with Type 2 systems, groundwater is not visible from the earth surface. These ecosystems can exist wherever the water table is within the root zone of the plants, either permanently or episodically.

6.3. Methods

The native vegetation and aquatic habitats recorded within the HWF site have been assessed against relevant Stage 1 questions from Table 3-1 of the GDEs toolbox (SKM 2011) to determine the likelihood of occurrence of GDEs. The following questions were relevant to this assessment.

- Does a stream/river continue to flow all year, or a floodplain waterhole remain wet all year in dry periods?
- Does the volume of flow in a stream/river increase downstream in the absence of inflow from a tributary?
- Is groundwater discharged to the surface for significant periods of time each year at critical times during the lifetime of the dominant vegetation type?
- Is groundwater or the capillary fringe above the water table present within the rooting depth of any vegetation?
- Is the level of water in a wetland/swamp maintained during extended dry periods?

An affirmative answer to one or more of these questions indicates that a GDE is potentially present.

6.3.1. Limitations

This groundwater dependent ecosystems assessment has been undertaken on a desktop-only basis. Nature Advisory, and EHP before it, have undertaken several site assessments at HWF of all native vegetation and fauna habitats in the development footprint, some of which are potential GDEs. No field visit has been undertaken to ascertain whether the identified ecosystems on the site were groundwater dependent. The assessments of the likelihood of occurrence of GDEs and of the impacts of the project on them therefore rely on the accuracy of existing information (i.e. ground-truthed mapping of remnant ecosystems) and the findings of Water Technology (2025).

6.4. Existing conditions

6.4.1. Potential GDE mapping

The Groundwater Dependent Ecosystems Atlas (BoM 2023) indicates that several potential aquatic and terrestrial GDEs occur within the project site. Potential aquatic GDEs are focussed along Mustons, Tea-tree and Drysdale Creeks, Black Swamp in the west, and several unnamed wetlands.

Terrestrial GDEs in the GDE Atlas within and near the project site include ten terrestrial vegetation wetland and woodland communities typically in isolated fragments or along major watercourses. These areas have been based on broad-scale EVC modelling. Field investigations of native vegetation present within and near the project site (see Section 5) have been used to accurately describe the presence of potential terrestrial GDEs.

Surface water and groundwater

The surface water and groundwater of the HWF has been described by Water Technology (2025) and is summarised below.

Much of the site is low-lying, with several waterways of varying size intersecting the site. The Hopkins River and Mustons Creek are the largest waterways in the site, with tributaries of Mustons Creek and of the Merri River also flowing through the site. Surface water bodies may be gaining and losing groundwater in different reaches and this changes according to the season. The water table at the site is located within the Newer Volcanic Group basalt aquifer and the Whalers Bluff Formation / Hanson Plain Sand aquifers. Variability in the location of these aquifers and their aquifer properties leads to a complex relationship between surface water and groundwater.

Groundwater flow in the water table aquifer is southwards towards the coast. The range of water table elevations varies from 150 metres AHD north of the project site to below 100 metres AHD at the south-eastern corner of the project site. This follows a regional groundwater gradient from northeast to southwest, out and away from the regions of higher elevation.

Groundwater flow in the water table aquifer is strongly influenced by recharge, which occurs via infiltrating rain during winter and spring. The underlying Whalers Bluff Formation / Hanson Plain Sand aquifer is recharged via indirect rainfall infiltration where it is overlain by basalt aquifers, and via direct rainfall infiltration where the aquifer is expressed at the surface.

Discharge from the Newer Volcanic Group basalt aquifer and the Whalers Bluff Formation / Hanson Plain Sand aquifer occurs through evapotranspiration and groundwater extraction from wells, as well as where groundwater expresses at surface (e.g. springs and freshwater meadows). Local groundwater information provided by landowners indicates that most springs in the area fill during winter and dry up during summer. Groundwater may also discharge into streams (as baseflow) and into unconsolidated alluvium/colluvium deposits (Quaternary Aquifer).

Aquatic habitats

Assessment of aquatic habitats has been undertaken by Nature Advisory with a specific focus on flora and fauna species and communities listed under environmental legislation. These habitats are sporadic in the study area and vary in form from permanent rivers to ephemeral drain lines. Many supported terrestrial and aquatic vegetation.

The major waterways within and near the HWF site, including the Hopkins River and Mustons Creek, hold water year-round. Smaller waterways are ephemeral and if not completely dry, are reduced to small ponds and pools in the dry season. Wetlands occur both associated with watercourses and fed by surface flow. Most wetlands within the site are ephemeral.

Native vegetation

Vegetation on the project site consisted of 12 EVCs: Plains Grassy Woodland (EVC 55_61), Higher Rainfall Plains Grassy Woodland (EVC 55_63), Floodplain Riparian Woodland (EVC 56), Plains Grassy Wetland (EVC 125), *Heavier-soils* Plains Grassland (EVC 132_61), Creekline Tussock Grassland (EVC 654), Creekline Grassy Woodland (EVC 68), Riparian Woodland (EVC 641), Plains Sedgy Wetland (EVC 647), Brackish Wetland (EVC 656), Aquatic Herbland (EVC 653) and Tall Marsh (EVC 821). Eight of these (Plains Grassy Wetland (EVC 125), Plains Sedgy Wetland (EVC 647), Aquatic Herbland (EVC 653), Plains Grassy Woodland (EVC 55_61), Higher-rainfall Plains Grassy Woodland (EVC 55_63), Riparian Woodland (EVC 641), Floodplain Riparian Woodland (EVC 56) and Creekline Grassy Woodland (EVC 68) are identified on the BoM's GDE Atlas (2023) as potential Terrestrial GDEs in the study area.

Assessment of native vegetation against GDEs criteria

Table 3-1 of the GDEs toolbox contains a series of questions that can be used to determine the likelihood of occurrence of GDEs. Native vegetation and habitat recorded within the project site are assessed against relevant questions in Table 14.

6.4.2. Aquifer and cave ecosystems (Type 1)

Figure 2-7 of the toolkit identifies the project site as a Volcano Karst area (SKM 2011); however, the Surface Water and Groundwater assessment (Water Technology 2025) does not identify karst systems within the HWF site, nor have any cave systems been identified on-site during assessments undertaken by Nature Advisory. Therefore, it is considered unlikely that HWF supports cave GDEs.

The Surface Water and Groundwater assessment (Water Technology 2025) identifies the Newer Volcanic Group basalt aquifer and the Whalers Bluff Formation / Hanson Plain Sand aquifers within the project site, as well as unconsolidated alluvium (Quaternary Aquifer) along watercourses. DPI (2010) identifies that aquifers can support a diverse array of ecosystems, usually dominated by microbial and invertebrate species.

Stygofauna are aquatic animals that inhabit groundwater for their entire life cycle (Bold et al. 2020). In Australia, stygofauna occur in alluvial, karstic, calcrete and certain fractured rock aquifers (Bold et al. 2020). A regional baseline survey of stygofauna was undertaken in the Otway in 2020, with samples taken from 80 groundwater wells. The survey identified stygofauna taxa at six groundwater wells (Bold et al. 2020). One of the wells, 110108 is located on the western project site boundary, in the Newer Volcanic Group Basalt (Water Technology 2025). Bold et al (2020) collected two Stygofauna taxa from this well. Re-sampling over six months later did not collect any Stygofauna, leading Bold et al. (2020) to suggest that populations are likely to vary seasonally. It is therefore considered likely that aquifer GDEs occur within the project site, but that populations exhibit seasonal variation. Furthermore, the extent of Type 1 GDEs within the project site is not known.

6.4.3. Ecosystems dependent on the surface expression of groundwater (Type 2)

Nine vegetation types recorded within the project site are considered potentially to be Type 2 GDEs. These are:

- Plains Grassy Wetland (EVC 125);
- Creekline Tussock Grassland (EVC 654);
- Plains Sedgy Wetland (EVC 647);
- Brackish Wetland (EVC 656);
- Aquatic Herbland (EVC 653);
- Tall Marsh (EVC 821);
- Riparian Woodland (EVC 641);
- Floodplain Riparian Woodland (EVC 56); and
- Creekline Grassy Woodland (EVC 68).

In addition, Type 2 GDEs can include aquatic ecosystems such as in rivers and creeks with groundwater inflow that do not meet the definition of a patch of native vegetation.

Riparian Woodland and Creekline Tussock Grassland occur adjacent to Mustons Creek. Floodplain Riparian Woodland occurs adjacent to the Hopkins River. Unnamed tributaries support Riparian Woodland, Creekline Grassy Woodland and Aquatic Herbland. The water level of all watercourses at HWF fluctuates seasonally according to rainfall. This suggests that although these vegetation types may interact with groundwater, it is not the primary water source for these vegetation types and they are supported by seasonal high flows from watercourses and local catchment runoff.

Tall Marsh was recorded in one farm dam and is therefore likely to be supported by surface flow.

Most Plains Grassy Wetland, Plains Sedgy Wetland and Brackish Wetland at HWF occur in wet depressions away from watercourses. These have been found to be ephemeral, with water levels fluctuating seasonally according to rainfall. This suggests that although these vegetation types may interact with groundwater, it is unlikely to be their primary water source.

6.4.4. Ecosystems dependent on subsurface presence of groundwater (Type 3)

Three vegetation types recorded within the project site are considered to potentially be Type 3 GDEs. These are:

- Plains Grassy Woodland (EVC 55_61);
- Higher-rainfall Plains Grassy Woodland (EVC 55_63); and
- Heavier-soils Plains Grassland (EVC 132_61).

The degree of interaction (if any) of these vegetation types with groundwater cannot be determined from the currently available data. Given the relatively high annual rainfall of the site (BoM 2018 a,b,c), it is considered likely that the primary source of water for terrestrial vegetation types is rainfall. Terrestrial vegetation types may benefit from access to groundwater over summer and during drought, but current evidence makes this unlikely. Surface water modelling for the project suggests that these systems are strongly influenced by surface water with inundation only occurring during winter months (Water Technology, 2025).

6.4.5. Conclusion

All three types of GDEs identified in the toolbox (SKM 2011) have the potential to occur within the project site, and sufficient evidence does not exist to comprehensively establish their presence (or otherwise); however, based on the available evidence, it is considered likely that:

- Type 1 GDEs are likely to be present as aquifer ecosystems, but that populations likely vary seasonally;
- Type 2 GDEs have the potential to occur in wetland and riparian vegetation types, but that surface flow is likely to be more critical for most of these vegetation types across the study area; and
- Type 3 GDEs have the potential to occur in terrestrial vegetation types, but that surface flow is likely to be more critical for most of these vegetation types across the study area.

It is recognised that wetland and terrestrial vegetation types may benefit from access to groundwater inflow systems over summer and during drought. Colvin *et al.* (2003) note that demonstration of groundwater use does not necessarily equate to groundwater dependence, while DPI (2010) note that defining the degree of dependency on the subsurface presence of groundwater is difficult, given that a species may use groundwater once every decade to survive or once each year. Furthermore, GDE dependence on groundwater is highly variable, ranging from partially and infrequently to continually and wholly dependent (DPI 2010).

By dependence it is meant that the ecosystem would be significantly altered and even irreversibly degraded if groundwater availability was altered beyond its 'normal' range of fluctuation (Colvin *et al.* 2003). Given the relatively high rainfall and subsequent response of watercourses and waterbodies within the project site, native vegetation and associated wetland ecosystems are unlikely to be highly dependent on groundwater.

All three GDE types identified in the toolbox (SKM 2011) have the potential to occur within the project site, but sufficient evidence does not exist to comprehensively establish their presence (or otherwise). Confirmation of their presence (or otherwise) would likely require several years of monitoring. Therefore, it is considered most practical to proceed with consideration of potential impacts and implications on the conservative assumption that GDEs occur within the project site, despite it being more likely that remnant ecosystems on the site are not dependent on groundwater. Given the uncertainties around the occurrence of GDEs within the study area, the precautionary approach has been applied, and their presence assumed for the impact assessment (Section 6.5).

Table 14: Assessment of native vegetation at HWF against relevant GDEs likelihood of occurrence questions (from SKM 2011)

EVC	Ecosystems reliant on surface expressions of groundwater			Ecosystems reliant on the subsurface presence of groundwater		
	Does a stream/river continue to flow all year, or a floodplain waterhole remain wet all year in dry periods?	Does the volume of flow in a stream/river increase downstream in the absence of inflow from a tributary?	Is the level of water in a wetland maintained during extended dry periods?	Is groundwater discharged to the surface for significant periods of time each year at critical times during the lifetime of the dominant vegetation type?	Is groundwater or the capillary fringe above the water table present within the rooting depth of any vegetation?	Is the level of water in a wetland/swamp maintained during extended dry periods?
Floodplain Riparian Woodland (EVC 56)	Yes, within Hopkins River, although flow fluctuates seasonally with rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.
Riparian Woodland (EVC 641)	Yes, within Mustons Creek and larger tributaries, although flow fluctuates seasonally with rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.
Creekline Tussock Grassland (EVC 654)	Yes, within Mustons Creek, although flow fluctuates seasonally with rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.

EVC	Ecosystems reliant on surface expressions of groundwater			Ecosystems reliant on the subsurface presence of groundwater		
	Does a stream/river continue to flow all year, or a floodplain waterhole remain wet all year in dry periods?	Does the volume of flow in a stream/river increase downstream in the absence of inflow from a tributary?	Is the level of water in a wetland maintained during extended dry periods?	Is groundwater discharged to the surface for significant periods of time each year at critical times during the lifetime of the dominant vegetation type?	Is groundwater or the capillary fringe above the water table present within the rooting depth of any vegetation?	Is the level of water in a wetland/swamp maintained during extended dry periods?
Creekline Grassy Woodland (EVC 68)	Larger watercourses are likely to hold water year-round, although flow fluctuates seasonally. Smaller watercourses are ephemeral.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Relies on flooding for water and water level fluctuates seasonally.
Aquatic Herbland (EVC 653)	Larger watercourses are likely to hold water year-round, although flow fluctuates seasonally. Smaller watercourses are ephemeral.	Unknown	Water level fluctuates seasonally.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	Water level fluctuates seasonally.
Plains Grassy Wetland (EVC 125)	Most of these wetlands do not occur on streams or rivers. For those that occur on streams or rivers, the flow fluctuates seasonally with rainfall.	Most of these wetlands do not occur on streams or rivers. For those that occur on streams or rivers, it is unknown.	No. Wetlands are ephemeral and dry out over summer.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Wetlands are ephemeral and dry out over summer.

EVC	Ecosystems reliant on surface expressions of groundwater			Ecosystems reliant on the subsurface presence of groundwater		
	Does a stream/river continue to flow all year, or a floodplain waterhole remain wet all year in dry periods?	Does the volume of flow in a stream/river increase downstream in the absence of inflow from a tributary?	Is the level of water in a wetland maintained during extended dry periods?	Is groundwater discharged to the surface for significant periods of time each year at critical times during the lifetime of the dominant vegetation type?	Is groundwater or the capillary fringe above the water table present within the rooting depth of any vegetation?	Is the level of water in a wetland/swamp maintained during extended dry periods?
Plains Sedgy Wetland (EVC 647)	Most of these wetlands do not occur on streams or rivers. For those that occur on streams or rivers, the flow fluctuates seasonally with rainfall.	Most of these wetlands do not occur on streams or rivers. For those that occur on streams or rivers, it is unknown.	No. Wetlands are ephemeral and dry out over summer.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Wetlands are ephemeral and dry out over summer.
Brackish Wetland (EVC 656)	This wetland type occurred away from streams or rivers.	This wetland type occurred away from streams or rivers.	No. Wetlands are ephemeral and dry out over summer.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	No. Wetlands are ephemeral and dry out over summer.
Tall Marsh (EVC 821)	This wetland type occurred on a farm dam, away from streams or rivers.	This wetland type occurred on a farm dam, away from streams or rivers.	Yes, as occurs in a farm dam, but appears to reflect rainfall.	Unknown, although the water level in this vegetation type appears to reflect rainfall.	Unknown	Yes, as occurs in a farm dam, but appears to reflect rainfall.
Plains Grassy Woodland (EVC 55_61)	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	Unknown	N/A Vegetation type does not occur within wetland

EVC	Ecosystems reliant on surface expressions of groundwater			Ecosystems reliant on the subsurface presence of groundwater		
	Does a stream/river continue to flow all year, or a floodplain waterhole remain wet all year in dry periods?	Does the volume of flow in a stream/river increase downstream in the absence of inflow from a tributary?	Is the level of water in a wetland maintained during extended dry periods?	Is groundwater discharged to the surface for significant periods of time each year at critical times during the lifetime of the dominant vegetation type?	Is groundwater or the capillary fringe above the water table present within the rooting depth of any vegetation?	Is the level of water in a wetland/swamp maintained during extended dry periods?
Higher Rainfall Plains Grassy Woodland (EVC 55_63)	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	Unknown	N/A Vegetation type does not occur within wetland
Heavier-soils Plains Grassland (EVC 132_61)	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	N/A Vegetation type does not occur on streams or rivers	Unknown	N/A Vegetation type does not occur within wetland

6.5. Impact assessment

6.5.1. Impact pathways

Impact pathways to GDEs include:

- Dewatering of groundwater during construction activities and lowering the water table resulting in groundwater drawdown that affects water availability;
- Disruption of groundwater recharge and flow, such as from the introduction of less permeable surfaces and physical barriers in the form of wind turbine foundations and tracks;
- Disruption of groundwater discharge to waterways or waterbodies by intersecting groundwater discharge water features (e.g. natural springs) or from a reduction in groundwater availability (e.g. due to dewatering); and
- Groundwater contamination, including from accidental spills.

6.5.2. Mitigation measures

Avoidance of impacts by design has been central to the development of the project. The approach has been to first avoid potential impacts if feasible and practical, then to minimise the severity of the impact over space and time, followed by the application of targeted mitigation and management measures.

Impacts to potential GDEs have been avoided through the following measures:

- A 100-metre buffer was placed around all mapped wetlands to exclude WTGs. This area was selected as a means of avoiding:
  - Physical disturbance to wetlands and their fringes; and
  - Limit surface water runoff, and entrained sediment loads reaching these ephemeral wetlands from construction works zones.
- Watercourses including Mustons Creek, Drysdale Creek and smaller drainages, were buffered by 100 metres to prevent:
  - Unnecessary disturbance to the watercourses or their banks; and
  - Limit potential downstream effects from construction activities such as sedimentation of water.
- Ephemeral drainage lines were buffered by 30 metres to:
  - Limit physical disturbance to the drainage line; and
  - Limit surface water runoff and entrained sediment loads reaching these ephemeral drainages from construction work zones.
- Watercourse crossings have been minimised through the siting of the accessways. The proposed crossings are necessary to provide access to infrastructure and will prevent vehicles from being diverted onto public roads. Other key design measures for watercourse crossings include:
  - Permanent surface structures designed to maintain existing overland flow paths and not cause increased upstream flood levels; and
  - Waterway crossings will be designed to accommodate a 1 in 10 ARI design criteria; and
- Re-alignment and micro-siting of infrastructure has avoided most of the native vegetation within the project site.

A range of management controls are proposed by Water Technology (2025) to manage potential impacts to surface water systems, and the potential effects of groundwater drawdown, impacts to groundwater recharge, flow and discharge, and accidental spills of hazardous materials.

6.5.3. Residual effects

Groundwater extraction would be limited to locations where a perched or very shallow aquifer is encountered during construction. Excavation during construction would typically be to depths of less than 3.5 m, except at the quarry site. If shallow groundwater is intercepted during construction, localised groundwater from the uppermost zones may seep into the excavated area. Under this scenario, groundwater abstraction via pumping (termed 'dewatering' of the excavation) may be required to create a safe work area. Dewatering may temporarily lower the water table until the concrete foundations are laid; however, as the construction period for turbine foundations is short (i.e., up to two weeks), impacts are unlikely materially to affect GDEs.

Potential impacts of physical disturbance to native vegetation communities (which may also be defined as GDEs) is described in Section 5.4 and 5.5.

The hydrogeological and hydrological impact assessment (Water Technology 2025) includes an assessment of impacts to potential GDEs in the three different aquifers that may occur within the project site. The assessment on GDEs was undertaken using different impact pathways and a residual impact significance was concluded considering changes in drawdown and extent of groundwater. Water Technology (2025) concluded that the residual impact significance as a result of the project were likely to be very low to low.

The temporary on-site quarry is designed to be a 'zero discharge' site with all surface water and groundwater managed within the quarry site using retention basins (Water Technology, 2025).

During turbine foundation construction, construction of infrastructure foundations and foundation excavations drawdown will depend on the time of year construction activities take place and is expected to be brief only occurring during winter and spring. Impacts to GDEs from these activities are considered to be low to very low.

With best practice preventative measures in place, the risk of accidentally released, fuels and chemicals stored within the project site impacting GDEs was assessed by Water Technology (2025) to be low.

To minimise the potential for impacts on GDEs, mitigation measures have been incorporated into the design of the project with buffers from aquatic and terrestrial systems. The quarry has been located away from sensitive receptors including groundwater bores. Management measures have also been proposed for the construction, operation and decommission phases of the project to further reduce impacts. Given these findings above and the implementation of mitigation measures proposed by Water Technology 2025, the residual impacts to GDEs are likely to be low.

7. Fauna overview

KEY FINDINGS

1. EHP completed fauna assessments between 2011 and 2012, and Nature Advisory completed targeted surveys between 2018 and 2025, focusing on species likely or with potential to occur based on desktop review of recent information.
2. The study site is highly modified and dominated by grazing and cropping land.
3. EHP (2014) described seven fauna habitats in the study area; modified grassland, woodland and scattered trees, planted vegetation, rivers, creeks and drainage lines, swamps and marshes, and artificial waterbodies. These found to be of low, low-moderate or moderate in habitat quality.
4. A review of existing information and online databases (EHP 2014, DEECA 2025b, DCCEEW 2025) was carried out of the search region (an area that extends 10km from the wind farm boundary).
5. Targeted surveys have been undertaken within the Project Study Area (but not Transport Routes) to determine the occurrence and current extent of listed species at the wind farm, including BUS, migratory bird surveys, Brolga, bat surveys, Golden Sun Moth surveys and Growling Grass Frog habitat assessments. The methods and results of these surveys are described in later sections of this report.
6. 13 fauna species listed under the EPBC Act, and an additional 12 species listed (only) under the FFG Act are known to occur, likely to occur or have the potential to occur in the search region. This excludes three bat species and one bird species (Brolga), which are covered in separate reports.
7. Locations along the Geelong and Portland Transport Routes proposed for road upgrades were reviewed through existing information and online databases (DEECA 2025b, eBird 2025) for the likelihood of occurrence of species listed under the EPBC Act or FFG Act.
8. Listed or species of interest fauna considered susceptible to residual impacts include:
    - Australasian Shoveler (FFG Act: Vulnerable)
    - Australian Gull-billed Tern (FFG Act: Endangered)
    - Black Falcon (FFG Act: Critically Endangered)
    - Blue-billed Duck (FFG Act: Vulnerable)
    - Blue-winged Parrot (EPBC Act: Vulnerable)
    - Eastern Great Egret (FFG Act: Vulnerable)
    - Freckled Duck (FFG Act: Endangered)
    - Gang Gang Cockatoo (EPBC Act: Endangered)
    - Little Eagle (FFG Act: Vulnerable)
    - Musk Duck (FFG Act: Vulnerable)
    - Spotted Harrier (Species of interest in Lumsden et al. (2019)
    - Migratory birds: White-throated Needletail (EPBC Act: Vulnerable, Migratory) and Fork-tailed Swift (EPBC Act: Migratory)
    - Migratory wetland species: Common Greenshank (EPBC Act: Migratory), Common Sandpiper (EPBC Act: Migratory), Curlew Sandpiper (EPBC Act: Critically Endangered, Migratory), Double-banded Plover (EPBC Act: Migratory), Latham's Snipe (EPBC Act: Migratory), Marsh Sandpiper (EPBC Act: Migratory), Red-necked Stint (EPBC Act: Migratory), Sharp-tailed Sandpiper (EPBC Act: Migratory).
    - Growling Grass Frog (EPBC Act: Vulnerable, FFG Act: Vulnerable)
    - Striped Legless Lizard (EPBC Act: Vulnerable, FFG Act: Endangered)
    - Tussock Skink (FFG Act: Endangered)
    - Fat-tailed Dunnart (FFG Act: Vulnerable)

- Hairy Burrowing Crayfish (FFG Act: Vulnerable)

7.1. Introduction

A combination of reviewing existing information and field assessments was undertaken to assess the potential impacts the proposed development may have on fauna species listed under the Commonwealth EPBC Act and Victorian FFG Act.

7.2. Existing information

Existing information used for this investigation is described below.

7.2.1. Existing reporting and documentation

The existing documentation below, relating to the study area was reviewed.

- Hexham Wind Farm – Detailed Flora and Fauna Investigations. Prepared for Hexham Wind Farm Pty Ltd (EHP 2014).
- Best Practice Guidelines for Wind Energy Developments in Australia (CEC 2018).
- Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017).
- Biodiversity Precinct Planning Kit (DSE 2010).
- EPBC Act survey guidelines for listed threatened fauna and various significant impact guidelines for listed species under the EPBC Act (DSEWPAC 2011).

7.2.2. Listed matters

Existing fauna species records and information regarding the potential occurrence of listed matters were obtained for the 'search region', defined here as the area within 10 km of the Project study area boundary and the boundaries of the Transport Route swept path locations.

A list of the fauna species recorded in the search region was obtained from the *Victorian Biodiversity Atlas* (DEECA 2025b).

A list of bird species recorded form the search region was obtained from *eBird* (eBird 2025, a citizen science database managed by the Cornell Lab of Ornithology. This database provides the most up-to-date bird species records.

BatMap (Australasian Bat Society 2025) was utilised to determine whether listed bat species may potentially occur in the search region. BatMap is a project developed by the Australasian Bat Society to enable Australia's bat experts to develop geographic distribution maps for Australian bat species. Given that survey effort between regions has been variable (with little to no survey effort in some areas), Nature Advisory uses a 20-km search radius with BatMap to obtain a conservative estimate of potential bat species.

The online EPBC Act-associated *Protected Matters Search Tool* (PMST; DCCEEW 2025) was consulted to determine whether nationally listed species or communities may potentially occur in the search region. This is based on a habitat modelling process.

Records from previous surveys conducted by EHP (2014) were reviewed. This report follows the VBA fauna taxonomy and nomenclature, unless stated otherwise.

7.3. Field assessment methods

Several fauna assessments have been undertaken in the study area. Early surveys were undertaken by EHP from 2011 to 2012 then by Nature Advisory from 2018 onwards. Fauna assessments undertaken at the HWF site are listed below with a summary of the methods used. More detail is provided in subsequent sections of this report.

7.3.1. Bird utilisation survey (BUS)

BUS were undertaken across the study area over several seasons from 2011 to 2025 using a fixed-point bird count method to characterise the use of the study area by the region's avifauna. Habitat assessments and roaming surveys were also undertaken across the study area. Full details of the BUS methods and results are provided in Section 8 of this report.

7.3.2. Migratory bird survey

Wetlands in the study area and surrounding areas were visited during spring and summer, and wetlands were assessed for suitable foraging habitat for migratory shorebirds in accordance with the EPBC Act survey guidelines for migratory species (DoE 2015). Surveys were undertaken between 2018 – 2019. Full details of the methods and results of these surveys are presented in Section 9.1 of this report.

White-throated Needletail surveys were conducted in 2022 and 2023 to determine the presence or absence of this species within the study area and surrounding area. Full details of the methods and results of these surveys are presented in Section 9.2 of this report.

7.3.3. Eagle nest survey

A targeted survey for Wedge-tailed Eagle nests was conducted in 2023 in the project study area, while additional nests located incidentally during other surveys have also been considered. Full details of the eagle nest search are provided in Section 10 of this report.

7.3.4. Brolga surveys

Fieldwork was undertaken by Nature Advisory from 2018 to 2024 and earlier surveys by Ecology and Heritage Partners from 2010 to 2013. A level three assessment as per the Interim Brolga Guidelines has been undertaken due to Brolga breeding within the wind farm boundary and outside the northern and eastern boundaries.

Full details are provided in the separate Brolga Assessment Report (Nature Advisory 2025b; EES Appendix C).

7.3.5. Bat surveys

Bat surveys were undertaken using ultrasonic bat detectors deployed remotely to record the echolocation calls of free-ranging bats that passed by them. Surveys were undertaken across the study area and immediately adjacent areas in a range of habitat types representative of the study area. The aim was to determine the location and levels of activity of threatened bat species, such as the Southern Bent-wing Bat, listed as Critically Endangered under the EPBC Act and FFG Act and the Yellow-bellied Sheath-tail Bat, listed as Vulnerable in Victoria under the FFG Act. Surveys were undertaken during the periods listed below.

- 21 October - 23 November 2010
- 10 February – 31 March 2011
- 25 October – 18 December 2018
- 5 February – 25 April 2019
- 18 February 2020 – 1 May 2020
- 1 March – 2 May 2023.

Detectors were deployed across the HWF site to determine the spatial distribution of bats utilising the study area and specifically to detect movements of Southern Bent-wing Bat across the site. The surveys were intended to provide data on the composition of the general microbat community within the study area as well as resolving the status and distribution of the Southern Bent-wing Bat

and Yellow-bellied Sheath-tail Bat on and near the site. The survey effort in 2019 was developed in consultation with DELWP Environment (now DEECA) and implemented by the proponent. A total survey effort of 4,619 detector nights was undertaken seasonally in six out of 13 years; at the time, this represented a significantly greater survey effort than had been required for impact assessment at any other proposed wind farm site in Victoria.

Full details are provided in the separate Bat Assessment Report (Nature Advisory 2025a; EES Appendix D1).

7.3.6. Grey-headed Flying-fox surveys

Targeted Grey-headed Flying-fox surveys were undertaken during the following dates:

- 14 - 16 February 2022
- 15 - 16 March 2022
- 22 March 2022
- 1 March 2023
- 7 - 8 March 2023
- 16 - 17 March 2023
- 7 March - 30 April 2023 (passive acoustic monitoring).

Full details are provided in the separate Bat Assessment Report (Nature Advisory 2025a).

7.3.7. Growling Grass Frog habitat

A survey to map suitable habitat for the Growling Grass Frog was undertaken in 2011 (EHP, 2014) and 2018 (NA) across the study areas, checking all wetlands and waterways. Habitat mapping was used to inform the layout of the wind farm to ensure suitable habitats were avoided wherever possible.

Full details of this work are presented in Section 11 of this report.

7.3.8. Other fauna studies

Fish survey (EHP)

Native freshwater fish surveys were undertaken using fyke nets, dip netting, and collapsible bait traps (EHP 2014). No electrofishing was used due to high water salinity at all survey sites. The aquatic survey was undertaken during the following dates.

- 21 – 24 November 2011.

Golden Sun Moth habitat surveys (EHP)

Golden Sun Moth targeted surveys were undertaken during the following dates (EHP 2014).

- 16 and 19 December 2011
- 6 January 2012.

Striped Legless Lizard and Fat-tailed Dunnart habitat modelling (EHP and NA)

In 2011, the then Department of Environment and Primary Industries (DEPI) provided advice to EHP that due to the high likelihood of occurrence of both species in remnant grassy EVCs, that surveys would not be required if presence was assumed in suitable habitat and mitigations were in place during construction (EHP 2014). Plains Grassland and Plains Grassy Woodland EVCs were mapped and ground-truthed. Patch size and connectivity were considered when deeming areas as potential habitat for both species, which have very similar requirements. This methodology was considered a reliable means of representing potential suitable habitat for the Striped Legless

Lizard and fat-tailed Dunnart, and has been used in this assessment using up to date native vegetation information.

7.3.9. Limitations of fauna surveys

Nature Advisory is aware that, at the time of this assessment, some studies (Fish, GSM, SSL, FTD) date back to 2011-2012, or are over 5 years old.

Aquatic surveys carried out in 2011-2012 are considered relevant to inform this assessment as waterbodies and waterways have not experienced major changes in the region. 2011 was a slightly above average rainfall year in Western Victoria, and 2012 was a slightly below average rainfall year, making them representative samples of regional climate scenarios. The project has taken a precautionary approach with regard to wetlands and waterway avoidance and mitigation as outlined in Section 12.1. In addition, in October 2025, a senior ecologist carrying out targeted flora surveys noted several freshwater crayfish burrows within habitat zone XAH. A shed exoskeleton was also identified, possibly belonging to Hairy Burrowing Crayfish, and justifying the use of a precautionary approach. Therefore, the age of early aquatic surveys is not considered a major limitation to the assessment of impacts to aquatic values.

The extent of native grassland vegetation can change within a decade due to human/livestock disturbance, fire frequency/intensity, weed invasion, or their management regimes. To address the possibility of changes in potential habitat extent for GSM, SLL, and FTD, we have taken the same broad approach used by EHP but updated with more recent native vegetation assessments carried out in 2025. A precautionary approach was taken when assessing impacts, where we have assumed presence in all areas of grassland EVCs with adequate size and connectivity. In October 2025, a senior ecologist familiar with the habitat requirements of these species, ground-truthed these grassland habitats while carrying out targeted flora surveys in the same EVC patches, and confirmed that they were suitable for GSM, SLL and FTD. Therefore, the age of the original surveys carried out by EHP, and the precautionary approach taken is not considered a major limitation to this assessment.

Growling Grass Frog surveys undertaken in 2011 and 2018 are considered still relevant to date as the waterways have not experienced major changes in the region since these surveys. As above, 2011 was a slightly above average rainfall year in W Victoria, and 2018 was below average in the region (Australian Bureau of Meteorology 2025). Where wetlands and waterways suitable for this species could not be avoided, we have taken a precautionary approach by assuming presence when assessing potential impacts to GGF. Therefore, the age of GGF surveys is not considered a major limitation to this assessment.

Potential threatened fauna habitats in the transport route were not formally surveyed in the swept path locations. The same approach was followed as per GSM, SLL and FTD in the study area; native vegetation patches mapped by NA botanists were assessed and a precautionary approach was taken assuming presence in all areas that qualified as potential habitat (grassland EVCs for terrestrial species, and waterbodies and buffer areas for aquatic species). In October 2025, an ecologist ground-truthed proposed impacted locations along the transport route and confirmed that there was potential for these species to occur. Therefore, the precautionary approach taken is considered appropriate, and not a major limitation to the assessment.

7.4. Results

7.4.1. Review of existing information

The initial review of existing information, including VBA records and EPBC Protected Matters Search Tool indicated that within the search region there were records of, or there occurred potential suitable habitat for 21 fauna species listed under the EPBC Act and/or FFG Act. The list under consideration also excluded FFG Act-listed species that were not recorded in the search region

since January 1980. The likelihood of occurrence of these species in the project study area was assessed and the results are presented in Table 15 and updated with confirmed sightings from surveys, including targeted fauna surveys and bird and bat utilisation surveys.

This analysis of potential occurrence of listed fauna species excludes:

- Marine fauna given that the project study area is inland.
- Migratory oceanic bird species (such as albatrosses and petrels) and migratory shorebirds given that the project study area is inland.

Species considered 'likely to occur' are those that have a very high chance of being in the project study area given the existence of numerous records in the search region and suitable habitat in the project study area. Using the precautionary approach, species considered to have the 'potential to occur' are those where suitable habitats exists, but recent records are scarce.

7.4.2. Fauna species in the Hexham Wind Farm Project area

Desktop assessments, information from previous field assessments (EHP 2014), and surveys conducted by Nature Advisory, provide information on listed species that are known to occur, likely to occur, or have potential to occur (Table 15).

Note: Three bat species, and one bird species (Brolga) are not considered in this section.

This analysis indicates that 13 fauna species listed under the EPBC Act are known to occur, likely to occur or have the potential to occur in the search region, comprising:

- 10 bird species listed as migratory, of which one is also critically endangered, and three are vulnerable;
- One vulnerable bird species;
- One reptile; and
- One frog.

An additional 12 species listed (only) under the FFG Act are known to occur, are likely to occur or have potential to occur in the search region, comprising:

- Nine bird species;
- One mammal species;
- One reptile species; and
- One invertebrate species.

One bird species listed as species of interest by Lumsden et al (2019) was recorded during Brolga surveys.

One bird species of concern for this particular project; Wedge-tailed Eagle, is known to breed in the project area in a number of locations.

Table 15: Listed fauna species from the search region and likelihood of occurrence in the project study area

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
Birds[4]								
Australasian Bittern	*Botaurus poiciloptilus*	EN		CR	Terrestrial wetlands, including a range of wetland types but prefers permanent water bodies with tall dense vegetation, particularly those dominated by sedges, rush, reeds or cutting grass (Marchant & Higgins 1990).	None	N/A	Some habitat remains in ephemeral and permanent wetlands, however species has not been recorded in years of intensive wetland monitoring and BUS, and records are lacking in the search region; **unlikely to occur**
Australasian Shoveler	*Spatula rhynchotis*			VU	Large and deep permanent bodies of water and aquatic flora abundant. Also occurs on billabongs, watercourses and flood waters on alluvial plains, freshwater meadows, shallow swamps, reed swamps, wooded lakes, sewage farms and farm dams (Marchant and Higgins 1990).	15	28/11/2011	Recorded in study area during surveys; **known to occur**
Australian Bustard	*Ardeotis australis*			CR	Inhabits mainly grasslands, low shrublands and lightly timbered open woodlands (Marchant & Higgins 1993).	1	23/06/1876	Regionally extinct; **unlikely to occur**
Australian Gull-billed Tern	*Gelochelidon macrotarsa*			EN	Shallow freshwater and saline wetlands; intertidal mudflats, also in sheltered inshore marine waters where they roost on sandbars and beaches (Higgins & Davies 1996).	No VBA records	N/A	Some records in vicinity of Mortlake. Individuals may visit wetlands in study area on occasion; **potential to occur.**
Australian Painted-snipe	*Rostratula australis*	EN		CR	Generally inhabits shallow terrestrial freshwater wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). Sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber (DoEE 2019).	None	N/A	Most suitable habitat present in the study area has been drained; **unlikely to occur**
Barking Owl	*Ninox connivens*			CR	Eucalyptus dominated forests and woodlands, commonly near water-bodies, such as streams and rivers, and requires hollow trees for nesting and trees with dense foliage for roosting (Higgins 1999).	None	N/A	It is unlikely to regularly occur in the search region; **unlikely to occur**
Black Falcon	*Falco subniger*			CR	Woodlands, open country and terrestrial wetlands; in arid and semi-arid zones; mainly over open plains and undulating land with large tracts of low vegetation. It is more commonly found in north-western Victoria and is only occasionally found in southern Victoria. It is a highly mobile species, moving in response to food availability and seasonal conditions. (Marchant and Higgins 1993).	2	28/11/2011	Recorded during EHP (2014) surveys; **known to occur**
Blue-billed Duck	*Oxyura australis*			VU	Terrestrial wetlands and prefers deep permanent, well vegetated water bodies (Marchant & Higgins 1990).	3	24/01/2020	Recorded in study area during BL&A surveys; **known to occur**
Blue-winged Parrot	*Neophema chrysostoma*	VU			Occupies coastal, subcoastal and inland habitats ranging into semi-arid zones. Throughout much of range inhabits grasslands and grassy woodlands and forest (Higgins 1999).	None	N/A	Recorded by NA incidentally during BUS surveys in 2024-2025 in flocks, singles, and pairs; **known to occur.**
Brown Treecreeper	*Climacteris picumnus*	VU			Woodlands dominated by eucalypts, especially Stringybarks or other rough-barked eucalypts usually with open grassy understorey (Higgins et al. 2001)	None	N/A	Outside its natural distribution range. This species is sedentary

[4] Excludes Brolga, refer to the Brolga Assessment Report.

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
								and very vocal and easily detected if in the study area; **unlikely to occur**
Common Greenshank	*Tringa nebularia*		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	EN	Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Higgins & Davies 1996).	6	2/10/2018	Recorded in 2010 (VBA) in study area; **likely to occur**
Common Sandpiper	*Actitis hypoleucos*		M (Bonn A2H, JAMBA, CAMBA)	VU	Inhabits a wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands. In Vic. Mostly found Westernport and Port Phillip Bay (Higgins & Davies 1996).	None	N/A	One individual recorded incidentally during bat surveys by NA in permanent dam in 2019; **known to occur.**
Curlew Sandpiper	*Calidris ferruginea*	CR	M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	CR	Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Higgins & Davies 1996).	2	5/02/1988	Suitable habitat in wetlands; **potential to occur**
Diamond Firetail	*Stagonopleura guttata*	VU		VU	Commonly found in box-ironbark forests and woodlands and also occurs along watercourses and in farmland areas. Widespread but scattered. Forages on a wide range of seeds, which in some cases a large portion can be derived from weed species (Read 1994). Populations have declined in Victoria since the 1950s (Emison et al. 1987; Tzaros 2005).	None	N/A	Outside its natural distribution range. Very limited habitat in the study area; **unlikely to occur**.
Double-banded Plover	*Charadrius bicinctus*		M (Bonn A2H)		Inhabits wide range of coastal or inland wetlands with varying levels of salinity; mainly muddy margins or rocky shores of wetlands (Marchant & Higgins 1993).	2	2/10/2018	Recorded incidentally during BL&A surveys; **known to occur**
Eastern Curlew	*Numenius madagascariensis*	CR	M (Bonn A1, ROKAMBA, JAMBA, CAMBA)	CR	Inhabits sheltered coasts, especially estuaries, embayment, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats, often with beds of sea grass (Higgins & Davies 1996).	None	N/A	Unsuitable habitat; **unlikely to occur**
Eastern Great Egret	*Ardea alba modesta*			VU	Occurs in a variety of wetlands including: permanent water bodies on flood plains; shallows of deep permanent lakes, either open or vegetated with shrubs or trees; semi-permanent swamps with tall emergent vegetation (e.g. bulrush) and herb dominated seasonal swamps with abundant aquatic flora (Marchant & Higgins 1990).	None	N/A	Recorded during surveys; **known to occur**
Fork-tailed Swift	*Apus pacificus*		M (CAMBA, ROKAMBA, JAMBA)		The species can occur in wet sclerophyll forest but mainly prefers open forest or plains. It is almost exclusively aerial and feeds up to hundreds on metres above the ground, but can feed among open forest canopy. The species breeds internationally and seldom roosts in trees (Higgins et al. 2006).	None	N/A	Potential to fly over site; **potential to occur**
Freckled Duck[5]	*Stictonetta naevosa*			EN	Terrestrial wetlands; prefer fresh, densely vegetated waters, particularly floodwater swamps and creeks vegetated with lignum or cane grass. During dry seasons or droughts, move off ephemeral breeding swamps and occupy large permanent waters (Marchant & Higgins 1990).	5	8/5/2019	Suitable habitat in wetlands; **potential to occur**
Gang-gang Cockatoo	*Callocephalon fimbriatum*	EN		EN	In summer generally in tall mountain forests and woodlands, particularly in heavily timbered, mature wet sclerophyll forests and woodlands. Prefer Eucalyptus dominated assemblages. Also occurs in subalpine snow gum woodlands and occasionally in temperate rainforests and regenerating forests. In winter occur at lower altitudes in drier, more open Eucalyptus woodland (Higgins 1999).	1	27/08/1980	Outside its natural distribution range. Limited habitat in the study area, and no recent VBA records; **unlikely to occur** within Project Site. Likely to occur along the Portland Transport Route.

[5] Not included in the November 2024 VBA, eBird, and PMST database searches. This species is included in this likelihood of occurrence table given its conservation status, its inclusion in previous database searches, and the presence of suitable habitat.

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
Grey Falcon	*Falco hypoleucos*	VU		VU	Inhabits arid and semi-arid zones; mainly on sandy and stony plains of inland drainage systems, lightly timbered with acacia. Hunt far into open areas, over spinifex, tussock grasslands and low shrublands. In Victoria, few records mostly in north and northwestern regions (Marchant & Higgins 1993).	None	N/A	Unsuitable habitat; **unlikely to occur**
Grey Goshawk	*Accipiter novaehollandiae*			EN	Inhabit rainforests, open forests, swamp forests, woodlands and plantations; most abundant where forest or woodland provide cover for hunting from perches. in Vic., most common in Otway ranges. (Marchant & Higgins 1993).	1	14/09/1994	Unsuitable habitat; **unlikely to occur**
Hooded Robin	*Melanodryas cucullata cucullata*	EN		VU	Occur mostly in open Grey Box, White Box, Yellow Box, Yellow Gum and Ironbark woodlands with pockets of saplings or taller shrubs, an open shrubby understorey, sparse grasses and patches of bare ground and leaf-litter, with scattered fallen timber. The population has declined throughout range, especially since the early 1980s. This species typically occurs north of the great divide in shrubland or woodland dominated by acacias (Higgins & Peter 2002; Tzaros 2005).	None	N/A	No suitable habitat and outside its natural distribution range; **unlikely to occur**
Latham's Snipe	*Gallinago hardwickii*	VU	M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)		Occurs in wide variety of permanent and ephemeral wetlands; it prefers open freshwater wetlands with dense cover nearby, such as the edges of rivers and creeks, bogs, swamps, waterholes. The species is widespread in southeast Australia and most of its population occurs in Vic. Except in the northwest of the state. (Naarding 1983; Higgins and Davies 1996).	3	12/01/2020	Recorded incidentally during surveys; **known to occur**
Lewin's Rail	*Lewinia pectoralis*			VU	Mostly inhabits wetland areas with dense vegetation, including wetlands, farm dams, swamps, saline lakes and river flats where they usually forage around the waters edge in shallow water and close to cover for a variety of aquatic plants and invertebrates (Marchant & Higgins 1993). A very secretive bird which spends most of the day amongst dense vegetation and most active at dawn and dusk.	None	N/A	Recorded incidentally during surveys; **known to occur**
Little Eagle	*Hieraaetus morphnoides*			VU	Over wooded and forested lands and open country of Aust. Range extending into arid zone. Most abundant in open forest and woodland (Marchant & Higgins 1993).	2	26/10/2018	Suitable habitat and recorded during BUS; **known to occur**
Little Stint	*Calidris minuta*		M (ROKAMBA)		Mudflats, sandflats, sheltered coastal estuaries, islets, freshwater lakes, lagoons and saltworks (Higgins & Davies 1996).	1	5/02/1988	Rare vagrant to south-eastern Australia. Limited habitat in the study area; **unlikely to occur**
Magpie Goose	*Anseranas semipalmata*			VU	Terrestrial and aquatic habitats, but activities centered on wetlands, mainly those on floodplains of rivers (Marchant & Higgins 1990).	1	14/09/1988	Unsuitable habitat, few records; **unlikely to occur**
Marsh Sandpiper	*Tringa stagnatilis*		BONNA2H,ROKAMBA,JAMBA,CAMBA	EN	Inhabits sandy, muddy or rocky shores, usually coastal, rarely far inland. Often on beaches and mudflats, sandflats and occasionally rock shelves (Higgins & Davies 1996).	No VBA records	N/A	Scarce in inland Victoria however records in Mortlake. May occur in ephemeral wetlands in the study area; **potential to occur.**
Musk Duck	*Biziura lobata*			VU	It inhabits terrestrial wetlands, estuarine habitats and sheltered inland waters. Almost entirely aquatic; preferring deep water of large swamps, lakes and estuaries, where conditions are stable and aquatic flora abundant (Marchant & Higgins 1990).	12	5/03/1995	Recorded in study area during surveys; **known to occur**
Osprey	*Pandion cristatus*		M (Bonn A2S)		Rare vagrant to Victoria (Marchant & Higgins 1993). Littoral and coastal habitats and terrestrial wetlands present. They are mostly found in coastal areas but occasionally travel inland along major rivers (Johnstone & Storr 1998; Marchant & Higgins 1993; Olsen 1995). They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993).	None	N/A	Unsuitable habitat, coastal, no records; **unlikely to occur**

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
Painted Honeyeater	*Grantiella picta*	VU		VU	Inhabits box-ironbark forests and woodlands and mainly feeds on the fruits of mistletoe. Strongly associated with mistletoe around the margins of open forests and woodlands. Occurs at few localities. Uncommon breeding migrant from further north, arriving in October and leaving in February. (Higgins et al. 2001; Tzaros 2005).	None	N/A	Unsuitable habitat, no records; **unlikely to occur**
Pectoral Sandpiper	*Calidris melanotos*		M (Bonn A2H, ROKAMBA, JAMBA)		Inhabit shallow fresh to saline wetlands, usually coastal to near-coastal, but occasionally farther inland. Wetlands often have open fringing mudflats and low emergent or fringing vegetation (Higgins & Davies 1996).	None	N/A	Some habitat, but scarce in Victoria, no nearby records; **unlikely to occur**
Plains-wanderer	*Pedionomus torquatus*	CR		CR	This species is highly sensitive to changes in grassland cover and density. Typically inhabits treeless native grasslands with sparse cover, with a preference for grasslands composed of wallaby grass and spear grass (Marchant & Higgins 1993). Habitat becomes unsuitable when grassland becomes dense (DoE 2016). Evidence suggests it avoids areas of tree cover, with no records of the species within 300m of trees (>10m high) in their strongholds in New South Wales or Victoria (DoE 2016).	None	N/A	Unsuitable habitat, no records; **unlikely to occur**
Plumed Egret	*Ardea intermedia plumifera*			CR	It mainly inhabits terrestrial wetlands; only occasionally visit coastal wetlands and forages amongst aquatic vegetation in shallow water and requires trees for roosting and nesting. It often occurs in wetlands that contain vegetation, including bulrush (Marchant & Higgins 1990).	2	13/09/2023	Some wetland habitat in the study area however this species is rarely recorded in the search region; **unlikely to occur**
Red-necked Stint	*Calidris ruficollis*		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)		Inhabit shallow fresh to saline wetlands, usually coastal to near-coastal, but occasionally farther inland. Wetlands often have open fringing mudflats and low emergent or fringing vegetation (Higgins & Davies 1996).	2	28/11/2011	Suitable habitat in wetlands, recorded in study area during Brolga surveys; **known to occur**
Sharp-tailed Sandpiper	*Calidris acuminata*	VU	M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)		Inhabit shallow fresh to saline wetlands, usually coastal to near-coastal, but occasionally farther inland. Wetlands often have open fringing mudflats and low emergent or fringing vegetation (Higgins & Davies 1996).	5	05/02/1988	Recorded in study area during Brolga surveys; **known to occur**
Southern Whiteface	*Aphelocephala leucopsis*	VU			Occurs mainly in woodlands and shrublands dominated by acacias or eucalypts, with an understory of grass and/or low shrubs (commonly mallee, mulga and saltbush) (Higgins & Peter 2002)	None	N/A	The study area is outside its natural distribution range; **unlikely to occur**
Swift Parrot	*Lathamus discolor*	CR		CR	Prefers a narrow range of eucalypts in Victoria, including White Box, Red Ironbark and Yellow Gum as well as River Red Gum when this species supports abundant 'lerp'. Breeds in Tasmania and migrates to the mainland of Australia for the autumn, winter and early spring months. It lives mostly north of the Great Dividing Range, passing through two areas of Victoria on migration: the Port Phillip district and Gippsland. (Emison et al. 1987; Higgins 1999; Kennedy and Tzaros 2005).	None	N/A	Unsuitable habitat; **unlikely to occur**
Wedge-tailed Eagle	*Aquila audax*	n/a	n/a	n/a	Not listed as threatened in Victoria, but considered as a species of concern due to its cultural significance, its role as an apex predator, and its susceptibility to collisions with operating wind farms across Victoria.			**Known to occur** and breed within the project area.
White-throated Needletail	*Hirundapus caudacutus*	VU	M (CAMBA, ROKAMBA, JAMBA)	VU	Aerial, over all habitats, but probably more over wooded areas, including open forest and rainforest. Often over heathland and less often above treeless areas such as grassland and swamps or farmland (Higgins 1999).	1	4/01/1977	Potential to fly over site; **potential to occur**
Yellow Wagtail	*Motacilla flava*		M (JAMBA, CAMBA, ROKAMBA)		Uncommon migrant. Few sightings in Victoria. Inhabits moist, grassy or muddy areas, sewage treatment plants, sports fields, tracks or bare ground, occasionally on beaches (Menkhorst et al. 2017).	None	N/A	Rare vagrant; **unlikely to occur**

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
Mammals[6]								
Eastern Barred Bandicoot	*Perameles gunnii*	EN		EN	The habitat of the Eastern Barred Bandicoot (mainland) is perennial tussock grassland and eucalypt woodland with a grassy ground layer (Dufty 1994; Seebeck 1995, 2001). Drainage lines and areas of high vegetative cover have been identified as prime habitat. The key determining factor for persistence of this species appears to be high structural complexity and heterogeneity within the environment, reflected in its absence from agricultural areas but persistence in rubbish dumps and other variable habitats	5	14/08/1997	Regionally extinct; **unlikely to occur**
Fat-tailed Dunnart	*Sminthopsis crassicaudata*			VU	Native grasslands associated with rocky areas, rough pastures and the edges of stubble paddocks (Menkhorst 1995).	12	18/11/2010	Some suitable habitat may occur; **potential to occur**
Long-nosed Potoroo	*Potorous tridactylus trisulcatus*	VU		VU	In Victoria, the species occupies a wide variety of wet forest and wet scrub, usually occurring on sandy loam soils where rainfall exceeds 750mm annually (Menkhorst 1995); In Tasmania, moist forest with dense shrub layer; in the north edge of rainforest (Menkhorst 1995). Dense understorey vegetation is an essential component for the species persistence, which can consist of grass trees, sedges, ferns, heath, tea-tree or melaleucas (Menkhorst 1995).	None	N/A	Unsuitable habitat; **unlikely to occur**
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	EN		EN	Species experts define suitable habitat for Southern Brown Bandicoots (eastern) to be any patches of native or exotic vegetation, within their distribution, which contains understorey vegetation structure with 50–80% average foliage density in the 0.2–1 m height range. In areas where native habitats have been degraded or diminished, exotic vegetation, such as Blackberry (Rubus spp.), can and often does, provide important habitat (DoEE 2020).	None	N/A	Unsuitable habitat; **unlikely to occur**
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	EN		EN	Rainforest, wet and dry forest, coastal heath and scrub and River Red-gum woodlands along inland rivers (Menkhorst 1995).	None	N/A	Unsuitable habitat; **unlikely to occur**
Swamp Antechinus	*Antechinus minimus maritimus*	VU		VU	Dense wet heath, tussock grassland, sedgeland heathy woodland and coastal heath and scrub (Menkhorst 1995).	None	N/A	Unsuitable habitat; **unlikely to occur**
Yellow-bellied Glider	*Petaurus australis*	VU		VU	Forests with a predominance of smooth-barked eucalypts, as well as a mixture of eucalypt species. Uncommon in wet forests dominated by single tree species; a mixture of tree species is preferred (Menkhorst 1995). Inhabits a range of forest types, depending on the location in Victoria - western populations use dry woodland and forest, whereas southern, eastern and northeastern populations use a variety of wet forest types (Menkhorst 1995). Require large hollows in large, old trees. In Mountain Ash forest dependent on extensive stands of old-growth forest - rare in young forest even when scattered old trees are available (Menkhorst 1995). Will persist in corridors as narrow as 200 m (Menkhorst 1995).	None	N/A	No suitable habitat; **unlikely to occur**
Reptiles								
Corangamite Water Skink	*Eulamprus tympanum marnieae*	EN		EN	Found in grassy open woodland and cleared pastures dotted with ephemeral swamps and lakes, on rocky basaltic soils. The preferred habitat is a geographically peculiar landform comprising basalt ridges and boulder heaps resulting from the collapse of lava tunnels (Peterson and Robertson 2011).	None	N/A	Unsuitable habitat; **unlikely to occur**
Striped Legless Lizard	*Delma impar*	VU		EN	Grassland specialist. Known to occur in some areas dominated by introduced species such as Harding Grass Phalaris aquatica, Serrated Tussock Nasella trichotoma and Flatweed Hypocharis radicata and at sites with a history of grazing and pasture improvement. shelter in grass tussocks, thick ground cover, soil cracks, under rocks, spider burrows, and under ground debris such as timber. The majority of sites in Victoria and NSW occur on cracking	59	15/11/2013	Some suitable habitat may occur, specifically in road reserves; **potential to occur**

[6] Excludes bats, refer to the Bat Assessment Report.

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
					clay soils with some surface rock which provide shelter for the species (Robertson and Smith 2010)			
Swamp Skink	*Lissolepis coventryi*	EN		EN	Wetlands including swamp margins, lakes, rivers, creeks and even tidal salt marshes, often associated with tea-tree thickets (Wilson & Swan 2003).	None	N/A	The study area is highly modified from its original condition. No suitable habitat. No connectivity to existing populations located closer to the coast; **unlikely to occur**
Tussock Skink	*Pseudemoia pagenstecheri*			EN	Tussock grasslands with few or no trees (Wilson & Swan 2003).	66	01/10/2013	Recorded within study area incidentally during BUS in 2024; **known to occur.**
Fish								
Australian Grayling	*Prototroctes maraena*	VU		EN	Large and small coastal streams and rivers with cool, clear waters with a gravel substrate and altering pools and riffles (Cadwallader & Backhouse 1983).	1	1/01/1981	Some suitable habitat but not detected during targeted surveys; **unlikely to occur**
Dwarf Galaxis	*Galaxiella pusilla*	VU		EN	Barwon River to Mitchell River. Vegetated margins of still water, ditches, swamps and backwaters of creeks, both ephemeral and permanent (Allen et al. 2002).	None	N/A	Some suitable habitat but not detected during targeted surveys; **unlikely to occur**
Little Galaxias	*Galaxiella toourtkoourt*			EN	Occurs in clear pool of small, flowing streams around rocks or logs (Allen et al. 2002).	6	12/06/2008	Some suitable habitat but not detected during targeted surveys; **unlikely to occur**
Macquarie Perch	*Macquaria australasica*	EN		EN	Cool, clear water of rivers and lakes. Favours slower moving water (Allen et al. 2002).	3	1/12/1920	Some suitable habitat but not detected during targeted surveys; **unlikely to occur**
Murray Cod	*Maccullochella peelii*	VU		EN	Slow flowing turbid water of rivers and streams of low elevation; also fast flowing clear upland streams (Allen et al. 2002).	None	N/A	Unsuitable habitat; **unlikely to occur**
Yarra Pygmy Perch	*Nannoperca obscura*	VU		VU	Streams and small lakes, prefers flowing water with abundant aquatic vegetation (Allen et al. 2002).	10	15/11/2007	Some suitable habitat but not detected during targeted surveys; **unlikely to occur**
Amphibians								
Brown Toadlet	*Pseudophryne bibronii*			EN	Wet and dry forest, grassy areas besides small creeks, alpine grasslands and mossy bogs (Cogger 2000). In Victoria, the Brown Toadlet is distributed from the north-east through to central and western Victoria with scattered records in Gippsland (SWIFFT 2020).	3	18/05/1962	Unsuitable habitat; **unlikely to occur**
Growling Grass Frog	*Litoria raniformis*	VU		VU	Permanent, still or slow flowing water with fringing and emergent vegetation in streams, swamps, lagoons and artificial wetlands such as farm dams and abandoned quarries (Clemann & Gillespie 2004).	13	19/11/2018	Heard calling in study area during surveys; **known to occur**
Southern Toadlet	*Pseudophryne semimarmorata*			EN	Damp areas in forests and woodlands (Cogger 2000). In Victoria, the Southern Toadlet is mainly found on and south of the Great Dividing Range although there are records as far north as the Little Desert (SWIFFT 2020).	4	16/04/1965	Unsuitable habitat; **unlikely to occur**
Invertebrates								
Hairy Burrowing Crayfish	Engaeus sericatus			VU	The Hairy Burrowing Crayfish is found in western Victoria, in creeks south or southeast of the Otway Ranges, more abundantly between the Otway Ranges and Warrnambool, in some creeks south and south-west of Ballarat (north of Lake Corangamite) and between Port Fairy and Portland (DELWP 2021). Burrowing crayfish spend most of their time underground and freshly excavated soil at burrow entrances is the most obvious sign of their presence. Surface activity is suspected to be nocturnal (Richardson and Swain 1980). Activity is	7	22/09/2021	Suitable habitat present, VBA records within the project area; **known to occur**

Common Name	*Scientific Name*	EPBC-T	EPBC-M	FFG	Habitat	No. VBA of records	Date of last record	Likelihood of occurrence in Hexham Wind Farm
					commonly related to seasonal rainfall (Morey and Hollis 1997, Van Praagh and Hinkley 1999).			
Golden Sun Moth	*Synemon plana*	VU		VU	Areas that are or have been native grasslands or grassy woodlands. It is known to inhabit degraded grasslands with introduced grasses being dominant, with a preference for the native wallaby grass being present (DEWHA 2009). Also known to be closely associated with exotic grass species, with populations found in grassland almost entirely composed of Chilean needlegrass (Richter et al. 2013).	6	21/12/2009	Suitable habitat occurs, Not detected during EHP (2014) targeted surveys; **unlikely to occur**

Notes:
EPBC-T = threatened species status under EPBC Act; EX = Presumed Extinct in the Wild; CR = Critically Endangered; EN = Endangered; VU = Vulnerable;
EPBC-M = migratory status under the EPBC Act; M = listed migratory taxa; Bonn Convention (A2H) - Convention on the Conservation of Migratory Species of Wild Animals – listed as a member of a family; Bonn Convention (A2S) - Convention on the Conservation of Migratory Species of Wild Animals - species listed explicitly; CAMBA - China- Australia Migratory Birds Agreement; JAMBA - Japan-Australia Migratory Birds Agreement; ROKAMBA - Republic of Korea Australia Migratory Birds Agreement;
FFG = threatened species status under the FFG Act; ; CR = Critically Endangered; EN = Endangered; VU = Vulnerable

*If a species has potential to occur, is likely to occur, or known to occur, this is indicated in grey shading.

7.4.3. Fauna Species in Transport Route

Desktop analysis indicated that six species considered likely or potential to occur within locations along the Geelong and/or Portland transport routes subject to potential habitat removal, were also potentially susceptible to impacts:

- Striped legless lizard (EPBC Act: Vulnerable, FFG Act: Endangered)
- Tussock Skink (FFG Act: Endangered)
- Growling Grass Frog (EPBC Act: Vulnerable; FFG Act: Vulnerable)
- Fat-tailed Dunnart (FFG Act: Vulnerable)
- Gang-gang Cockatoo (EPBC Act: Vulnerable; FFG Act: Endangered)
- Golden Sun Moth (EPBC Act: Vulnerable; FFG Act: Vulnerable)

Table 16 presents the swept path locations where there is potential for impacts to listed fauna, and the listed species which may be susceptible to impacts at each location. This assessment considers the suitability of habitat on each site, recent records of each species, and extent of habitat removal proposed. This table describes which transport route (Portland or Geelong) impacts occur. If both routes are selected, all impacts reported in this table would apply. The area impacted (ha) across the Portland and Geelong transport routes is provided in Table 31 and Table 32.

Table 16: Listed fauna potentially susceptible to impacts at each swept path and local road upgrade location

Figure reference	Intersection location	Source of impact	EPBC Act Fauna	FFG Act (only) Fauna
2-1	**Scott Street / Dunkeld-Cavendish Rd, Cavendish**	Portland Transport Route – removal of up to 5 roadside foraging trees, assessed on a precautionary basis	▪ Gang-gang Cockatoo	N/A
2-2	**Dunkeld-Cavendish Rd / Glenelg Hwy / Penshurst – Dunkeld Rd, Dunkeld**	Portland Transport Route – removal of one native vegetation patch	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-3	**Warrnambool-Caramut Rd, Caramut**	Portland and Geelong Transport Routes – removal of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-4	**Hamilton Hwy, Hexham**	Geelong and Portland Transport Routes – removal of areas of native vegetation.	N/A	▪ Tussock Skink
2-12, 2-13	**Minjah North Rd / Warrnambool-Caramut Rd**	Geelong and Portland Transport Route – removal of Plains Grassy Woodland Local Road Upgrades– removal of Plains Grassland,	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-22	**Woolsthorpe – Hexham Rd**	Geelong Transport Route – removal of one area of Plains Grassy Woodland	▪ Golden Sun Moth	▪ Fat-tailed Dunnart

Figure reference	Intersection location	Source of impact	EPBC Act Fauna	FFG Act (only) Fauna
			▪ Striped Legless Lizard	▪ Tussock Skink
2-23	Woolsthorpe – Hexham Rd	Local road upgrades – removal of areas of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-24	Woolsthorpe – Hexham Rd	Local road upgrades – removal of one area of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-26	Woolsthorpe – Hexham Rd	Geelong and Portland Transport Routes – removal of two areas of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-28	Woolsthorpe – Hexham Rd	Geelong and Portland Transport Routes – removal of areas of Plains Grassland/ NTGVVP	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-29	Woolsthorpe – Hexham Rd	Geelong and Portland Transport Routes – removal of one area of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-33	Hexham-Ballangeich Rd Connewarren Ln	Geelong Transport Route – removal of Plains Grassland and one area of Plains Grassy Woodland Local road upgrades – removal of Plains Grassy Woodland, and an area of Plains Grassland /NTGVVP	▪ Golden Sun Moth ▪ Striped Legless Lizard ▪ Growling Grass Frog	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-34 to 2-44	Hexham-Ballangeich Rd	Local road upgrades – removal of Plains Grassy Woodland / GEWVVP, and Plains Grassland / NTGVVP	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-51 to 2-56	Woolsthorpe – Hexham Rd	Local road upgrades – removal of Plains Grassland / NTGVVP, Plains Grassland, and Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink
2-57	Woolsthorpe – Hexham Rd / Warrnambool-Caramut Rd	Geelong Transport Route, and Portland transport route – removal of one area of Plains Grassy Woodland	▪ Golden Sun Moth ▪ Striped Legless Lizard	▪ Fat-tailed Dunnart ▪ Tussock Skink

Figure reference	Intersection location	Source of impact	EPBC Act Fauna	FFG Act (only) Fauna
		Local road upgrades – removal of Plains Grassland / NTGVVP		

7.4.4. Fauna communities in the Project Area

Victorian Temperate Woodland Bird Community (FFG Act listed)

- The community's typical area of distribution includes dry forests inland of the dividing range dominated by Ironbark, Box, Yellow Gum, Buloke, River Red Gum, and Cypress Pine with a sparse shrubby layer and abundant leaf litter, fallen logs, and mature trees with hollows. Far southwestern Victorian examples of this community are dominated by Brown Stringybark and Desert Stringybark in sandy soils, and nearby River Red Gum, Yellow Gum and Buloke Woodlands.
- The benchmark bird community (SAC, 2015) includes the following species: Painted Button-quail (*Turnix varia*), Bush Stone-curlew (*Burhinus grallarius*), Red-tailed Black-Cockatoo (*Calyptorhynchis banksii graptogyne*), Little Lorikeet (*Glossopsitta pusilla*), Superb Parrot (*Polytelis swainsonii*), Swift Parrot (*Lathamus discolor*), Turquoise Parrot (*Neophema pulchella*), Barking Owl (*Ninox connivens*), Brown Treecreeper (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Western Gerygone (*Gerygone fusca*), Regent Honeyeater *(Anthochaera = Xanthomyza phrygia*), Yellow-tufted Honeyeater (*Lichenostomus melanops meltoni*), Fuscous Honeyeater (*Lichenostomus fuscus*), Black-chinned Honeyeater (*Melithreptus gularis*), Brown-headed Honeyeater (*Melithreptus brevirostris*), Painted Honeyeater (*Grantiella picta*), Jacky Winter (*Microeca fascinans*), Red-capped Robin (*Petroica goodenovii*), Hooded Robin (*Melanodryas cucullata*), Grey-crowned Babbler (*Pomatostomus temporalis*), Ground Cuckoo-shrike (*Coracina maxima*), Apostlebird (*Struthidea cinerea*), and Diamond Firetail (*Stagonopleura guttata*).
- The site is considered unlikely to support the community due to the below considerations:
    - HWF study site sits in the southern fall of the Great Dividing Range and the remnant woodland communities are not dominated by Ironbark, Box, Yellow Gum, Buloke, and Cypress Pine with a sparse shrubby layer and abundant leaf litter, fallen logs. River Red Gums present are found along watercourses and in a plains grassy woodland structure.
    - HWF does not sit within the southwestern Victorian woodlands distribution, dominated by Brown Stringybark and Desert Stringybark in sandy soils.
    - Some significant River Red Gum – dominated riparian woodland is present adjacent to the eastern boundary of the site along Hopkins River, spreading east as plains grassy woodland with mature River Red Gums. This habitat is unlikely to contain the community as the understorey has been substantially modified by farming activities.
    - The nearest remnant woodland is Cobra Killuc Wildlife Reserve (7.5 kilometres northeast of nearest boundary). This location is the nearest substantial area of suitable habitat for the community. No impacts are expected in Cobra Killuc WR.
    - Only one of the benchmark avifauna species, Brown-headed Honeyeater, was recorded in the site during BUS and in the vicinity of the site (Cobra Killuc Wildlife Reserve). The species is widespread in most woodlands on either side of the Great Dividing Range, and its presence alone is not indicative of the threatened community.

- Eight of the representative bird species (inc. Brown-headed Honeyeater) were recorded within 20km of the site in the last 10 years (eBird 2025, Atlas of Living Australia 2025), and some of the representative species may move through the site sporadically.
- The Project Site is largely devoid of remnant woodland vegetation, with extant canopy trees restricted to roadside vegetation, riparian corridors, and some grazing paddocks. It is considered that the limited extent of suitable woodland remnants on the site is unlikely to support the community.

7.5. Impact Assessment

7.5.1. Impact pathways

The transport route, and construction and operation of the project may have the following impacts on fauna species:

- Direct removal of fauna habitat;
- Indirect alteration to habitat from runoff from construction areas into adjacent habitat;
- Indirect disturbance to fauna inhabiting the site during construction and operations, including barrier effects and noise;
- Direct mortality or injury due to collision with construction traffic and/or construction activities; and
- Direct mortality of birds and bats due to collision with operating turbines.

7.5.2. Susceptibility of fauna to project impacts

The proposed wind farm development footprint constitutes approximately 588 hectares, which is 3.65% of the project site. The total area of native vegetation (patches and DEECA-mapped wetlands) that has been recorded within the project study area was 55.302 hectares.

The following amounts of native vegetation would be removed from each component of the project (See Table 11 and Table 31 for a detailed native vegetation removal breakdown):

- 6.466 ha of native vegetation would be removed within the wind farm footprint area,
- 0.432 ha removed due to the Portland transport route swept paths,
- 0.249 ha removed due to the Geelong transport route swept paths,
- 0.542 ha removed by transport route swept paths if both Portland and Geelong routes are selected (accounting for some overlap between the Portland and Geelong routes),
- 1.180 ha removed due to local road upgrades.

As the wind farm development footprint has been derived in accordance with the 'avoid' and 'minimise' principles (Section 5.4.2), impacts to habitat has been reduced as much as practicable.

It is assumed that some threatened fauna habitats such as Striped Legless Lizard, Tussock Skink and Golden Sun Moth can extend beyond the native vegetation definition (under 25% native vegetation cover), however threatened fauna is heavily dependent on well-conserved habitats for critical periods of their life cycle which, in the area, fall within remnant vegetation such as grassy wetlands or native grasslands. Pre-clearance surveys and habitat management will be undertaken in native and non-native vegetation suitable habitat to minimise presence of SLL and TS in areas to be removed such as roadsides (See 12.1.1).

Some seasonal wetland areas could not be completely avoided by turbines T57, T108 and T109 and associated construction buffers (Figure 2-16, 2-17, 2-46, 2-47).

Native grassland areas impacted are mostly restricted to road reserves, with limited impacts within the construction footprint. Road upgrades will impact these in some sections, where impacts would predominantly be removal of narrow sections along the inner roadside (Table 16). Most of the highest quality grassland and wetland habitat remaining on the site for native fauna has been avoided and will be retained, apart from these areas which could not be avoided. The impact on the local population on any grassland-dependent fauna is therefore likely to be limited, and these populations will persist in the remaining areas of grassland habitat.

Construction activities have the potential to degrade the quality of adjacent grassland habitat, as well as contribute sediment-laden runoff to nearby wetlands and/or waterways if not properly managed.

During construction, vehicle movements, human activity and noise will increase significantly. This has the potential to disturb native fauna. As most activity will occur during daylight hours, nocturnal fauna is not expected to be disrupted significantly near works areas. During daylight hours, a small proportion of grassland habitat on the site will experience indirect disturbance and some mobile fauna species may be deterred from using these areas. Once construction is complete, the lower level of vehicle traffic and human activity associated with operating the completed wind farm is considered unlikely to disturb fauna in adjacent habitats persistently. As construction is temporary and intermittent (estimated to last for short periods at any one works site within the longer project construction period), and operational activity is at a very low level, long-term exclusion of fauna from these disturbed areas is not anticipated.

Disturbance and behavioural changes in fauna can come about through increased light and noise permeating into ecosystems (Gaston *et. al.* 2015). The latter can result in a wide range of behavioural changes in fauna, which can in turn effect breeding and foraging success (Jakob-Hoff *et. al.* 2019, Shannon *et. al*. 2016). Typically, animals will habituate to regular noise. Compared with chronic background or repetitive noise, unpredictable noise can provoke distress responses in animals (Broucek 2014). Noise from wind turbines is usually continuous and does not vary suddenly. Habituation may occur within individuals and reduce physiological responses to environmental stress over time (Iskasson 2015). Species that are less adaptable are likely to be disadvantaged in high-disturbance environments (Lowry *et. al.* 2013). Given the Project lies within an agricultural landscape with various sources of human-made noise, it is considered unlikely that fauna in adjacent habitats will be significantly disturbed by noise from the turbines and associated maintenance or other works.

During the construction stage, noise may be more irregular and louder, and focused around the parts of the site undergoing turbine or infrastructure construction at any given time. A temporary quarry is to be constructed on site to supply materials for the Hexham Wind Farm. Almost weekly blasting is expected from the quarry operations during the construction of the wind farm, anticipated to last two years (BCA Consulting, 2025). The construction stage may cause behavioural change for some species, though this is expected to be temporary.

Collision with turbines poses a risk to many bird and bat species at operating wind farms and should be assessed and mitigated for any species considered at risk.

The following section discusses the susceptibility to impacts arising from the Project of fauna species that may utilise the Project study area and transport routes. This assessment considers all species that are considered to have the potential to occur, are likely to occur, or have been recorded in the Project Site to date.

Birds

There are 11 listed non-migratory bird species and one non-migratory bird species of interest considered to have the potential, are likely to occur, or have been recorded in the project study area.

- Australasian Shoveler (FFG Act: Vulnerable)

This species was recorded by Nature Advisory as occurring on site. It prefers large and deep permanent bodies of water and with abundant aquatic flora, but can also occur on billabongs, watercourses and flood waters on alluvial plains, freshwater meadows, shallow swamps, reed swamps, wooded lakes, sewage farms and farm dams. This species is considered **susceptible** to impacts through habitat loss, and may be susceptible to collisions.

- Australian Gull-billed Tern (Not listed, but a species of interest)

The species has not been recorded in the study area, however it is likely to visit or breed in the various ephemeral wetlands in the project site and immediate surrounds. The species is usually recorded flying below RSA, however it may fly higher exceptionally to hunt flying insects. This species is considered **susceptible** to collisions risk. However, no previous records of collisions of the species in any operational wind farm in Australia monitored by NA, suggesting the likelihood of collision is low. Wetland turbine-free buffers will prevent any potential disturbance impacts.

- Black Falcon (FFG Act: Critically Endangered)

This species is uncommon to southwestern Victoria and its occurrence on site is expected to be infrequent. There is potential for impacts to this species through collision with turbine blades once the wind farm is operational. Collisions of Black Falcon have occurred at wind farms within the species range in NSW (Nature Advisory unpublished data).

The foraging behaviour of raptor species puts them at risk of turbine collision above other bird groups. This species is considered **susceptible** to impacts, however, as this species is considered to occur in the area only irregularly, collisions would be expected to be highly infrequent.

- Blue-billed Duck (FFG Act: Vulnerable)

This species was recorded by Nature Advisory as occurring on site. It prefers well vegetated and deep-water wetland habitats and is almost entirely aquatic, rarely appearing on land. This species may be **susceptible** to impacts through changes to, or loss of wetland habitat, disturbance and operation of turbines.

- Blue-winged Parrot (EPBC Act: Vulnerable)

The estimated population of Blue-winged Parrot is 10,000 individuals (Birdlife International 2025). Blue-winged Parrots breed in hollow-bearing trees, and the site falls within the species breeding range. Avoidance of removal of all hollow-bearing trees on-site and along the transport route is recommended, to avoid loss of breeding sites for the species. Where potential nesting habitat was identified and removed, installation of nest boxes may mitigate impacts. The Blue-winged Parrot is known to fly at RSA heights, and there are records of turbine collisions involving this species at Victorian wind farms (BL&A 2019; Symbolix 2020). The species is considered potentially **susceptible** to impacts due to collisions.

- Eastern Great Egret (FFG Act: Vulnerable)

The Eastern Great Egret occurs in a variety of wetlands including permanent water bodies on flood plains, shallows of deep permanent lakes and semi-permanent swamps with tall emergent vegetation. It is expected to occur in wetlands and waterways year-round in small numbers, spending most of the time at ground level and only flying to travel between foraging/roosting areas This species was recorded during BUS and is considered **susceptible** to impacts from turbine collision.

- Freckled Duck (FFG Act: Endangered)

This species prefers heavily vegetated wetlands containing species such as Cumbungi. Such habitat was not observed in the study area and so it is not expected to utilise habitat for breeding or foraging, but recent records indicate that they may occasionally utilise the area.

The species is considered **susceptible** to impacts through changes to, or loss of wetland habitat, disturbance and operation of turbines.

- Gang Gang Cockatoo (EPBC Act: Endangered)

This species may be **susceptible** to impacts at one location along the Portland Transport route due to the potential removal of up to five large scattered trees within Cavendish town which may present suitable foraging habitat.

This assessment is precautionary at this stage, as it is not known that these 5 trees would indeed require removal.

- Lewin's Rail (FFG Act: Vulnerable)

The species has been recorded on one occasion, suggesting a relative low occurrence. The species seldom leaves dense vegetation and is a reluctant flyer. Due to its behaviours, this species is considered not susceptible to impacts.

- Little Eagle (FFG Act: Vulnerable)

They occupy areas over wooded and forested lands and open country and are most abundant in open forest and woodland (Marchant & Higgins 1993). The main impacts to Little Eagles in Victoria are habitat clearing and degradation (SAC 2020). The species may be **susceptible** to turbine collisions risk.

- Musk Duck (FFG Act: Vulnerable)

The Musk Duck has been recorded in the search region and has the potential to occur in the study area. It inhabits terrestrial wetlands, estuarine habitats and sheltered inland waters. It is almost entirely aquatic and prefers deep water of large swamps, lakes and estuaries, where conditions are stable and aquatic flora abundant.

The species is considered **susceptible** to impacts from changes to, or loss of wetland habitat, disturbance and operation of turbines.

- Spotted Harrier (Species of interest in Lumsden et al. (2019))

The species has been recorded on one occasion in the northern portion of the project site, suggesting a relative low occurrence compared to the amount of fieldwork days in the site, and to other locations where it is recorded frequently in surveys. As a medium sized raptor, flights at RSA are common. Though **susceptible** to collisions, the likelihood of collision in any given year is considered very low due to the low occurrence of the species in the site, and therefore a low risk overall to the species.

Migratory Birds

There are 10 listed migratory bird species (excluding oceanic species) potential to occur in the project study area. The susceptibility of these species to possible impacts from any development in the project study area is discussed below.

- White-throated Needletail (EPBC Act: Vulnerable, Migratory)

The White-throated Needletail is an aerial bird species that spends most of its life on the wing. This species is often observed in south-eastern Australia in the summer, flying ahead of storm fronts, feeding on flying insects. No White-throated Needletail were observed during BUS in summer and early autumn, a time when activity over Victoria is thought to be at its peak, indicating that the habitat on the site is unlikely to represent important habitat for a significant proportion of the population for any length of time. The species occurs more frequently over forested areas in

Australia (Higgins 1999) and the lack of forested vegetation or extensive planted treed areas indicates that the habitat is not the preferred type for this species. Therefore, impacts from disturbance, habitat loss or changes are not expected.

At wind farms elsewhere (Nature Advisory data) the species has been recorded colliding with operating wind turbines in small numbers; however, targeted surveys for this species were undertaken in the study area and surrounding areas (see Section 9.2) and they were not recorded. Though potentially **susceptible** to collision, it is considered that the species is unlikely to occur at the site frequently or in large numbers.

- Fork-tailed Swift (EPBC Act: Migratory)

An aerial bird species that spends most of its life on the wing. Therefore, impacts from disturbance, habitat loss or changes are not expected. The Fork-tailed Swift often flies at RSA heights and may be **susceptible** to collision with operating turbines. However, Fork-tailed Swift is a more abundant and widespread bird than the White-throated Needletail and its population numbers as high as 100,000 (DoE 2015) and is rarely recorded colliding with wind turbines (Nature Advisory data).

- Migratory wetland species listed below are discussed separately in Section 9:
  - Common Greenshank (EPBC Act: Migratory)
  - Common Sandpiper (EPBC Act: Migratory)
  - Curlew Sandpiper (EPBC Act: Critically Endangered & Migratory)
  - Double-banded Plover (EPBC Act: Migratory)
  - Latham's Snipe (EPBC Act: Migratory)
  - Marsh Sandpiper (EPBC Act: Migratory)
  - Red-necked Stint (EPBC Act: Migratory)
  - Sharp-tailed Sandpiper (EPBC Act: Migratory).

Bird communities

- Victorian Temperate Woodland Bird Community – (FFG Act listed) – The community is considered unlikely to occur, and in any case, impacts to woodland communities suitable to support this community are minor. This community is not considered susceptible to impacts.

Frogs

One listed frog species is considered to have the potential to occur in the project study area and transport route (Table 16). The susceptibility of this species to possible impacts from any development in the project study area is discussed below.

- Growling Grass Frog (EPBC Act: Vulnerable, FFG Act: Vulnerable)

The Growling Grass Frog is a nocturnal ambush predator and is unlikely to forage more than 100 metres from the waterline of wetlands (Heard et al. 2008). It was recorded as calling during surveys and it may occur in a variety of aquatic habitats throughout the project study area.

It may also occur along the transport route within a dam at the intersection of Hexham-Ballangeich Rd and Connewarren Lane. Some minor terrestrial vegetation may be removed immediately adjacent to the roadside, to facilitate blade transport, but no impacts to the dam itself are anticipated.

The species is **susceptible** to impacts from the proposed wind farm through, aquatic habitat changes or loss, impacts to terrestrial foraging habitat surrounding wetlands, disturbance and direct mortality.

This species and any impacts are explored further in Section 11.

Reptiles

- Striped Legless Lizard (EPBC Act: Vulnerable, FFG Act: Endangered)

In the project site, suitable habitat for this species was recorded within patches of Plains Grassland within roadsides of Woolsthorpe-Hexham Road and Hexham-Ballangeich Road, and some scattered areas of Plains Grassland and Plains Grassy Woodland EVCs overlapping with the development footprint within the study area. No targeted surveys have been undertaken based on early advice from the Department of the Environment and Primary Industries (DEPI) to assume presence within suitable habitat (EHP 2014).

This species is **susceptible** to impacts through the removal of suitable grassland habitat within road reserves due to required road upgrades in some areas, and due to habitat removal in patches of Plains Grassy Woodland and Plains Grassland EVCs within the project area. This is currently limited to the removal of 0.3 ha of the above EVCs within the development footprint; 1.175 hectares due to local road upgrades; 0.241ha due to the Geelong Transport Route; 0.432ha due to the Portland Transport Route, or 0.534ha due to transport routes if both are selected (Table 16 and Figure 2). Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided tussock, soil, and rock structure are present.

- Tussock Skink (FFG Act: Endangered)

This species has been recorded in the study area in exotic pasture and further suitable habitat may occur outside native grasslands of road reserves.

This species is **susceptible** to impacts through the removal of suitable grassland habitat within road reserves due to required road upgrades in some areas (see habitat removal for Striped Legless Lizard). Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided tussock, soil, and rock structure are present.

Mammals

- Fat-tailed Dunnart (FFG Act: Vulnerable)

Refer to Striped Legless Lizard (similar habitat requirements).

Fish

- Yarra Pygmy Perch (EPBC Act: Vulnerable, FFG Act: Endangered)
- Little Galaxias (FFG Act: Endangered)

Targeted surveys for these species were undertaken by EHP between 21 and 24 November 2011 using bait traps and fyke nets set overnight as well as active searches through dip netting within suitable habitat (EHP 2014). None of these species were recorded. Despite the age of these surveys, no impacts to waterways are anticipated within the Project Site (see Mitigation Measures in Section 12.1), therefore it was not considered necessary to carry out updated fish surveys.

Some occurrences of Little Galaxias and Yarra Pygmy Perch are possible in waterways along the transport route outside the project site. No impacts to waterways are anticipated along the Transport Routes, and these species are considered **not susceptible** to impacts.

Invertebrates

- Golden Sun Moth (EPBC Act: Vulnerable, FFG Act: Vulnerable)

EHP undertook targeted Golden Sun Moth surveys in December 2011 and January 2012 at the request of DEPI although preliminary fauna surveys determined that there was a low likelihood of occurrence due to low number of records in the local area and lack of high-quality suitable habitat (EHP 2014). No Golden Sun Moth were observed during the surveys, although they were observed flying at reference sites outside the study area on the survey dates.

If present, the species may be **susceptible** to impacts through the removal of suitable grassland habitat which largely occurs within road reserves and which are subject to impacts through road upgrades in some areas. On a precautionary basis, the total impact to Plains Grassy Woodland and Plains Grassland EVCs is considered. This is currently limited to the removal of 0.3 ha of the above EVCs within the development footprint; 1.175 hectares due to local road upgrades; 0.241ha due to the Geelong Transport Route; 0.432ha due to the Portland Transport Route, or 0.534ha due to transport routes if both are selected (Table 16 and Figure 2). Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided suitable non-native grasses are present (e.g. Chilean needlegrass).

- Hairy Burrowing Crayfish (FFG Act: Vulnerable)

There is little information available regarding this cryptic species however, as with many other species of burrowing crayfish, its habitat preferences are associated with waterways and wetland habitat. It can be identified by mud chimney structures around margins of aquatic habitats and can be found some distance from water itself on flood plains and wet areas.

This species may be **susceptible** to impacts from habitat loss through construction occurring in, or around, waterways such as crossing points in Muston's Creek, and low-lying areas in proximity to waterways during the wetter months.

The transport route is not impacting waterways or areas adjacent to waterways where species habitat may be present.

7.5.3. Conclusions

The residual impacts to these species following the application of mitigation measures, is discussed in Section 12.

For bat species with potential to be impacted, refer to the Hexham Wind Farm Bat Assessment Report 2025 (Nature Advisory 2025a).

For Brolga refer to the Hexham Wind Farm Brolga Assessment Report 2025 (Nature Advisory 2025b).

8. Bird utilisation surveys

KEY FINDINGS

1. Across bird utilisation surveys, incidental observations, and other surveys, a total of 125 bird species have been recorded within and around the proposed HWF site (Appendix 8).
2. Two BUSs occurred in summer and spring 2018-19, two in winter and spring 2024, and four more in 2025 across all seasons, resulting in two years of pre-construction (baseline) seasonal surveys conducted between 2018 and 2025. In addition, two initial summer BUSs were conducted in 2011 and 2012.
3. During the 2018-19 BUS, 94.4% of bird observations occurred below Rotor Swept Area (RSA) height (<40 m), whilst during 2024-25 87.5% of all observed birds occurred below RSA height within the HWF site.
4. Threatened species observed during the BUSs were the Brolga, Blue-winged Parrot, Eastern Great Egret, Lewin's Rail, Little Eagle and Musk Duck. Brolga observations triggered additional Brolga breeding and flocking surveys which are presented in a separate Brolga assessment report.
5. Threatened and/or migratory species only recorded incidentally by NA were Black Falcon, Latham's Snipe, Common Sandpiper, Double-banded Plover, and Sharp-tailed Sandpiper.
6. EHP (2014) reported four threatened species including Brolga, Eastern Great Egret, Black Falcon and Royal Spoonbill (currently not listed as threatened) from early BUSs in 2011 and 2012.
7. Surveys recorded ten raptor species, with a further incidental observation of a Black Falcon.
8. There were four cumulative observations of Wedge-tailed Eagles during 2018-19 and 90 during 2024-25.
9. The most common species recorded during BUSs within the project site were Raven sp. (mostly Little Raven), Australian Magpie, Common Starling and Eurasian Skylark.

8.1. Introduction

The BUS was undertaken consistent with the requirements for a "Level Two" bird risk assessment in accordance with *Wind Farms and Birds – Interim Standards for Risk Assessment* issued by the Australian Wind Energy Association (AusWEA 2005). This approach has been endorsed in the Association's latest *Best Practice Guidelines for Implementation of Wind Energy Projects in Australia* (Clean Energy Council 2018).

8.2. Methods

This section outlines the methods undertaken to implement BUS at HWF.

8.2.1. Timing of the surveys

Eight pre–construction BUS have been undertaken within the study area between 2018 and 2025 in addition to two summer BUS surveys carried out in 2011 and 2012:

- 2011 Summer (EHP surveys)
- 2012 Summer (EHP surveys)
- 2018 Spring: 29 October – 2 November
- 2019 Late summer – early autumn: 4 – 8 March
- 2024 Winter: 18-25 August
- 2024 Spring: 25-29 November

- 2025 Summer: 24-27 February
- 2025 Autumn: 7-10 April
- 2025 Winter: 4-7 August
- 2025 Spring: 16-19 September

Due to the changes in field methodology and data collection between 2018-19 BUS and 2024-25 BUS, results from those periods were analysed and presented separately.

The timing of these surveys covers a suitable period for surveying birds during their annual cycle, capturing the main seasonal changes in abundance and use of the study area.

During each BUS survey, eight counts were made at survey points (Figure 4), twice each in the early morning, late morning, early afternoon and late afternoon. This schedule ensured that all points were visited at all times of day so that no time-of-day bird activity biases affected the pooled count data.

8.2.2. Fixed-point bird count method

The 2018-19 fixed-point bird count method used to collect bird utilisation data involved an observer stationed at a survey point for 15 minutes. The adequacy of using 15 minutes as an interval to record the presence of birds during bird utilisation surveys was investigated in an earlier study at another wind farm site (BL&A, unpublished data). This showed that 82 to 100 % (average 88 %) of species seen in one hour of surveying were seen in the initial 15 minutes of observation.

During this period, all birds observed within 200 m were recorded. The species, the number of birds and the height of the bird when first observed were documented.

The 2024-25 fixed-point count method involved a 20-minute count of birds as far as the naked eye can see, with binoculars used to identify birds in the distance but not to scan for birds.

For the purpose of this report, estimated flight height relative to the RSA height is presented as described below. These heights were based on an assumed turbine height of up to 260 m with a diameter of the turbine blades of 190 m.

- **A =** Below RSA (< 40 metres above ground)
- **B =** At RSA (40 – 260 metres above ground)
- **C =** Above RSA (> 260 metres above ground)

During the 2018-19 BUS, heights were measured at 10 m intervals between 0 and 60 m, at 20 m intervals between 60 and 100 m, and above 100 m for those flying over the latter height.

During the 2024-25 BUS, heights were estimated to the nearest metre.

8.2.3. Locations of survey points

Eight fixed survey points were established during the 2018-19 surveys within the wind farm site, and these were again used in 2024-2025 (Figure 4). From 2024, two *reference* (control) sites were added to the surveys. *Impact* points were located as close as possible and within 500 metres of proposed turbine locations and reference points were located outside the project boundaries and at more than 1,500 metres from proposed turbine locations.

The survey points were selected to ensure the sites were suitable (i.e., points were positioned on elevated ground where possible, allowing a clear view in all directions). Impact points were distributed as evenly as possible (subject to access constraints) across the study area to maximise coverage in areas where wind turbines would be located.

Descriptions of survey points (B1-B8 *impact* points; R1-R2 *reference* points):

B1: Grazing paddock adjacent to a native-planted windbreak containing young Eucalyptus, Acacia, and Melaleuca. A large dam is located approximately 700 m away, but visibility is obstructed by fringing planted gums.

B2: Located alongside a farm track at a creek crossing. Remnant scattered trees occur along the creek, with a dense reedbed within the watercourse. Surrounding areas comprise grazing paddocks interspersed with native and pine windbreaks.

B3: Grazing paddock containing a large, scattered river red gum. Cypress windbreaks are approximately 100 m away, and a revegetation row of young wattles and gums is nearby.

B4: Central grazing paddock adjacent to a boulder outcrop/pile. The nearest windbreak (semi-mature planted sugar gums) is 200 m away.

B5: Grazing paddock near the main road (approx. 80 m). Some remnant roadside vegetation includes blackwood and scattered gums. A nearby windbreak of semi-mature sugar gums occurs within the paddock.

B6: Grazing paddock adjacent to two semi-mature sugar gum windbreaks. Nearby roadside vegetation includes native grasses, wattles, and scattered sugar gums.

B7: Grazing paddock at the intersection of two planted windbreaks—one of cypress pine and the other comprising a mix of native woody species.

B8: Located in a farm lane at the intersection with a windbreak of mixed native trees, including gums.

R1: Side of a gravel road with a few scattered Acacia trees along the roadside, surrounded by grazing paddocks.

R2: Side of a gravel road adjacent to a small patch of mixed trees, including Eucalyptus and Casuarina, surrounded by grazing paddocks.

8.2.4. Incidental observations

In addition to the observations during fixed-point counts, observations (if any) of threatened species and raptors made incidentally while moving across the study area were also recorded (observations outside the formal BUS count). Emphasis was placed on observing birds that were moving through the site at RSA height or those crossing the development footprint.

8.3. Data preparation and statistical analysis

The species observed during the BUS were expressed as a cumulative species graph. A plateau (or clear tendency toward one) in such a graph indicates that survey effort was sufficient to record most species regularly occurring at the site, providing an adequate representation of the local avifauna.

8.3.1. Limitations

The BUS undertaken during 2018–2019 covered spring and summer, representing key stages in the annual bird cycle, whilst the 2024–2025 BUS encompassed all four seasons. In total, the pre-construction (baseline) BUS comprised eight seasonal survey periods across two full annual cycles between 2018 and 2025. These surveys, conducted by Nature Advisory are supplemented by earlier BUS surveys completed by EHP in 2011 and 2012, providing an adequate and representative basis for assessing potential risks to birds associated with the project.

In autumn and winter, birds such as starlings, cockatoos, magpies and ravens usually occur in flocks, potentially generating large counts. However, there may be few observations if the flocks are elsewhere at the count time. Furthermore, most migrant species are absent from the region in autumn and winter. Conducting multiple surveys across different times of day and year should

overcome these limitations, providing representative utilisation rates that account for temporal variability. As such, the BUS provides a robust basis upon which to assess the risks to birds posed by the proposed wind farm.

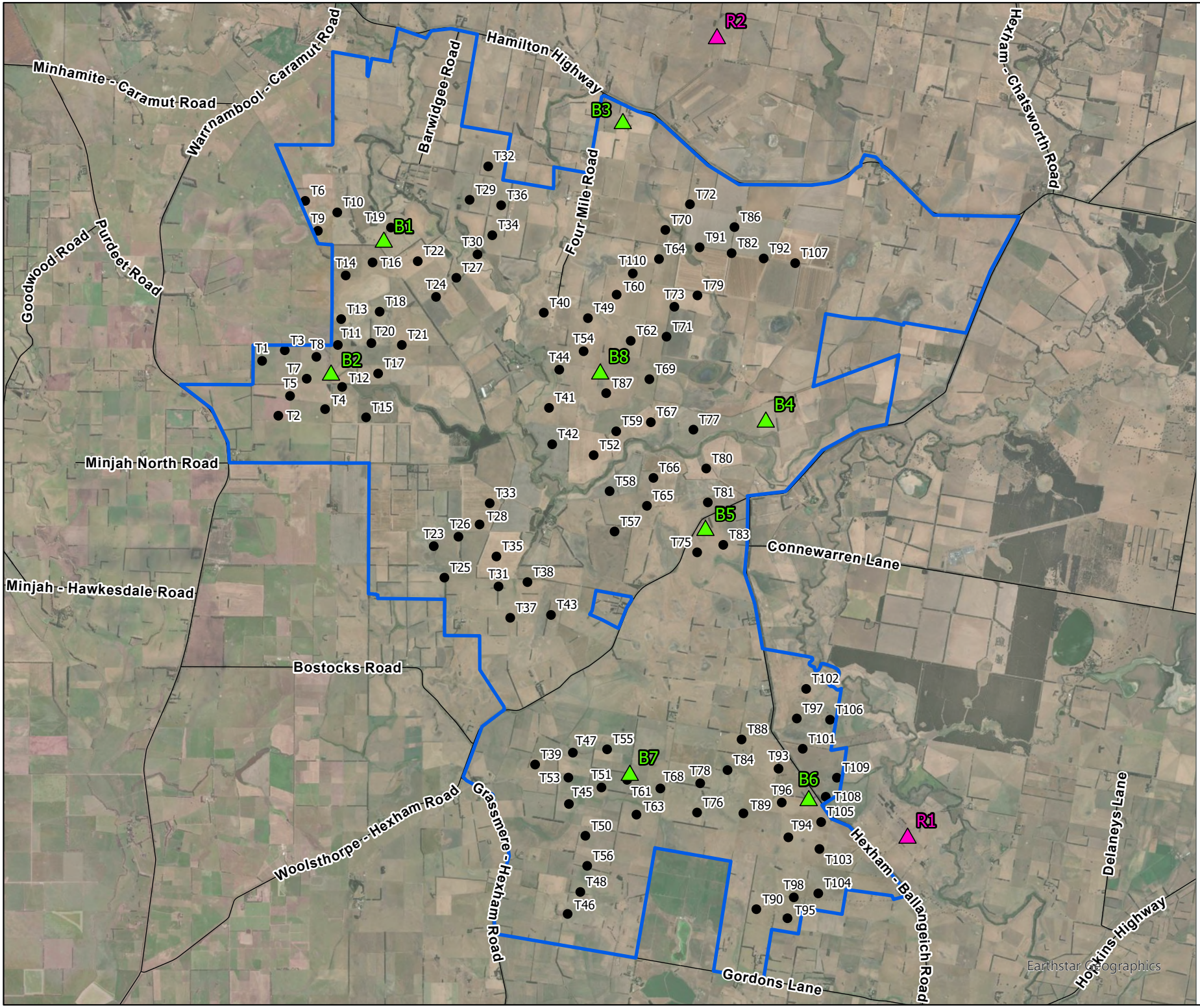


Figure 4: Hexham Wind Farm - Location of BUS Points

Project No: 18088_25
Project: Hexham Wind Farm, VIC
Date: 3/09/2025

- Wind farm boundary
- Roads
- Turbines
- BUS point
- Reference point

N

Kilometres

0 1 2 3 4

GDA2020 MGA Zone 54

Nature Advisory
PO Box 337, Camberwell, VIC 3124, Australia
www.natureadvisory.com.au
03 9815 2111 - info@natureadvisory.com.au

8.4. Previous studies

EHP undertook two BUS, one in late spring/early summer (28 November–2 December, 2011) and one in late summer (20–22 February, 2012). The survey was undertaken consistent with the requirements for bird risk assessment in accordance with *Wind Farms and Birds – Interim Standards for Risk Assessment* issued by the Australian Wind Energy Association (AusWEA 2005).

The BUS followed the fixed-point bird count method which was undertaken using 12 points, 10 of these were located within the development footprint and two reference points located close to the site. The search radius used was 100 m for small birds and 800 m for large birds. Points were counted 13 times over the course of the two surveys (seven times in spring and six times in summer). Each point was surveyed at different times of the day and bird height was recorded for each observation.

Data collected were amalgamated for the seasons and summarised in Table 9 of the report (EHP 2014). There were 2,983 observations of 11,428 individuals from 97 species of birds during 153 fixed–point counts. The most common species recorded included in order of importance: Australian Magpie, Little Raven, Eurasian Skylark, Stubble Quail and Long-billed Corella.

Most birds were found flying below RSA height (84% of birds below, 16% at and 0.1% above RSA heights). The study identified four threatened species including Brolga, Great Egret, Black Falcon and Royal Spoonbill. Note that Royal Spoonbill was classified as Near Threatened in the *Advisory List of Threatened Vertebrate Fauna in Victoria – 2013* (DSE 2013), but under the current *Flora and Fauna Guarantee Act 1988 Threatened Listing* (Vic; FFG Act) it no longer holds a threatened status.

The methods used in this study, although based on the same source (AusWEA 2005), were different to that used in the Nature Advisory survey. EHP surveyed ten impact sites, of which five points were outside the current wind farm boundary, used different turbine dimensions and consequently different RSA heights, and used different approach for data analysis. It is therefore difficult, to make meaningful comparison of the results from the earlier survey to that of the current survey and results, However, general findings of bird life within the study area, such as common species utilising the site, species which dominated in terms abundance, and species found at risk were comparable to those reported in the current study.

8.5. BUS 2018-19 Results

8.5.1. Survey Suitability

The cumulative number of bird species recorded from the 2018 and 2019 fixed-point bird counts are shown in Figure 5. As both the spring and summer curves flatten out as the number of counts increases, this suggests that a high percentage of the diversity of birds utilising the study area was captured during the surveys.

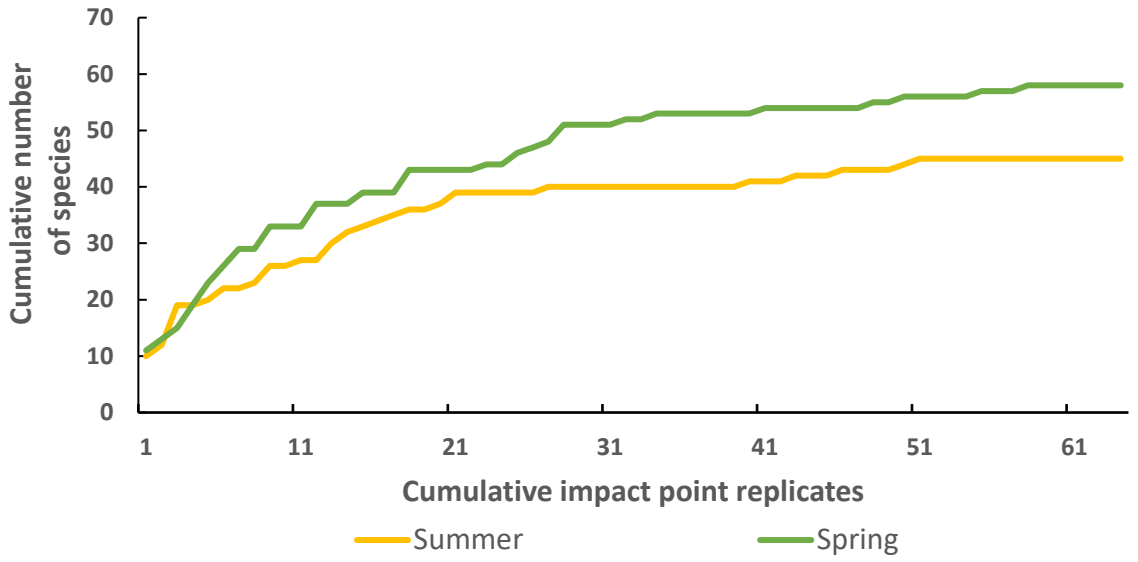


Figure 5: The cumulative number of bird species recorded during consecutive counts at impact survey points during the spring surveys in 2018 and summer surveys in 2019

8.5.2. Species composition

A total of 90 bird species were recorded using the study area during the two seasonal BUS surveys in 2018 and 2019, including both formal BUS counts and incidental recordings.

During formal BUS counts, 58 species were recorded during spring 2018 and 43 during summer 2019. The combined number of species seen at both seasons during the formal BUS count was 68 species.

The species observed utilising the impact observation points, their relative abundance and height distribution are detailed in Appendix 9. The appendix includes a list of the species observed during the two seasonal BUS at each of the observation points, as well as the number of individuals per species recorded at each of the three height zones (below 40 m, between 40 to 260 m and above 260 m RSA height). A summary of the 2018/2019 BUS data is presented below.

8.5.3. Species abundance

The abundance of birds in 2018/19 varied between the two seasons, with 1,818 counts during formal counts in spring; and 2,911 counts summer, totalling 4,729 counts.

The five most abundant species of birds at the impact sites are shown in Table 17. The common resident species (Lorikeet, Australian Magpie; Raven (mainly Little Raven); Common Starling and Red-rumped Parrot), formed over 50% of all birds recorded during the BUS. The mix of bird species recorded at each survey point also reflected the habitat in the count area. At points with patches of native vegetation, such as remnant woodlands, more woodland birds were encountered compared with points in mostly open grazing paddocks and few or no trees. Similarly, the interface between woodlands and open grassy paddocks also attracted species that utilise both habitats.

Table 17: The five most abundant species at the impact observation points in 2018/2019

Species	% of total
Lorikeet sp.	12.3
Raven sp.	11.1
Common Starling	10.9
Australian Magpie	10.3
Red-rumped Parrot	5.8
	50.4

8.5.4. *Flight heights*

Bird heights were classified as below (< 40 m), at (40–260 m), and above (> 260 m) RSA height. The number of birds recorded during the two seasonal surveys at these flight heights are presented in Table 18. At the survey sites, most birds were recorded flying below RSA heights (94.4%), with 5.6 % at RSA height, and none above RSA heights.

The height distribution confirms that most birds flew below RSA height or were either on the ground or in trees (from 1 to 20 m in height), therefore reducing collision risks between birds and operational wind turbines.

Species recorded at RSA height summarises the species of birds found flying at RSA heights during the two seasons of BUS in 2018 and 2019. The most common bird to fly regularly at RSA heights in spring was the Long-billed Corella. Other birds regularly flying at RSA heights include Sulphur-crested Cockatoo, ravens and raptors.

In summer, ravens were the most common birds flying at RSA heights. Other birds included large waterbirds (such as ibises, and herons), cockatoos, corellas, and lorikeets together with raptors. Among raptors there were two Wedge-tailed Eagle sightings in summer 2019, of which one was at RSA height.

In general, a total of 22 species of birds were recorded at RSA heights for the combined seasons.

Table 18: Species recorded flying at RSA height during fixed-point surveys in 2018/19

Species at RSA	Birds at RSA	All birds	% Species Flights at RSA	% All Flights at RSA
Australian Magpie	12	487	2.5	4.6
Australian White Ibis	13	13	100	5.0
Black Swan	2	2	100	0.8
Brown Falcon	2	16	12.5	0.8
Brown Goshawk	2	2	100	0.8
Brown Songlark	2	36	5.6	0.8
Eurasian Skylark	12	162	7.4	4.6
Fairy Martin	20	78	25.6	7.6
Galah	8	63	12.7	3.1
Little-pied Cormorant	1	6	16.7	0.4
Long-billed Corella	57	101	56.4	21.8
Lorikeet sp.	20	583	3.4	7.6
Nankeen Kestrel	3	8	37.5	1.1
Raven sp.	56	525	10.7	21.4
Red-rumped Parrot	3	272	1.1	1.1

Species at RSA	Birds at RSA	All birds	% Species Flights at RSA	% All Flights at RSA
Straw-necked Ibis	6	6	100	2.3
Sulphur-crested Cockatoo	23	68	33.8	8.8
Wedge-tailed Eagle	1	2	50.0	0.4
Welcome Swallow	10	72	13.9	3.8
Whistling Kite	6	8	75.0	2.3
White-faced Heron	2	17	11.8	0.8
White-necked Heron	1	11	9.1	0.4
Total	262	2538		

Notes: RSA height (40 -260 m). No birds sighted above RSA height (>260). All birds = all birds of this species counted at all heights in the survey.

8.5.5. Listed threatened birds and species of concern (2018/2019)

Threatened species

Most birds found to utilise the study area were common birds. Of the bird species recorded during fieldwork, three threatened species were recorded:

- Brolga (FFG Act: Endangered)
- Eastern Great Egret (EPBC Act: Migratory; FFG Act: Vulnerable)
- Little Eagle (FFG Act: Vulnerable)

Brolga

One pair was sighted foraging in an open paddock. The Brolga was studied in more detail by undertaking breeding and flocking surveys in and around the project site. Results of the Brolga studies are presented in a separate report.

Eastern Great Egret

The species was observed once below RSA height. Great Egret is expected to occur in wetlands and waterways year-round in small numbers, spending most of the time at ground level and only flying to travel between foraging/roosting areas.

Little Eagle

The species was observed once, flying at RSA height. Due to the lack of woodland vegetation, the species is expected to occur in low densities and only foraging or traveling.

Species of interest (Lumsden et al. 2019)

The document *Updated species of concern list for Victoria, relevant to onshore wind energy facilities* (DEECA 2024c) contains a list of species that independent of their listing status in the state and federal conservation acts, are considered vulnerable to impacts by wind farms.

All three threatened species recorded and listed above are also found in this document. No other species of interest were recorded in 2018-19 BUS.

8.6. BUS 2024-2025 Results

8.6.1. Survey suitability

The cumulative number of bird species recorded in winter, spring, summer and autumn fixed-point counts are plotted as species accumulation curves (Figure 6:). These show that the numbers of species tended to plateau after approximately 50 counts. Therefore, the survey effort was considered sufficient for obtaining a representative sample of bird species utilising the study area in each season.

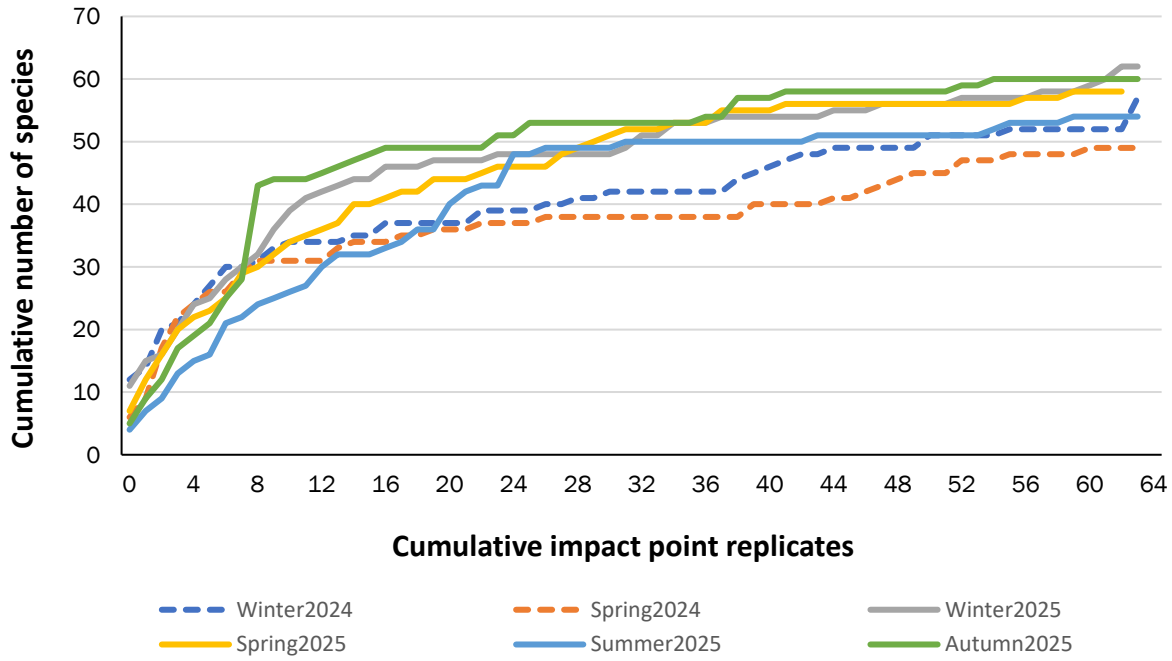


Figure 6: Cumulative number of bird species observed in each season of the 2024-25 Bus during repeated fixed-point counts at Hexham Wind Farm.

8.6.2. Species composition

The location, number and height distribution of each species are presented in Table 19. During the seasonal surveys conducted in 2024 and 2025, 105 bird species and six species complexes identified to genus/group were recorded in BUS fixed points totalling 15,827 counts. Of these, 12,590 counts were at impact points and 3,237 counts at reference points. Farmland and bushland species predominated, while there were few observations of raptors, woodland birds, wetland birds, and threatened species. Two additional species were recorded incidentally only while traversing the project site.

During formal BUS counts within the wind farm site (impact points), in 57 species in winter and 49 in spring 2024, and 54, 60, 62, and 58 species in summer, autumn, winter, and spring 2025, respectively.

Table 19: Bird species, numbers and flight-height distributions observed during the seasonal BUS at Hexham Wind Farm in 2024-25

BUS point	B1			B2			B3			B4			B5			B6			B7			B8			Totals			R1			R2			Totals		
Species and Height Class	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Australasian Grebe	1																								1	0	0							0	0	0
Australasian Swamphen				1																					1	0	0							0	0	0
Australian Hobby	1				1																	1			2	1	0							0	0	0
Australian Magpie	161	6		197	35		201		4	164	18		242	6		182			203	17		215	4		1565	86	4	144			185			329	0	0
Australian Pelican	2										1														2	1	0							0	0	0
Australian Pipit	4			35			10	1		19			7			9			3			20			107	1	0	37			15			52	0	0
Australian Shelduck	99	1					5			39	12		4	2		5			3	2		2	4		157	21	0	13	2					13	2	0
Australian White Ibis	1																								1	0	0							0	0	0
Australian Wood Duck	23	2								2						8									33	2	0							0	0	0
Banded Lapwing							2																		2	0	0							0	0	0
Black Kite											1												1		0	2	0							0	0	0
Black Swan	18	2					2				6														20	8	0							0	0	0
Black-faced Cuckoo-shrike																2									2	0	0	1						1	0	0
Black-fronted Dotterel	7																								7	0	0							0	0	0
Black-shouldered Kite	1			4			1																		6	0	0							0	0	0
Blue-winged Parrot				35							2												1		35	3	0							0	0	0
Brolga										2															2	0	0							0	0	0
Brown Falcon	5	1		2	9		6			10	5		6	1		8			6			13	1		56	17	0	3	1		1			4	1	0
Brown Goshawk																									0	0	0				2	2		2	2	0
Brown Songlark				2						1									2			3			8	0	0	1			1			2	0	0
Brown Thornbill	23			4			10						16			17			27						97	0	0	7			16			23	0	0
Brown-headed Honeyeater							1																		1	0	0							0	0	0
Buff-rumped Thornbill				1																					1	0	0							0	0	0
Cacatua sp.																						1			1	0	0							0	0	0
Chestnut Teal	16																								16	0	0							0	0	0
Collared Sparrowhawk	1																								1	0	0							0	0	0
Common Blackbird							1			3															4	0	0							0	0	0
Common Starling	12			20			8			527	17		171	14		211	45		11			361			1321	76	0	297		3	28			325	0	3
Crested Pigeon	15			1			4			6						1			6						33	0	0	15			1			16	0	0
Crimson Rosella	19			18						3			2			61			6						109	0	0	12			9			21	0	0
Duck sp.	6																								6	0	0							0	0	0
Dusky Moorhen	1																								1	0	0							0	0	0
Eastern Rosella																8						2			10	0	0	39			5			44	0	0
Eastern Spinebill																									0	0	0				1			1	0	0
Emu										7						5									12	0	0							0	0	0
Eurasian Coot	688																								688	0	0							0	0	0
Eurasian Skylark	38	28		137	71		35	23		74	83		56	49		21	28		32	29		95	73		488	384	0	53	9		64	22		117	31	0
European Goldfinch	7			45			15			14			6			24			121			1			233	0	0	15						15	0	0
Fairy Martin	16			1																		1			18	0	0							0	0	0
Flame Robin				3																					3	0	0							0	0	0
Forest Raven	12			28			22			5			17			24			15			15			138	0	0	8			2			10	0	0
Galah	10			33	15		6			50	6		30			47	4		42	12		3			221	37	0	10			29			39	0	0
Golden Whistler																1			1						2	0	0				1			1	0	0

BUS point	B1			B2			B3			B4			B5			B6			B7			B8			Totals			R1			R2			Totals		
Species and Height Class	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Golden-headed Cisticola				5									5												10	0	0							0	0	0
Great Crested Grebe	7																								7	0	0							0	0	0
Great Egret	1																								1	0	0							0	0	0
Grey Butcherbird							4						1			3									8	0	0	13			1			14	0	0
Grey Currawong				3			1																		4	0	0							0	0	0
Grey Fantail				2			2			13			4			6			5						32	0	0				2			2	0	0
Grey Shrike-thrush	18			4			21			7			17			28			2			3			100	0	0	1			9			10	0	0
Grey Teal	53									6															59	0	0							0	0	0
Hoary-headed Grebe	25																								25	0	0							0	0	0
Lewin's Rail				1																					1	0	0							0	0	0
Little Black Cormorant	4										7					1									5	7	0							0	0	0
Little Corella													3									7			10	0	0	9			52			61	0	0
Little Eagle																									0	0	0		1					0	1	0
Little Grassbird				1																					1	0	0							0	0	0
Little Lorikeet																2									2	0	0							0	0	0
Little Pied Cormorant	3																								3	0	0							0	0	0
Little Raven	77	21		260	1		217	3		104	74		350	15		135	18		101	81		439	6		1683	219	0	71	14		77	3		148	17	0
Long-billed Corella	10	7						8		26	117		17	11		145	5		5	12		7	4		210	164	0	708	92		4	35		712	127	0
Magpie-lark	22			17			37			22			21	1		15			27			40			201	1	0	21			12			33	0	0
Martin sp.		9														1									1	9	0							0	0	0
Masked Lapwing	20			2						2						3	2					1			28	2	0	1			2			3	0	0
Masked Woodswallow										1															1	0	0							0	0	0
Musk Duck	20																								20	0	0							0	0	0
Musk Lorikeet	10	8		24	14		16				18											38	2		88	42	0	7			28			35	0	0
Nankeen Kestrel	1			2			5			2	1					5			2	2		1			18	3	0	3						3	0	0
New Holland Honeyeater	126			1			16			7			7			1			4						162	0	0				31			31	0	0
Noisy Miner	15			9			1			2			1			3			1			100			132	0	0	16			18	5		34	5	0
Pacific Black Duck	130			3			3				4		2			2						7			147	4	0	4			3			7	0	0
Pink-eared Duck	13																								13	0	0							0	0	0
Purple-crowned Lorikeet	28	25					6	1			8					2						10			46	34	0	2			26			28	0	0
Rainbow Lorikeet	7															2									9	0	0				2			2	0	0
Raptor sp.																									0	0	0		1					0	1	0
Raven sp.	78	7		151	7		41	17		36	17		142			57	6		60	31		93	4		658	89	0	88	15		55			143	15	0
Red Wattlebird	105			26			40			15			27			19			16			6			254	0	0	28			38			66	0	0
Red-browed Finch	1			7			4																		12	0	0							0	0	0
Red-kneed Dotterel	1																								1	0	0							0	0	0
Red-rumped Parrot	62			3	4		6			2			33			90			26						222	4	0	39	2		10			49	2	0
Reed-Warbler				14																					14	0	0							0	0	0
Rufous Whistler																									0	0	0				2			2	0	0
Scarlet Robin				1																					1	0	0							0	0	0
Silvereye							6						3			2			11						22	0	0							0	0	0
Spotted Dove							1																		1	0	0							0	0	0
Spotted Pardalote																			2						2	0	0							0	0	0
Straw-necked Ibis	25	115						125			5														25	245	0					12		0	12	0

BUS point	B1			B2			B3			B4			B5			B6			B7			B8			Totals			R1			R2			Totals		
Species and Height Class	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Striated Pardalote	6						6			4			4			9	2								29	2	0				2			2	0	0
Striated Thornbill																2									2	0	0							0	0	0
Stubble Quail										2			3						1			1			7	0	0				1			1	0	0
Sulphur-crested Cockatoo							8	4		36	2		11	4		111	3		9	1					175	14	0	285	12					285	12	0
Superb Fairy-wren	143			81			12			27			45			40			78						426	0	0	9			104			113	0	0
Swamp Harrier	1	1									1		1												2	2	0							0	0	0
Thornbill sp.																7									7	0	0							0	0	0
Tree Martin	4			2			2			2						7	4								17	4	0	44	32					44	32	0
Wedge-tailed Eagle	1	4		3	7		2	4		2	12			2			10		1	12			3		9	54	0	4	15		3	5		7	20	0
Weebill							3						2						3						8	0	0							0	0	0
Welcome Swallow	63			30			13	4		1			6			24			24			12			173	4	0	7	1		3			10	1	0
Whistling Kite	1	1			1		3	1		12	11			1		7	1					2	1		25	17	0		1		2			2	1	0
White-browed Scrubwren										3									2						5	0	0							0	0	0
White-faced Heron	1	1					7	1					4			4	4		2						18	6	0	2			1			3	0	0
White-fronted Chat				4																					4	0	0				9			9	0	0
White-naped Honeyeater																1									1	0	0							0	0	0
White-necked Heron													2										1		2	1	0	3						3	0	0
White-plumed Honeyeater	7			6			5			2			21												41	0	0	1			18			19	0	0
White-winged Chough	4												4						7						15	0	0							0	0	0
Willie Wagtail	8			8			13	1		12			8			20			42						111	1	0				16			16	0	0
Yellow Thornbill																2									2	0	0							0	0	0
Yellow-faced Honeyeater	4			12			4			6			36			56			7			2			127	0	0				6			6	0	0
Yellow-rumped Thornbill	4			7			51			3			4			31			28						128	0	0	6			28			34	0	0
Yellow-tailed Black-cockatoo	22						10				1								2						34	1	0							0	0	0
Grand Total	2318	239	0	1256	165	0	895	193	4	1283	429	0	1341	106	0	1477	132	0	946	199	0	1502	105	0	11018	1568	4	2027	198	3	925	84	0	2952	282	3

Notes: A = below RSA height; B = at RSA height; C = above RSA height.

8.6.3. Species abundance

Relative observed abundance tended to be highest during winter (4,140), autumn (3,144) and spring 2025 (2,735), followed by summer 2025 (2,333), winter 2024 (1,880) then spring 2024 (1,595). These large seasonal fluctuations are likely influenced by the behaviour of common, highly gregarious species such as ravens, magpies, starlings, and cockatoos (including corellas), which often occur in large flocks in disturbed or agricultural areas. These species, among the five most common species observed at impact and reference points (Table 20), can show marked variation in numbers between surveys and years depending on local foraging conditions and seasonal population increases following summer recruitment. Their ubiquitous distribution and dominance in the landscape can therefore amplify apparent abundance fluctuations in the local avifauna, which often reflect natural variability and sampling noise rather than true community-level change.

Table 20: Five most common bird species observed at Hexham Wind Farm in 2024/25

Impact points	Reference points
Little Raven	Long-billed Corella
Australian Magpie	Australian Magpie
Common Starling	Common Starling
Eurasian Skylark	Sulphur-crested Cockatoo
Raven sp.	Little Raven

These five species, presented in decreasing order of abundance in Table 20, comprised 52% of all birds observed at impact points and 60% observed at reference points.

8.6.4. Flight heights

Bird flight heights were classified according to the RSA height of the turbines at the wind farm as below (< 40 m), at (40-260 m) and above (> 260 m). The numbers of each bird species recorded at these heights are presented in Table 21. The raw data are presented in Appendix 9.

Most birds were observed flying below RSA height at impact (87.5%) and reference (91%) points. At impact points, 12.5% birds were observed at or above RSA height, compared with 9% at reference points.

Table 21: Flight height distributions of birds observed at impact and reference points in 2024/25

Height	Impact points		Reference points	
	Number	% of total	Number	% of total
A (below RSA)	11018	87.51%	2952	91.20%
B (at RSA)	1568	12.45%	282	8.71%
C (above RSA)	4	0.03%	3	0.09%
Total	12590	100%	3237	100%

Table 22: Most abundant species flying at or above RSA heights at Hexham Wind Farm in 2024/25

Species	Count (% All Flights ≥ RSA)
Eurasian Skylark	415 (22.4%)
Long-billed Corella	291 (15.7%)
Straw-necked Ibis	257 (13.9%)
Little Raven	236 (12.8%)
Raven sp.	104 (5.6%)

Among the most abundant species observed flying at or above RSA heights (Table 22), the Eurasian Skylarks is not native to Australia and as such of no concern. Straw Necked Ibis is seasonally common in open farmland and has been observed in winter 2024 in larger flocks at RSA. Ravens (typically the Little Raven) and Long-billed Corella are also common in farmland and will move at different heights in flocks of variable size.

8.6.1. Species recorded at RSA height

All species that were recorded flying at RSA height during fixed-point surveys in 2024/25 are listed in Table 23.The most common bird to fly regularly at RSA heights in spring was the Eurasian Skylark. Other birds regularly flying at RSA heights include Long-billed Corella, Ravens and Ibis. Among raptors there were 49 Wedge-tailed Eagle sightings at RSA height. Wedge-tailed Eagles tend to fly at height (Table 23) where warm air currents are found and are common in farmland year-round due to presence of rabbits, large-sized birds, and sheep/cow carrion.

In general, a total of 38 species of birds were recorded at or above RSA heights for the combined seasons in 2024/25.

Table 23: Species recorded flying at or above RSA height during fixed-point surveys in 2024/25

Species at RSA	Birds ≥ RSA	All birds	% Species Flights ≥ RSA	% All Flights ≥ RSA
Australian Hobby	1	3	33.3	0.05
Australian Magpie	86	1980	4.3	4.65
Australian Pelican	1	3	33.3	0.05
Australian Pipit	1	160	0.6	0.05
Australian Shelduck	23	193	11.9	1.24
Australian Wood Duck	2	35	5.7	0.11
Black Kite	2	2	100.0	0.11
Black Swan	8	28	28.6	0.43
Blue-winged Parrot	3	38	7.9	0.16
Brown Falcon	18	78	23.1	0.97
Brown Goshawk	2	4	50	0.11
Common Starling	76	1722	4.4	4.11
Eurasian Skylark	415	1020	40.7	22.43
Galah	37	297	12.5	2.00
Little Black Cormorant	7	12	58.3	0.38
Little Eagle	1	1	100	0.05

Species at RSA	Birds ≥ RSA	All birds	% Species Flights ≥ RSA	% All Flights ≥ RSA
Little Raven	236	2067	11.4	12.76
Long-billed Corella	291	1213	24	15.73
Magpie-lark	1	235	0.4	0.05
Martin sp.*	9	10	90	0.49
Masked Lapwing	2	33	6.1	0.11
Musk Lorikeet	42	165	25.5	2.27
Nankeen Kestrel	3	24	12.5	0.16
Noisy Miner	5	171	2.9	0.27
Pacific Black Duck	4	158	2.5	0.22
Purple-crowned Lorikeet	34	108	31.5	1.84
Raptor sp.*	1	1	100	0.05
Raven sp.*	104	905	11.5	5.62
Red-rumped Parrot	6	277	2.2	0.32
Straw-necked Ibis	257	282	91.1	13.89
Striated Pardalote	2	33	6.1	0.11
Sulphur-crested Cockatoo	26	486	5.3	1.41
Swamp Harrier	2	4	50	0.11
Tree Martin	36	97	37.1	1.95
Wedge-tailed Eagle	74	90	82.2	4.00
Welcome Swallow	5	188	2.7	0.27
Whistling Kite	18	45	40	0.97
White-faced Heron	6	27	22.2	0.32
White-necked Heron	1	6	16.7	0.05
Willie Wagtail	1	128	0.8	0.05
Yellow-tailed Black-cockatoo	1	1	100	0.05
Total	1850	12330		

Notes: * Species not identified at the species level.

8.6.2. Listed birds and species of concern (2024/2025)

The majority of birds utilising the proposed wind farm were common species. Of the species recorded during the BUSs, the following are listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth; EPBC Act) and/or the *Flora and Fauna Guarantee Act 1988* (Vic; FFG Act):

- Brolga (FFG Act: Endangered)
- Blue-winged Parrot (EPBC Act: Vulnerable)
- Eastern Great Egret (FFG Act: Vulnerable)
- Lewin's Rail (FFG Act: Vulnerable)
- Little Eagle (FFG Act: Vulnerable)
- Musk Duck (FFG Act: Vulnerable)

Of the incidental bird observations during BUSs, the following species are listed under the EPBC Act and/or the FFG Act.

- Black Falcon (FFG Act: Critically Endangered)
- Latham's Snipe (EPBC Act: Vulnerable and Migratory)

A map of the locations of listed bird species observed during the study is presented in Figure 7. Of these listed species, Brolga, Eastern Great Egret, Little Eagle and Black Falcon are considered species of concern under the *Updated species of concern list for Victoria, relevant to onshore wind energy facilities* (DEECA 2024c)

Brolga

A single observation of a pair of Brolga near a known wetland was recorded at B4 during the winter 2024 survey. The birds were flying below RSA. Detailed results of the Brolga studies are presented in a separate report.

Blue-winged Parrot

Several flocks of Blue-winged Parrot were recorded in the winter 2024, and winter and spring 2025 surveys foraging on grasses and weeds growing on sides of farm tracks, in paddocks and near revegetation windbreaks. Flock sizes were generally small, with a median of 11 individuals, ranging from single birds to a maximum of 32.

The project area sits within the known breeding distribution of the species, however it is considered unlikely that Blue-winged Parrot breeds in HWF due to the lack of mature woodlands. If breeding does occur (spring-summer), this is typically between October–January. Nesting usually in tree hollows, often a high eucalypt, but can also breed in a stump, fence post or fallen log. Incubation lasts 18–20 days; nestling period c. 30 days. The species has been found to collide with operating turbines on occasion in south-east Australia, however it is unlikely to be disturbed by operating turbines as the species is often observed foraging in their vicinity.

Lewin's Rail

The species was observed on one occasion on a creek at B2 during the winter 2025 survey. Its presence at HWF is likely to be very low and restricted to creek lines, based on a single observation despite extensive field effort since 2011. As a reluctant flyer that rarely moves beyond dense wetland vegetation, the species is unlikely to be at risk of collisions.

Little Eagle

The species was observed on one occasion at R1 within RSA during the autumn 2025 survey. The species has been recorded to collide with operating turbines, however its presence in HWF is likely to be very low given the sole observation and the extensive field effort since 2011.

Musk Duck

Most Musk Duck observations were in two permanent dams in the northwest portion of the site. Flights between these habitats and other areas of the wind farm are expected, however flight heights are unknown as this species moves nocturnally. Brolga wetland buffers may benefit Musk Duck flights into and out of wetlands in a scenario where they climb above RSA shortly after take-off. Musk Duck flights are direct and fast, minimising the interactions with operating turbines.

Black Falcon

Black Falcon was recorded incidentally on one occasion near B4 during the summer 2025 survey. The species collides with operating turbines in Victoria. The site has been extensively surveyed over the years by skilled ornithologists, with only one record, suggesting the site is unlikely to host territorial pairs on an ongoing basis. Black Falcon occurrences in southwest Victoria are less frequent than other regions such as the wheatbelt, however due to the presence of wetlands in the

area the species could be attracted to these foraging habitats on occasion, or even breed in the vicinity.

Eastern Great Egret

The species was observed once flying at 10 m over a farm dam at B1 during the autumn 2025 survey, and twice incidentally at Mustons Creek. Its presence at HWF is likely to be very low and restricted to waterbodies, based on the few observations despite extensive field effort since 2011. Given that turbines are located away from waterbodies and do not obstruct waterways, combined with the expected low numbers of this species, interactions with turbines are considered unlikely.

Latham's Snipe

This species could occur in low numbers within wetlands and wet drainage lines across the study area in the warmer months, as it has been recorded incidentally on occasion. Latham's Snipe will fly at height after dusk, however it is unknown whether flights occur within RSA height. Latham's Snipe flights are direct and fast, minimising the interactions with operating turbines.

Other migratory shorebirds

During other surveys conducted concurrently with the BUS, NA incidentally recorded migratory shorebirds, including Common Sandpiper, Double-banded Plover, and Sharp-tailed Sandpiper, which are relevant to note. These species were observed in low numbers, primarily at a relatively large lake/vegetated dam (wetland 29405). Planned turbine locations avoid this wetland, minimising the risk of collisions with these and other potential migratory shorebirds. Further details are provided in the following section (Section 9), which addresses migratory birds.

Raptors

258 observations of 11 raptor species were recorded during the BUSs at fixed points, with an additional Black Falcon recorded incidentally. Raptor presence varied seasonally.

Wedge-tailed Eagle (90 cumulative observations) and Brown Falcon (78) were the most abundant raptor species and were observed regularly throughout the study area. These species are common in farmland in temperate regions of Australia, being generalist feeders and also opportunistic carrion feeders. Wedge-tailed Eagle observations were relatively high during the sheep lambing season (winter at the majority of properties), when non-resident eagles arrive to scavenge dead lambs. 82% of Wedge-tailed Eagles sightings were recorded at or above RSA height. Of all Australian bird species, the Wedge-tailed Eagle is considered the most vulnerable to turbine collision as it commonly soars at RSA heights.

Raptors formed a very small proportion of the bird assemblage (1.6%), yet comprised approximately 6.5% of the birds seen flying at RSA height.

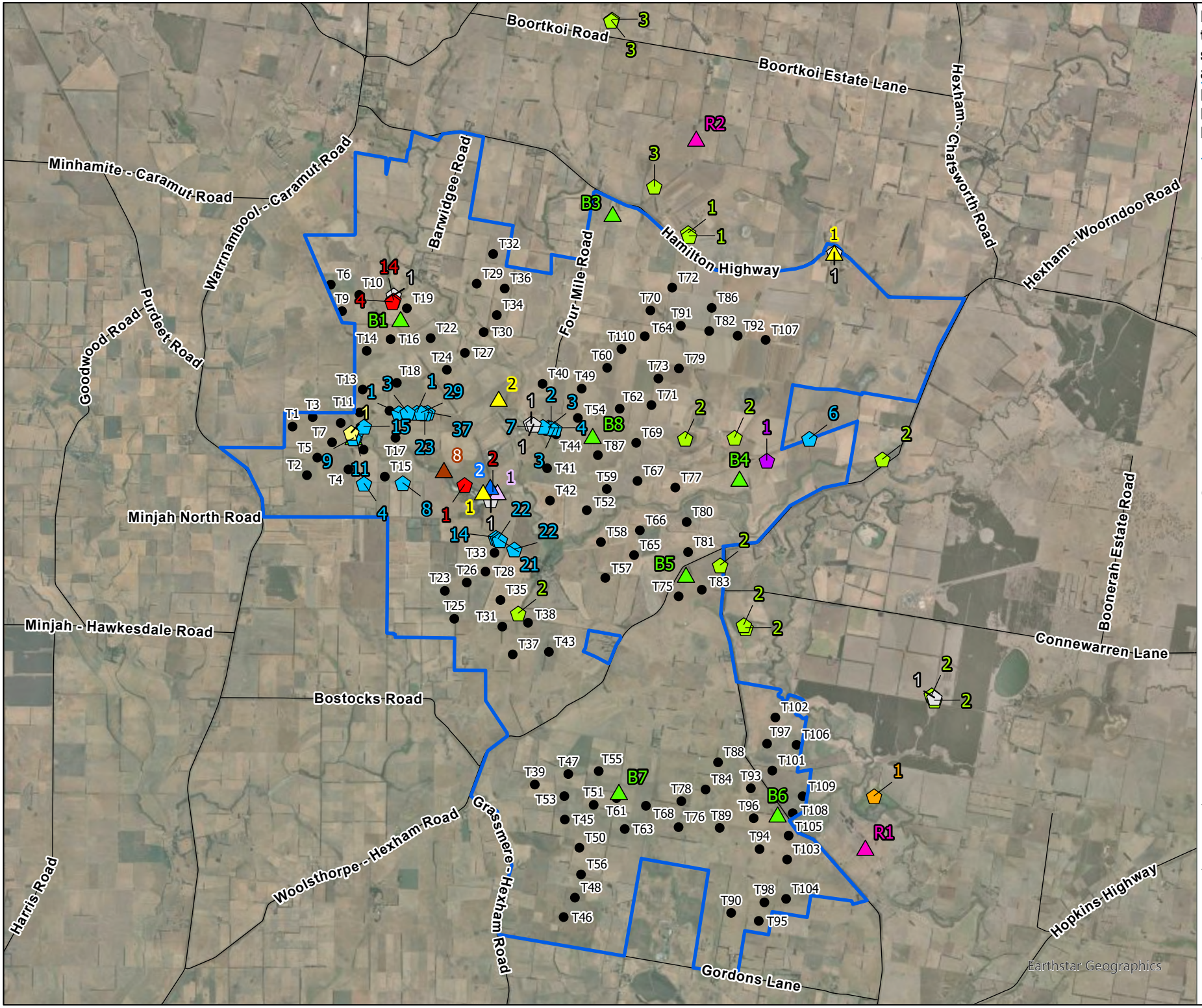


Figure 7: Locations of listed threatened and migratory bird species observed in the study area

Project No: 18088_25
Project: Hexham Wind Farm, VIC
Date: 17/11/2025

- Wind farm boundary
- Turbines
- BUS point
- Reference point

Threatened species (total count)

- Black Falcon (1)
- Blue-winged Parrot (245)
- Brolga (29)
- Eastern Great Egret (6)
- Little Eagle (1)
- Lewin's Rail (1)
- Musk Duck (21)

Migratory species (total count)

- Common Sandpiper (1)
- Double-banded Plover (2)
- Latham's Snipe (4)
- Sharp-tailed Sandpiper (8)

Individual count: 1

N

Kilometres
0 1 2 3 4

GDA2020 MGA Zone 54

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8.7. Conclusions and recommendations

The conclusions from the BUS from both 2018-19 and 2024-25 survey periods are:

- The study area consists largely of open, mostly flat, grassy paddocks and cultivated farmland intercepted with small to medium-sized remnant eucalypt woodlands, linear windbreaks of native trees and introduced pines and supporting a variety of common, predominantly farmland and woodland birds.
- Eight seasonal surveys were undertaken by NA, the first two in spring 2018 and summer 2019, followed by four seasons of surveys from winter 2024 to autumn 2025 and two additional surveys in winter and spring 2025.
- Over 100 bird species were recorded during formal fixed-point surveys between 2018 - 2025.
- The composition and relative abundances of species utilising the study area is typically of south-eastern Australian wind farms, with farmland and bushland birds generally dominating the avifauna.
- Bird abundance and diversity (number of species recorded) was generally similar between the eight impact survey points, although points surrounded by planted or scattered trees such as B1 and B6 tended to display higher abundance compared with sites within open grazing paddocks lacking trees (B8).
- The most abundant observed species of birds at the impact sites were Ravens (mostly Little Raven), Australian Magpie, Common Starling and Eurasian Skylark, and overall, they formed over half of all birds recorded during the BUS. A similar set of birds were also reported as dominant species during 2011/12 BUS indicating that little change has occurred in bird composition over the years (EHP 2014).
- Within the HWF site, most birds were recorded flying below RSA heights. In 2011-12, 84% of birds flew below 16% at, and 0.1% above RSA heights. In 2018-19, 94.4% of birds flew below, 5.6% at, and none above RSA heights. In 2024-25, 87.5% of birds flew below, 12.5 % at, and 0.03% above RSA heights. The higher percentage of birds flying at RSA height in the later surveys may be explained by the lower minimum RSA height of 30 m that was assumed in the 2011/12 analysis.
- The most common birds flying at RSA height were Eurasian Skylark, Ravens (mostly Little Raven), Long-billed Corella and Straw-necked Ibis.
- Several raptor species were commonly observed flying at RSA height, particularly Wedge-tailed Eagles, which were the most frequently recorded raptor and of which 82% of flights occurred at RSA height.
- Eight listed threatened and/or migratory bird species under the EPBC Act and/or FFG Act were observed utilising the study area between 2011 – 2025 BUSs (including fixed-point counts or incidentally recorded).
    - Brolga (FFG Act: Endangered)
    - Black Falcon (FFG Act: Critically Endangered)
    - Blue-winged Parrot (EPBC Act: Vulnerable)
    - Eastern Great Egret (FFG Act: Vulnerable)
    - Latham’s Snipe (EPBC Act: Vulnerable and Migratory)
    - Lewin's Rail (FFG Act: Vulnerable)
    - Little Eagle (FFG Act: Vulnerable)
    - Musk Duck (FFG Act: Vulnerable)

9. Migratory Birds

KEY FINDINGS

1. Three EPBC Act-listed migratory shorebird species (Sharp-tailed Sandpiper, Latham's Snipe and Double-banded Plover) were detected on the project site during targeted migratory bird surveys in 2018 and 2019.
2. None of the three species of listed migratory shorebird recorded were in numbers that would be above the threshold significance levels of 1% (international) or 0.1% (national) of the flyway population, or, in the instance of the Latham's Snipe a wetland that supports at least 18 individuals.
3. Subsequently, Common Sandpiper was recorded on site in 2019 incidentally,
4. Most wetlands were categorised as ephemeral and too well vegetated with dense growth of reed, rush, sage, and introduced grasses on the edges and dense growth of water ribbon and emergent and submerged vegetation, particularly the sections that are expansions of the Muston Creek. In most cases vegetation was taller than 30 centimetres and deemed unsuitable for most migratory shorebirds, which require more open shorelines and shallow open water or mud in which to forage.
5. Due to the limited extent of suitable habitat, Latham Snipe numbers on the project site are unlikely to exceed 0.1 % of the population and no wetland is likely to support at least 18 individuals (DoEE 2017).
6. Based on these findings, significant impacts on migratory shorebirds from the project development are considered unlikely.

9.1. Migratory Shorebirds

9.1.1. Introduction

Habitat surveys and a review of previous assessments was undertaken for migratory shorebirds at the proposed project site. The investigation provides updated information on the likelihood of occurrence of migratory shorebird species listed under the EPBC Act.

The investigation included:

- Wetland and aquatic fauna habitat assessment, and
- Targeted surveys.

Five species of migratory shorebirds listed under the Commonwealth EPBC Act were initially considered to have the potential to occur in wetlands on the project site: Common Greenshank, Curlew Sandpiper, Double-banded Plover, Latham's Snipe, Red-necked Stint and Sharp-tailed Sandpiper. Accordingly, targeted surveys were undertaken in the summer of 2018-19. Subsequently, Common Sandpiper was recorded incidentally on site in 2019, and Marsh Sandpiper was considered to have potential to occur in 2025 due to records in Mortlake,

The aim of these surveys was to identify areas of suitable wetland foraging habitat that may support any one of these EPBC Act listed shorebird species within the proposed project site and survey them for the potential shorebird species.

This section of the report presents information on the species' biology then the methods and results of this survey, followed by a discussion of the implications of the findings for the project.

Australia is party to several international treaties which serve to protect a suite of migratory bird species that occur along the East Asia – Australasia flyway. The Convention on Wetlands of International Importance (or Ramsar Convention) was the earliest such agreement (1971); it protects wetlands of international significance. The Convention on Conservation of Species of Wild Animals (or Bonn Convention) also protects migratory animals including birds.

Additionally, three bilateral treaties that protect migratory birds are the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) and Republic of Korea – Australia Migratory Bird Agreement (ROKAMBA).

Key species protected by these agreements are the migratory shorebirds, which comprises 37 species that breed in the northern hemisphere (i.e. mostly in Siberia, China, Mongolia, Japan and the Korean Peninsula) and migrate to Australia and New Zealand during their non-breeding season (DEWHA 2009a) are shown in Table 24 below. These species are listed on the Commonwealth EPBC Act.

Table 24: The listed migratory shorebirds

Common name	Scientific name
Scolopacidae	Sandpipers and related birds
Latham's Snipe	*Gallinago hardwickii*
Pin-tailed Snipe	*Gallinago stenura*
Swinho''s Snipe	*Gallinago megala*
Black-tailed Godwit	*Limosa limosa*
Bar-tailed Godwit	*Limosa lapponica*
Little Curlew	*Numenius minutus*
Whimbrel	*Numenius phaeopus*
Eastern Curlew	*Numenius madagascariensis*
Common Redshank	*Tringa totanus*
Marsh Sandpiper	*Tringa stagnatilis*
Common Greenshank	*Tringa nebularia*
Wood Sandpiper	*Tringa glareola*
Terek Sandpiper	*Xenus cinereus*
Common Sandpiper	*Actitis hypoleucos*
Grey-tailed Tattler	*Tringa brevipes*
Wandering Tattler	*Tringa incana*
Ruddy Turnstone	*Arenaria interpres*
Asian Dowitcher	*Limnodromus semipalmatus*
Great Knot	*Calidris tenuirostris*
Red Knot	*Calidris canutus*
Sanderling	*Calidris alba*
Red-necked Stint	*Calidris ruficollis*
Long-toed Stint	*Calidris subminuta*
Pectoral Sandpiper	*Calidris melanotos*
Sharp-tailed Sandpiper	*Calidris acuminata*
Curlew Sandpiper	*Calidris ferruginea*
Broad-billed Sandpiper	*Limicola falcinellus*
Ruff	*Philomachus pugnax*
Red-necked Phalarope	*Phalaropus lobatus*
Charadriidae	Plovers and Lapwings
Pacific Golden Plover	*Pluvialis fulva*
Grey Plover	*Pluvialis squatarola*

Common name	Scientific name
Little Ringed Plover	*Charadrius dubius*
Double-banded Plover	*Charadrius bicinctus*
Lesser Sand Plover	*Charadrius mongolus*
Greater Sand Plover	*Charadrius leschenaultii*
Oriental Plover	*Charadrius veredus*
Glareolidae	Pratincoles
Oriental Pratincole	*Glareola maldivarum*

Most of the listed species are birds of the coastal mudflats and intertidal zones, but some preferentially forage in freshwater habitats, including the Wood Sandpiper and Latham's Snipe. Others may occur in fresh, brackish and saline waters both inland and coastal (e.g. Sharp-tailed Sandpiper). One species, the Double-banded Plover migrates between Australia and New Zealand and occurs on ocean, estuarine and inland lake shorelines in Victoria.

In Victoria, some of these species are listed under the FFG Act (Table 25).

Table 25: Status of migratory listed shorebirds

Common name	*EPBC Act status*	*FFG Act status*
Bar-tailed Godwit	EN	VU
Common Greenshank	EN	EN
Common Sandpiper		VU
Curlew Sandpiper	CR	CR
Eastern Curlew	CR	CR
Great Knot	VU	CR
Greater Sand Plover	VU	VU
Grey Plover	VU	VU
Grey-tailed Tattler		CR
Lesser Sand Plover	EN	EN
Pacific Golden Plover		VU
Red Knot	VU	EN
Ruddy Turnstone	VU	EN
Terek Sandpiper	VU	EN
Whimbrel		EN
Wood Sandpiper		EN

Note: CE = Critically Endangered; EN = Endangered; VU = Vulnerable.

Migratory shorebird surveys were undertaken based on guidelines from *EPBC Act Policy Statement 3.21 Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (DoEE 2017).

9.1.2. Existing Information

Prior to the targeted surveys in 2018 and 2019, existing information on the status of the migratory shorebirds were obtained from the VBA. These records were obtained from a wider area, termed the 'search region' defined for this assessment as an area of 10 kilometres radius centred on a point of the study area (38° 02' 15" S and longitude 142° 34' 46" E).

The likelihood of suitable habitat in the study area for nationally threatened fauna species was ascertained through a search of the online PMST (DCCEEW 2024) using the same search region.

Previous work on the study area undertaken by EHP (2014) was reviewed prior to the current investigations.

In 2025, database searches were updated with a search region defined as within 10km of the Project study area boundary (see 7.2.2).

9.1.3. Methodology

Habitat assessment and selection of survey sites

An aquatic fauna habitat assessment was undertaken to assess the location and extent of suitable habitat for migratory species. The habitat assessment considered the characteristics of wetlands and waterways and whether they meet the habitat requirements. Wetlands within three kilometres of the study area were assessed to determine the status of their habitats and values.

Wetlands assessed were DEECA mapped and other wetlands and waterways identified in the study area. At each wetland site, the vegetation type, structure and habitat quality, and amount and quality of water (temporary or permanent) were examined.

Habitat for the potential species was searched for by visiting mapped wetlands from the DEECA database mapping layer, and then looking for:

- Habitat for most of these shorebird species, which is characterised by open, shallow wetlands (fresh or saline) with banks with shallow gradients and with no vegetation and open shorelines, or at most a shallow cover of aquatic herbs; or
- Habitat for Latham's Snipe, which comprises more heavily vegetated, freshwater wetlands (e.g. comprising Water Ribbons *Triglochin procera*, Dock *Rumex* spp., Water Buttons *Cotula* sp., sedges and rushes), usually with soft muddy substrate and nearby dense vegetation (this can include Austral Bracken *Pteridium esculentum* or dense heath, e.g. *Melaleuca* spp. or *Leptospermum* spp.)

Creek lines (i.e. Mustons Creek and Drysdale Creek) were also inspected for the presence of Latham's Snipe, as this species may use these narrow corridors for foraging, roosting in nearby areas of dense vegetation.

Wetlands assessed and surveyed are described in Appendix 10 and shown in Figure 8.

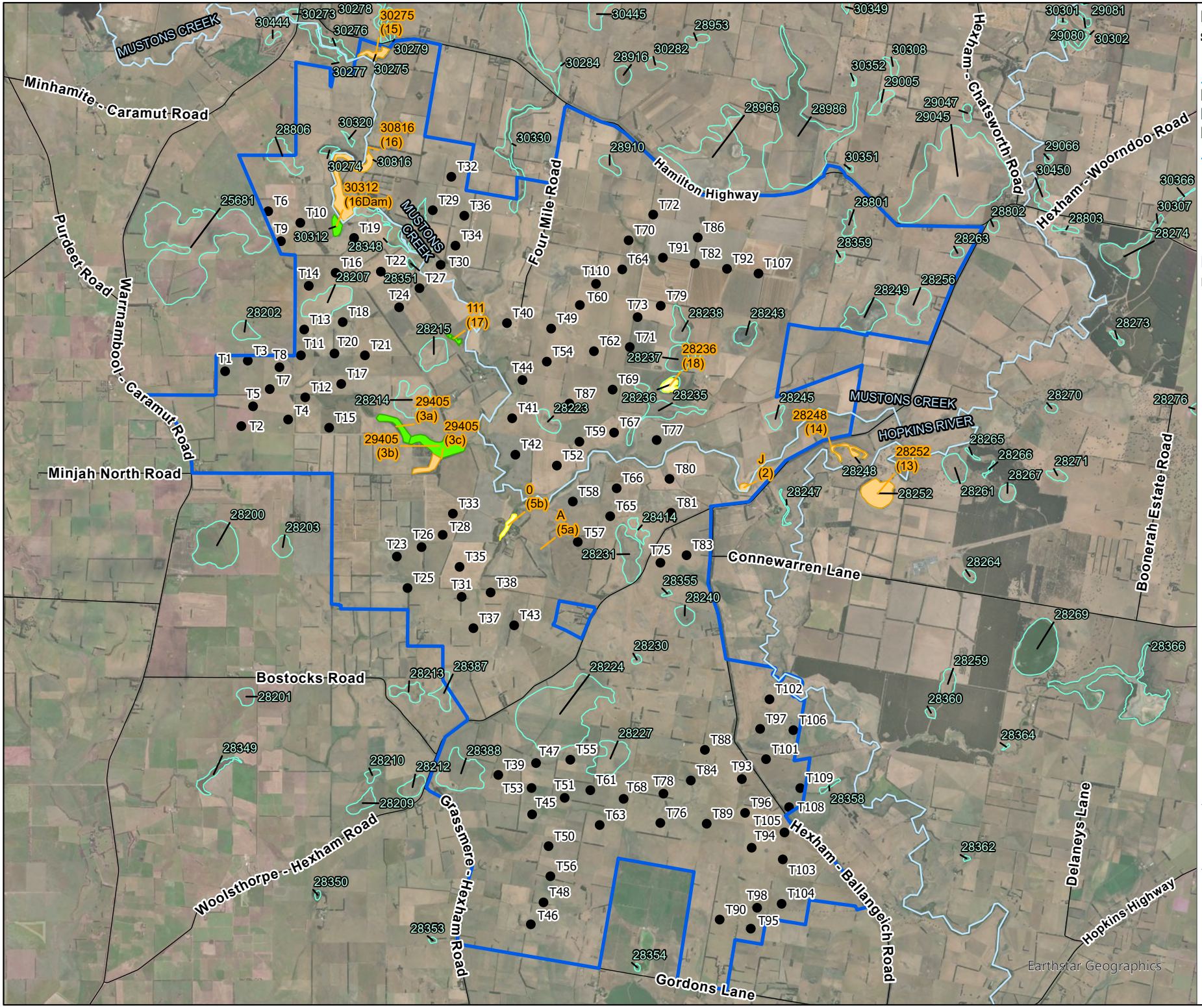


Figure 8: Migratory shorebird survey - surveyed wetlands

Project No: 18088_25
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Date: 18/09/2025

- Wind farm boundary
- Turbines
- Roads
- Watercourse

Habitat quality (with wetland number labelled)

- Medium-high
- Medium
- Low
- DEECA mapped wetland

N

Kilometres
0 1 2 3 4

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Field methodology

Surveys were undertaken by examining all possible and suitable wetland within and outside the project site up to a 3 kilometers buffer (Figure 1).

Whenever habitat was visited, a detailed search was made using 10x binoculars and 20-60x telescope for migratory shorebirds. All listed migratory birds encountered were identified and the number of individuals was counted.

Based on the above guidelines, five migratory shorebird surveys were undertaken at the following times (Table 26).

Table 26: Migratory bird survey dates

Survey	Date
Survey 1	December 18–20 2018
Survey 2	January 9–11 2019
Survey 3	January 30–31 2019
Survey 4	February 26–28 2019
Survey 5	March 27–29 2019

Each survey was for a duration of two days. Each wetland was visited at least once, and those suspected of or found to support migratory birds were visited more than once.

9.1.4. Results

Existing Information

Records of migratory shorebird species in the search region and considered likely to occur, or recorded during surveys in the study area are presented in Table 27.

Data from the EHP (2014) fauna-targeted surveys were reviewed and species recorded to occur during their surveys were noted.

The EPBC PMST in 2018 expected that nine migratory species were likely to occur, in or near the study area, based on habitat presence and preferences. The VBA provided records for six of these species within the 10 kilometres radius of the study area. Three of these species were sighted during the 2018 – 2019 targeted surveys (Table 27).

The PMST in 2025 expected that 11 migratory species were likely to occur based on modelled distribution (Table 27).

Records of the migratory shorebirds, either in the VBA or sighted during the surveys were of an insignificant number of birds.

Table 27: Nationally and state listed shorebirds likely and known to occur in Hexham Wind Farm

Species	EPBC Act	FFG Act	VBA record (most recent 10 km radius)	Recorded on-site
Sharp-tailed Sandpiper	M, VU		1988	Recorded 2018/19
Curlew Sandpiper	M, CR	CR	1988	
Little Stint	M		1988	
Eastern Curlew	M, CR	CR	Not recorded	
Common Greenshank	M, EN	EN	2010	
Latham's Snipe	M, VU		2023	Recorded 2018/19

Species	EPBC Act	FFG Act	VBA record (most recent 10 km radius)	Recorded on-site
Double-banded Plover	M		Not recorded	Recorded 2018/19
Common Sandpiper	M	VU	Not recorded	Recorded 2019
Red-necked Stint	M		2011	Recorded 2014
Marsh Sandpiper	M		Not recorded	
Pectoral Sandpiper	M		Not recorded	

Notes: **EPBC Act**: listed under the Environment Protection and Biodiversity Conservation Act; **FFG Act**: listed under Flora and Fauna Guarantee Act; **CR**-- Critically Endangered; **EN**-- Endangered; **VU**-- Vulnerable; **M** – Migratory

Survey Results

In 2018 – 2019, five surveys of the wetlands likely to provide habitat and refuge to migratory birds at project site were conducted throughout the season when such migratory birds are present in Australia.

During these assessments, mapped wetlands and creek and river frontages were visited throughout the development footprint (Figure 8). Most wetlands were found to be ephemeral and too well vegetated with dense growth of reed, rush, sage, and introduced grasses on the edges and dense growth of water ribbon and emergent and submerged vegetation, particularly the sections that are expansions of the Muston Creek. In most cases vegetation was taller than 30 centimetres and as such were unsuitable for most migratory shorebirds, which require more open shorelines and shallow open water or mud in which to forage.

One exception to this rule is the Latham's Snipe which hides in dense vegetation near water by day and mostly forages in more open wetlands with soft substrates (e.g. mud) at night. Moreover, many of the ephemeral wetlands were already dry by December 2018.

A total of three species of migratory shorebirds were recorded within the study area during the 2018 – 2019 targeted surveys (Table 28:

Table 28: Migratory shorebird survey results

Survey	Wetland	Observation
Survey 1	29405 (Site 3a)	A small group of 7 or 8 **Sharp-tailed Sandpiper** were observed foraging at edge of the northern section of the large lake
Survey 2	111 (Site 17)	Two **Latham's Snipe** were observed at Mustons Creek at site 17 hiding among vegetation. Also, another small group of possible **Sharp-tailed Sandpipers** were seen, but were too far to be positively identified.
Survey 3	N/A	No migratory shorebirds were seen during this survey.
Survey 4	29405 (Site 3b)	A pair of **Double-banded Plover** sighted on the central section of the large lake
Survey 5	N/A	No migratory shorebirds were seen during this survey.

In addition to the above wetlands visited during the formal five surveys; other historical wetlands and sections of the Muston Creek were also visited particularly during Brolga breeding and flocking surveys (see separate Brolga report), but no additional shorebirds were sighted.

EHP (2014), recorded two species, namely, Red-necked Stint (eight birds) and Latham's Snipe (three birds) during their targeted fauna surveys in 2014.

Nature Advisory incidentally recorded one Common Sandpiper in a permanent dam on site in December 2019, while carrying out bat surveys.

Several species recorded to occur in or near the study area in the VBA database shown (Table 27) were not recorded during the 2018-2019 surveys, such as Common Greenshank, Curlew Sandpiper and Red-necked Stint.

Limitations

At the time of writing this report, the surveys presented are up to six years old. However, the wetlands visited have experienced consistent levels of inundation-drying cycles across the years. 2018 had a "below average" rainfall and 2019 had "average to below average" rainfall in the region (Australian Bureau of Meteorology 2025). Subsequent surveys including for Brolga and BUS supplement the original targeted wetland bird survey, with additional records of migratory species being recorded including in years of above average rainfall. Therefore, the age of the original surveys are not considered to be a major limitation to this assessment.

9.1.5. Conclusions and recommendations

Four migratory shorebird species listed under the EPBC Act were detected at two sites on the wind farm during surveys in 2018-19:

- **Sharp-tailed Sandpiper**: Seven-eight on 18 December, 2018 on the northern end of the large wetland (Wetland 3a);
- **Latham's Snipe**: Two on 9 January 2019 on the Mustons Creek (Wetland 17); and
- **Double-banded Plover**: a pair on 26 February, 2019 on the muddy shores of the large lake (Wetland 3b).
- **Common Sandpiper**: One individual recorded on 10 December 2019 using a permanent dam on site, during bat detector surveys.

It was determined that there is very little suitable habitat within the wind farm footprint for most species of migratory shorebirds owing to the ephemeral nature of most waterbodies, and the lack of muddy shorelines. It is considered that most shorebirds would therefore not be affected by the wind farm development.

Two ephemeral wetlands, namely habitat zones XAH and 3AH are impacted by the footprint of two turbines. Historical aerial imagery shows that 3AH wetland has been drained and no longer holds standing water but is a damp, grassy habitat in wet periods. XAH is also drained, however the drainage line is wide and holds water for some periods, creating damp grassland and grassy puddles.

The Latham's Snipe requires dense cover for daytime roosting and can tolerate plant cover when feeding at night. Its main requirement is a soft substrate (usually mud) in which it can probe with its long bill to extract its prey from beneath the surface. This habitat is provided along Mustons Creek, and XAH, and some of the muddy margins of the large lake (un-named) and large dams. The highest number of Latham's Snipe reported in this survey was a pair roosting among vegetation on the shore of Mustons Creek. The number of snipes recorded failed to reach significant levels defined as 1 % of the population (i.e., 18 individuals). Sharp-tailed Sandpiper may also utilise open grassy wetlands on occasion, however in small numbers and likely to stick to large, semi-permanent water bodies, none of which are impacted by the footprint. Curlew Sandpiper requires open, barren, muddy shores in extensive open wetlands, which are not present within the windfarm footprint.

Latham's Snipe will fly at height after dusk, however it is unknown whether flights occur within RSA height. Latham Snipe , as most shorebirds, have a direct, powered flight pattern that puts them at lesser risk of collision compared to soaring birds, which spend lengthy periods at RSA height and have repeated circling trajectories, as well as less manoeuvrability (Schuster et al. 2015). Studies in operational wind farms in Europe show that similar migratory shorebirds (including Jack Snipe *Limnocryptes minutus)* avoid collision by flying above operating turbines, or if flying within RSA,

avoiding the operating turbine (Krijgsveld et al. 2011). Latham Snipe could occasionally collide with turbines and is thus susceptible to impacts from collision, but no important population (18 individuals or more) is expected at the Project Site. It is considered that there is unlikely to be a significant impact of the wind farm on Latham's Snipe or their habitat.

Based on the current survey results, it is considered that migratory shorebirds would only be present in small numbers that do not meet significant population thresholds at the international (1 % of flyway population) or national level (0.1% of the flyway population) for any species found at HWF.

Most migratory shorebirds spend most of their time at ground level but may fly at RSA height or above when migrating or travelling between regional wetlands. The closest large water body which holds important numbers of these species lies at least 40km to the east-south-east – the Western District Lakes Ramsar site.

Shorebirds ascend rapidly and steeply and are usually still ascending when lost from sight by the observer. Estimates of climb rate vary from 0.55 to 0.69 m per second, with larger, heavier species of shorebirds climbing at slower rates (Piersma et al. 1990).

Observations of flight altitude using weather radar show that during migration, shorebirds fly at between 0.5 and 6 km heights (Piersma et al. 1990; Tulp et al. 1994). Altitudes of migration given in these two studies are of birds still ascending when they disappeared from sight, often at altitudes of greater than one kilometre, and are therefore likely to be at the lower range of altitude estimates for level migratory flight.

Given this, species migrating across the HWF site will be at a height well above RSA and not at risk to collision. Due to the ephemeral nature of most waterbodies at and adjacent to HWF and the lack of muddy shorelines, numbers of migratory shorebirds on site are likely to be low. Consequently, the risk of a significant impact on an important population is considered low, even when accounting for short-range local movements at low flight heights.

Mitigation measures applied to avoid and reduce impacts on migratory species, are outlined in Section 12.1.

9.2. White-throated Needletail

9.2.1. Introduction

The White-throated Needletail (*Hirundapus caudacutus caudacutus*) is widespread throughout eastern and south-eastern Australia during the Australian summer months. This subspecies is a trans-equatorial migrant that breeds in the Northern Hemisphere summer and migrates south to the Southern Hemisphere during the southern summer. White-throated Needletails generally arrive in Australia in about October each year and migrate north somewhere between May and August, typically appearing in Victoria and south-eastern New South Wales in December and later peaking in Tasmania from February to March.

The White-throated Needletail population has previously been estimated at between 50,000 to 100,000 in Victoria but has declined by 49 % between 1979–1981 and 1998–2000. The number of White-throated Needletails observed per day in eastern Australia more than halved between 1951-1960 and 1991-2020, the same trend of decline in numbers observed per day in Victoria (Garnett and Baker 2021).

This species is an aerial insectivore and thus is almost exclusively aerial in Australia, flying at heights of less than one metre up to more than 1000 metres above the ground (Higgins 1999; TSSC 2019). White-throated Needletails travel and forage in flocks and occur over most habitat types. They are most frequently observed above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings. When flying above

farmland, it is more often recorded above partially cleared pasture, plantations or patches of remnant vegetation at the edge of paddocks.

As an aerial insectivore, the White-throated Needletail forages during flight on flying invertebrates, including termites, ants, beetles and flies. Foraging birds typically make use of rising thermal currents associated with atmospheric disturbance (e.g., storm fronts) and bushfires and they are commonly observed prior to, during or after frontal weather systems (Higgins 1999; TSSC 2019).

White-throated Needletails have been reported to roost in trees at night in Australia, arriving at roost sites after dark and departing before first light (Tarburton and Garnett 2021); there are descriptions of these roosting but from few recorded instances (Corben et al. 1982; Day 1993; Tarburton 1993). White-throated Needletail roosting habitat is considered unlikely to be present within the immediate study area.

9.2.2. Existing Information

Existing information regarding the status of the species was obtained from the VBA. These records were obtained from a wider area, named the 'search region' defined for this assessment as an area with a radius of 30 kilometres from the approximate centre point of the study area.

9.2.3. Methodology

Targeted surveys were employed to monitor for the presence of the White-throated Needletail within the area of the proposed HWF. A fixed-point count method was used, which required an observer to be stationed at 10 fixed-point locations within the study area for 45 minutes. During this period all White-throated Needletails observed were recorded. If White-throated Needletails were observed the number, the approximate height when first sighted, flight height range and direction of flights were documented.

Three surveys were undertaken during the period between December 2022 and March 2023. Each fixed-point count location was surveyed four times (three hours each) and at different times of day (e.g., early morning, late morning, early afternoon, late afternoon). The timing of the three surveys and the number of fixed-point counts were as follows:

- 5 to 9 December 2022: Ten fixed-point counts across the study area were surveyed over five days (total of 40 replicates), with a period of 45 minutes at each survey point (30 hours of survey effort) (Observer: L. Halpin).
- 6 to 10 February 2023: Ten fixed-point counts across the study area were surveyed over five days (total of 40 replicates), with a period of 45 minutes at each survey point (30 hours of survey effort) (Observer: C. Schipper).
- 22 to 25 March 2023: Ten fixed-point counts across the study area were surveyed over four days (total of 40 replicates), with a period of 45 minutes at each survey point (30 hours of survey effort) (Observer: K. Al-Dabbagh).

Fixed-point count locations were selected within the proposed wind farm site, scattered along public roads and reserves throughout the study area. Fixed-points were selected provided that they offered good visual coverage of surrounding habitats (Figure 9). Habitat types and features in the selected fixed-points varied between pasture paddocks, wetlands and planted field margins (Eucalypt Sp. and Cypress sp.).

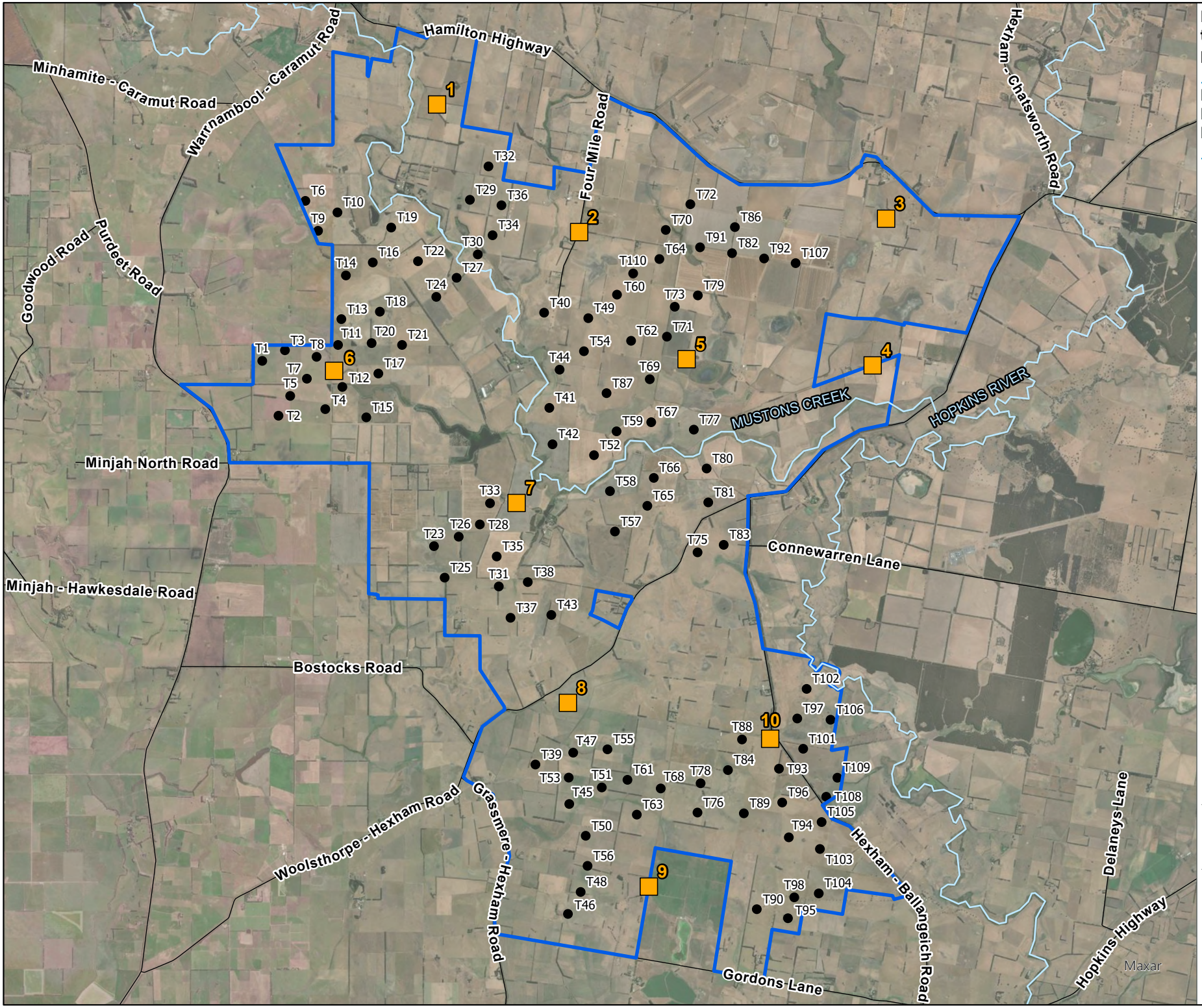


Figure 9: Location of White-throated Needletail survey points

Project No: 18088_25
Project: Hexham Wind Farm, VIC
Date: 3/09/2025

- Wind farm boundary
- Roads
- Watercourse
- Turbines
- WTNT survey location

N

Kilometres
0 1 2 3 4

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9.2.4. Results

The VBA holds two historical records of the White-throated Needletail from a search region of a 30 kilometres radius centred on the project site (Figure 10). These records are over 40 years old (1977). There is one record of a flock of 1000 birds from 2009 at a location 30 to 40 kilometres east- northeast of the project site.

During the 2022 – 2023 survey period, no White-throated Needletails were observed during fixed-point counts. Weather conditions were acceptable for surveying, with temperatures ranging from 9°C to 27°C. Conditions were mostly dry with occasional light rain and on two occasions heavy rain for no more than half of a day. Wind directions during the survey were predominantly southerly, south-eastly, or south-westerly, which may have represented slightly suboptimal conditions for the species' during is southerly migration. Wind conditions ranged in speeds from no wind to 30 kilometres per hour.

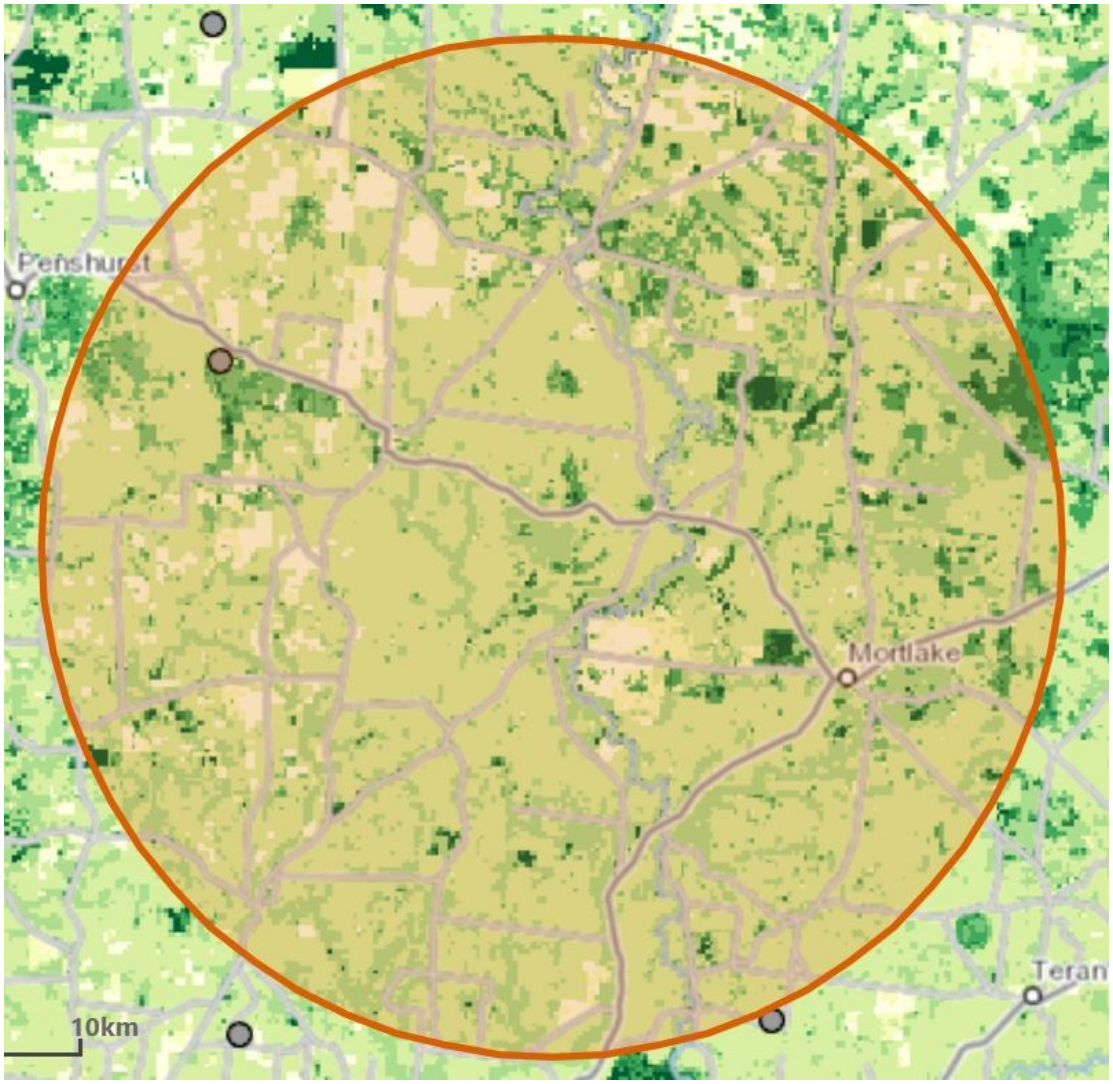


Figure 10: Location of VBA records of the White-throated Needletail

9.2.5. Conclusions

The White-throated Needletail **was not** observed in the study area during the survey period.

The survey period was undertaken during the time of year when White-throated Needletails are known to occur in southern Australia including Victoria. Weather conditions were conducive to the observations of White-throated Needletails during the survey period. However, it is acknowledged

that there are limitations for human based surveys to detect this species due to the species' brief, variable, and often weather-dependent seasonal presence meaning surveys can occur outside periods when birds are detectable

However, this result is consistent with VBA records for this species from the area. The closest records are approximately 30 to 40 kilometres from the study area.

Combined with the absence of records during on-site surveys conducted to date, this suggests that the White-throated Needletail is unlikely to use the area in or around the study site frequently or in large numbers. Therefore, a significant impact from the proposed project is considered unlikely.

10. Wedge-tailed Eagle Nest Survey

10.1. Introduction

A targeted survey for Wedge-tailed Eagle (WTE) nests was carried out in the Project study area.

This investigation was commissioned to provide information on the presence of WTE nests within the study area and locate any that may be impacted by turbine construction.

The WTE is also acknowledged for its cultural significance. It is known as Bunjil by central and west-Victorian Aboriginals, who hold a strong connection to the species as the ultimate form of the creator of the land, water, animals and sky (DELWP 2022).

In May 2024, Nature Advisory and Wind Prospect met with the Eastern Maar Aboriginal Corporation (EMAC) and informed them on Wedge-tailed Eagle surveys as well as nest surveys undertaken and discussed the results and proposed mitigation measures.

Wedge-tailed Eagle nesting ecology

Wedge-tailed Eagles nest primarily in mature eucalypt forest. In semi-arid areas the species will nest in trees as low as a few metres tall (Marchant and Higgins 1993; Olsen 2005). In Victoria, nests average 12.6 metres above the ground and most are in the top of large trees in gullies or on moderate slopes (Foster & Wallis 2008). The species creates a large platform and pile of sticks to nest on, typically measuring 1.5 metres in diameter and 1 metre deep (Olsen 2005). With repeated use nests can become 2.1 metres wide and 3 metres deep (Debus 2019; Olsen 2005). Active nests are lined with fresh greenery during the incubation or early nestling period (Olsen 2005). A pair of breeding eagles may use between two to three nests (Olsen 2005).

Nests are created or refurbished in April to May ready for laying clutches in winter from April to September (Debus 2019; Olsen 2005). Incubation lasts 42-43 days followed by a nestling period of 77-95 days (Debus 2019).

10.2. Methodology

The targeted WTE nest survey was conducted from 20 to 23 of June 2023.

Searches for WTE nests involved active searching of large old trees and forested areas within the wind farm boundary and a 1-kilometre radius of the wind farm. Treed vegetation within the study area was identified from aerial imagery and these areas were visited and surveyed using a combination of high-powered optics (i.e., binoculars and/or telescope) and closer inspection on foot of denser vegetation where accessible.

Coordinates of WTE nests identified, approximate size, and any signs of activity (fresh greenery/leaves, feathers, whitewash, or remains of prey) were recorded. Incidental observations of WTE were also recorded whilst traversing the study area.

Additionally, and further incidental observations of WTE nests were recorded during other surveys.

In 2025, a potential WTE nest was notified by a landowner to Nature Advisory. An ornithologist observed the location on 6th August 2025, and confirmed this to be a WTE nest which was in use.

Limitations

Due to lack of access to most properties within 1-kilometre outside of the proposed wind farm boundary, these areas were surveyed from public roads and some treed vegetation was not clearly visible. One property within the northern boundary of the wind farm was also not surveyed as this was inaccessible as per client request.

Wet and boggy conditions within the wind farm boundary prevented vehicle access to some treed areas. Therefore, some areas of vegetation could not be inspected closely.

WTE nests within large Eucalyptus trees are easily detectable and are considered likely to have been identified from afar. Most windrows of pine trees were also able to be viewed clearly via telescope, however, some areas of dense pine trees were more difficult to survey from a distance and may have contained nests that could not identified.

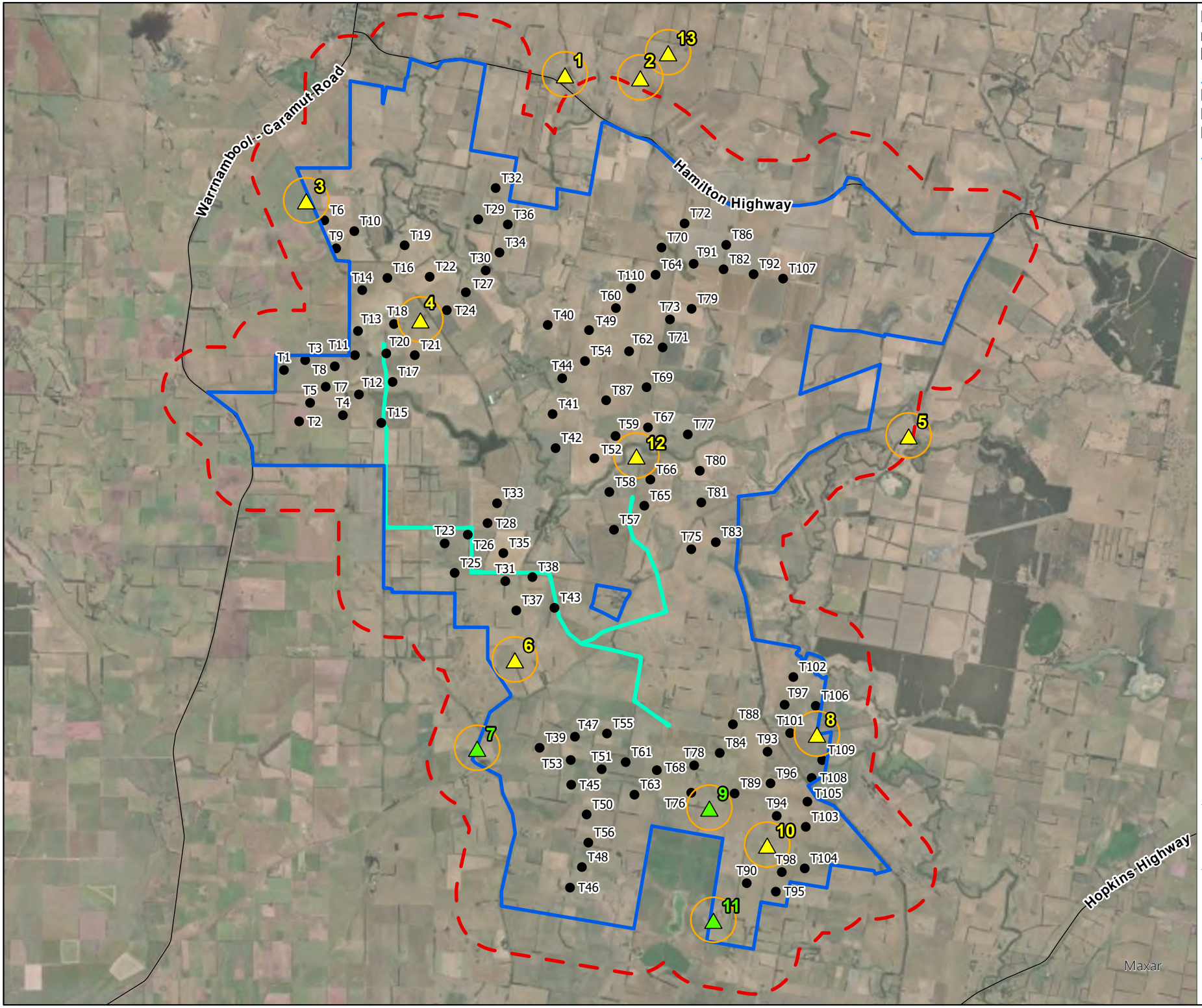


Figure 11: Wedge-tailed Eagle nest locations and 500m buffer

Project No: 18088_25
Project: Hexham Wind Farm, VIC
Date: 24/09/2025

- Wind farm boundary
- Study area (1km buffer of wind farm boundary)
- Roads
- Overhead Transmission Line
- Turbines
- WTE nest
- Potential WTE nest
- 500m buffer around nest

N

Kilometres
0 1 2 3 4

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10.3. Results

Between 2023 and 2025 a total of ten WTE nests, and three potential nests were recorded (Figure 11, Table 29). Three of these WTE nests were found in the north, just outside of the 1-kilometre radius from the wind farm boundary.

During 2023, no nests showed signs of fresh leaves/greenery, whitewash or prey remains, suggesting they were not actively being used for breeding at the time of survey. However, three pairs of WTE were observed flying near three of the nests, suggesting these nests were within the territory of breeding pairs and may have been used in the 2023 season.

In 2025, two new nests (nests 12 and 13) were recorded as active with birds on the nests; one within the study area, and one outside the 1km radius north of the site boundary.

Three nests were assessed to be "potential WTE nests" as they were relatively smaller in size. These nests may be partially constructed or old WTE nests from a past breeding season or may be utilised by other large raptors (e.g., Kite spp.) instead of WTE.

Table 29: Description of Wedge-tailed Eagle nests observed.

Map Reference	Description
1	Outside of the study area. Location provided by landholder. Large nest built in a dense row of Pine trees, 1.5 – 2m diameter and 1m deep. Landholder reports that a WTE pair goes between nests 1 and 2 each year and are regularly observed with juveniles each year. No signs of activity (fresh greenery, white-wash or prey remains).
2	Outside of the study area. Nest appears inactive and relatively small, max 1m in diameter and approximately 20 – 30cm deep. The nest is built with large sticks and branches, in the fork of a eucalypt tree. No signs of activity (fresh greenery, white-wash or prey remains). Landholder reports WTE nesting here in the past.
3	Adjacent to wind farm boundary. Approximately 1 – 1.5m in diameter and 30cm deep. Constructed from large sticks in the fork of dead branches of a Pine/Cyprus tree. No signs of fresh greenery, white-wash or prey remains. **A pair of WTE recorded perched in nest and circling above**.
4	Large nest built in a forked trunk and branch of a Pine tree, 1.5 – 2m in diameter and 0.5m deep. The nest is approximately 20m high in the tree and consisted of sticks and branches. No signs of fresh greenery, whitewash in the nest. **A pair of WTE was observed circling over the nest**.
5	Approximately 1 – 1.5m in diameter and 0.5m deep. Created in fork of tree trunk branches of Eucalypt tree adjacent to the Hopkins River. No signs of activity.
6	Large nest built in a Pine tree in a windrow. Approximately 1.5m in diameter and at least 30cm deep. Built in a forked branch approximately 15m above ground. The nest is created from sticks and branches and Pine needles. No signs of activity.
7	Potential WTE nest. Nest approximately 1m diameter and 30-40cm deep. Built in the fork of a Pine tree, approximately 30m high, in a windrow on the wind farm boundary. No signs of activity. Height in the tree and access from public road limited clear assessment.
8	Large nest, 2m in diameter and at least 1m deep in some sections. Built in the fork of a Pine tree. Consists of large sticks and branches with some string observed in the nest. No signs of activity, Corellas were using the tree for perching.

Map Reference	Description
9	Potential WTE nest. Relatively small nest, max 1m diameter and 20cm deep. Made in a Pine tree within a windrow. Consists of sticks, pine needles and a small amount of sheep's wool. **A pair of WTE was observed flying in the vicinity of the nest.** No other signs of activity.
10	Large nest, approximately 1.5m in diameter and 50 – 80cm deep. Consisted of sticks and branches in the fork of a Pine tree. No signs of current activity (fresh greenery, white-wash or prey remains).
11	Potential WTE nest. Relatively small nest, approximately 80cm in diameter and 40cm deep. Created in the fork of a Pine tree. Appears inactive. May be a partially constructed nest, an old nest that has deteriorated or belong to another species of raptor.
12	Nest seen from distance through binoculars. Nest in fork of a pine tree. **Nest confirmed active with a WTE sitting on the nest.**
13	Nest seen from distance through binoculars. **Nest likely active with a WTE seen flying to the nest.**

Incidental Wedge-tailed Eagle Observations

A total of six incidental observations of Wedge-tailed Eagle were recorded during the 2023 survey period as shown in Table 30.

Table 30: Incidental observation of Wedge-tailed Eagle

Observation no.	Count	Date	Time	Flight Height	Location
1	1	21/6/23	9:08	10m	Perched in a tree on Barwidgee Road.
2	2	21/6/23	10:11	30m	Circled over patch of Pine trees in the north-western border of the wind farm.
3	2	21/6/23	10:53	20m	Perched in tree above nest 3.
4	2	21/6/23	13:14	20-30m	Circled closely over nest 4.
5	1	21/6/23	17:10	10-20m	Flew low over Emmersons Road.
6	2	22/6/23	13:27	30-60m	Observed flying NE from behind Pine windrow that contains nest 9.

10.4. Discussion and Recommendations

During surveys in 2023, a total of 8 Wedge-tailed Eagle nests and 3 potential eagle nests were recorded. Two of these nests were located outside of the study area. No nests appeared to be active at the time of survey, although WTE pairs were recorded circling or perching near three of the nests. This suggested that these nests may have been within the territory of a breeding pair. It

was unknown whether the same pair was observed repeatedly or if there were at least three active breeding pairs in the area.

In 2025, two additional nests were observed (one notified via a landowner, and one observed incidentally during BUS) which were both confirmed to be active. One of these nests is located within the wind farm boundary (nest 12), while one is located outside to the north (nest 13).

As a pair of breeding eagles may use between two to three nests (Olsen 2005), the number of nests within the study area suggest that more than one pair utilises the area for breeding.

WTE are highly vulnerable to disturbance during sensitive phases of the breeding cycle (Olsen 2005, Rowe et al. 2018), and new human activity can lead to desertion of the nest. Disturbance distances appear to vary depending on the nature of the disturbance. There is evidence that WTE can become habituated to routine traffic and farming activity and there are reports of nests within 200 metres of houses and roadways (Debus et al. 2007, Foster & Wallis 2010). However, there are also reports of failed nesting when visually exposed to busy roads within 400 metres or in close proximity to regularly used huts and traffic (Rowe et al. 2018).

A buffer of 500m around WTE nests to any wind farm facility is recommended by the Department of Planning, Industry, and Environment, due to the vulnerability of WTE fledglings to any threats near the nest during their first flights (DPIE 2018), and to ensure existing nests remain active (Energy Grid Alliance 2021).

Mitigation measures applied to avoid and reduce impacts on WTE, are outlined in Section 12.1.

11. Growling Grass Frog

KEY FINDINGS

1. EHP did not detect Growling Grass Frog (GGF) on the site during targeted surveys in 2009-10 but it was recorded in several locations across the study area during preliminary ecological assessments in 2011 following widespread, prolonged rainfall.
2. Nature Advisory heard GGF calling from three separate sections of Mustons Creek.
3. GGF are assumed to use Mustons Creek for most parts of the year.
4. Several other smaller tributaries of Mustons Creek within the study area could provide habitat for GGF during the wet season and form a continuous network of wetland habitats for this threatened species.
5. Most farm dams lack proper habitat, are usually trampled by livestock and are of low value for the frogs.
6. All turbines and associated access tracks (apart from crossings) are located greater than 100 metres from the GGF habitat along Mustons Creek.
7. Impacts on GGF habitat from the project along Mustons Creek will be minimised at both the detailed design and construction phases of the project by implementing the mitigation measures in Section 12.1.
8. Provided those measures can be implemented, then the impacts on the species from the project will be minor and temporary, affecting only a small proportion of its potential habitat permanently. These impacts will not result in the loss of the species from the creek and, therefore, population scale impacts are not considered likely.

11.1. Introduction

A habitat survey and review of previous assessments were undertaken primarily GGF, listed as Vulnerable under the EPBC Act, but also considered Swamp Skink (*Lissolepis coventryi*), listed as Endangered under the FFG Act, at the proposed HWF site. This investigation provided updated information on the likelihood of occurrence of these threatened aquatic species.

The scope of the investigation included:

- Wetland and aquatic fauna habitat assessment.

11.2. Background

Description

The GGF grows to 85 millimetres, is dull green to bright emerald, green with blotches of brown or rich golden bronze and numerous large warts above and whitish below. It has a narrow blackish stripe from the nostrils along each side to the groin, which is bright blue or blue-green (Cogger 2000; Pyke 2002).

Distribution

GGF was originally widespread across south-eastern Australia, Bass Strait Islands and northern and eastern Tasmania. Previously the mainland distribution extended from the southern tablelands and Riverina of NSW and the ACT, through most of Victoria (excluding Mallee and alpine areas) and into south-eastern SA, near the mouth of the Murray River.

The natural distribution of the frog has contracted, most noticeably since 1990. It has disappeared from the slopes and southern Tablelands of NSW and ACT, from much of central Victoria and from parts of Tasmania and South Australia.

Habitat

The GGF is found in cool temperate grasslands near permanent water; inhabits areas of permanent water occurring commonly around reservoirs, farm dams and swamps, especially those with bulrushes. The species often hides by day under debris (Turner 2004).

The GGF is usually associated with water bodies supporting large areas of fringing and aquatic vegetation such as Common Reed (*Phragmites australis*), Bulrush (*Typha spp.*) and Water Ribbon (*Triglochin procera*) (Organ 2002). The species has generally been reported to occur in or around water that is shallow and still or slowly moving, often with emergent aquatic vegetation, but a broad variety of waterbodies are occupied (Pyke 2002).

Near Melbourne, there is a negative association of GGF occurrence with the length of roads within 1000 metres of a site and a positive association with waterbodies with a high proportion of submerged or floating vegetation and the permanence of the waterbody (Heard *et al.* 2004).

Breeding and behaviour

In Victoria, GGF courtship advertisement calling begins in September or October and continues to about December or January (BL&A, pers. obs.). Tadpoles been observed from September to April, and immature frogs from January to April (Pyke 2002). Over 1500 eggs are usually laid in a cluster in spring, summer or autumn following heavy rain resulting in local floods. Eggs hatch within two to four days of being laid. Within four weeks tadpoles may reach metamorphosis. Tadpoles prefer warmer water and feed near the surface with their head upwards; may reach over 100 millimetres in length (Turner 2004).

GGF are generally more active and more often seen at night but will often call during the day from September to December (BL&A, pers. obs.). The frog is not a frequent climber of plants and is usually found in water, on floating vegetation or nearby at ground level.

Little is known about diet and foraging. GGF are considered a 'sit-and-wait' predator, foraging during the day and at night. It may feed on tadpoles and other frogs, including members of the same and other species. GGF have also been reported to feed on other vertebrates, including snakes, lizards and small fish and on invertebrates (DoEE 2019)

Threats

Threats to GGF include habitat loss and fragmentation through land clearing for agricultural and urban development, drought, disease (e.g. chytrid fungus), drainage and degradation of wetlands, increasing salinity and water pollution, and increased predation of tadpoles by the introduced Mosquito Fish (*Gambusia* spp.) and global climatic change (Heard et al. 2004; SAC 1999). Mosquito Fish are widespread and abundant throughout much of Victoria and south-eastern Australia (Allen et. al. 2002).

Legislative protection

The species is listed Vulnerable under the EPBC Act and the FFG Act. Overall, this species is of national conservation significance.

11.3. Methods

The detailed GGF surveys based on DSE's *Biodiversity Precinct Planning Kit* and DSEWPC Guidelines (2011) was not undertaken in the current investigation. Instead, surveys were based on the presence or absence of suitable habitats within or near the wind farm, and records of the species from previous studies and the VBA database.

Aquatic habitats in and near the proposed wind farm were assessed for their suitability for the GGF using the following criteria:

High: Habitat components listed below are usually all present.

- Permanent, or largely permanent, still water body;
- Slow-flowing stream with dense in-stream vegetation;
- Water body with large areas of fringing and aquatic vegetation (e.g. Common Reed, Bulrush, Sedges, Rushes (*Juncus* spp.) and Water Ribbon;
- Thick ground cover vegetation, or rocks, for shelter;
- Connectivity with other areas of suitable habitat.

Moderate: Some fauna habitat components are often missing although linkages with other remnant habitats in the landscape are usually intact.

- Water body likely to hold water for most of the year (i.e. permanent, or largely permanent);
- Water body with some fringing and aquatic vegetation (e.g. Common Reed, Bulrush, Sedges, Rushes (*Juncus* spp.) and Water Ribbon;
- Some ground cover vegetation, or rocks;
- Some connectivity with other areas of suitable habitat.
- Water body shows some signs of disturbance (such as erosion, access to stock, feral predators and pets)

Low: Many habitat elements have been lost. Aquatic habitats that are:

- Likely to be ephemeral (only hold water for part of the year);
- Little or no fringing or in-stream aquatic vegetation;
- Isolated (little or no connectivity);
- Showing signs of disturbance (such as erosion, access to stock);
- Thick ground cover vegetation or rocks absent.

The assessment of each of the wetlands is included in Appendix 10. The examination of wetlands for the presence of GGF was carried out during the five migratory shorebirds surveys and during Brolga surveys and incidentally while surveying for bird fauna. In few cases, the frogs were calling during the day confirming their utilization of certain wetlands.

Existing Information

Existing information on the status of the GGF were obtained from the VBA. These records were obtained from a wider area, termed the 'search region' defined for this assessment as an area of 10 kilometres radius centred on a point of the study area (38° 02' 15" S and longitude 142° 34' 46" E).

EHP did not record the species during targeted surveys in 2012, but recorded GGF in several locations across the study area during preliminary ecological assessments in 2011 following widespread, prolonged rainfall (EHP 2014).

The likelihood of suitable habitat in the study area for nationally threatened fauna species was ascertained through a search of the online PMST (DCCEEW 2024) using the same search region.

Previous work on the study area undertaken by EHP (2014) was reviewed prior to the current investigations.

11.4. Results

GGF were heard calling during the wetland assessment. There were three such records from three separate sections of Mustons Creek (Wetland 111 (17), Wetland 28248 (14) and wetland J (2) – see Figure 12).

Nature Advisory therefore assumed that the GGF use the Mustons Creek for most parts of the year in the sections that retain sizable water pools. Mustons Creek connects to the Hopkins River to the east of the study area and therefore provide continuous habitat for the GGF. Several other smaller tributaries of Mustons Creek within the study area could provide habitat for the frog during the wet season and form a continuous network of wetland habitats for this threatened species. In addition, the large permanent dam in the west of the project area (wetland 29405) and associated dams could contribute to the GGF distribution within the study area, but most dams lack proper habitat, are usually trampled by livestock and are of low value for the frogs (see Appendix 10 and Figure 12).

A desktop assessment of the transport route also identified a roadside dam (Figure 2), where some of the short grassy vegetation around the waterbody is proposed removal to facilitate the transport vehicle turning movement. GGF records occur in the vicinity, and the dam could contribute to the species distribution within the local area. It is considered that the removal of some terrestrial habitat is unlikely to significantly impact the species.

It is considered that, provided the known sites for GGF are avoided and minimal habitat is altered at creek crossing points during the construction and operation of the wind farm, or at the transport route dam, there should be minimal impact on the local population of GGF.

Project construction will not reduce the area of occupancy of a population or lead to a long-term decrease in the population size of Growling Grass Frogs as turbines are set back 100 metres from the potential habitat along Mustons Creek, Hopkins River and other suitable wetland habitat. Any upgrading of the creek crossing will be completed without impacts on flows or water quality and there will be no impacts on aquatic habitats from construction and operation of the Project. Crossings and management measures will be included in a CEMP, such as culvert design and erosion control etc. Significant impacts on this species are not expected.

11.5. Conclusions and recommendations

GGF was heard along Mustons Creek on 10th January 2019 on Wetland 17, and also previously heard at two more sections of the Mustons Creek during December 2018 within the study area. It could also move along the small tributaries of Mustons Creek or occupy a small number of dams and ephemeral wetlands during periods of inundation.

Provided appropriate avoidance and minimal removal of its wetland habitat can be achieved (e.g. at crossing road points of watercourses), there is no reason to expect that the frog would be adversely affected in the long term by the HWF development.

No other listed threatened species were recorded at any other locations on HWF, including all mapped wetlands visited.

Mitigation measures applied to avoid and reduce impacts on GGF, are outlined in Section 12.1.

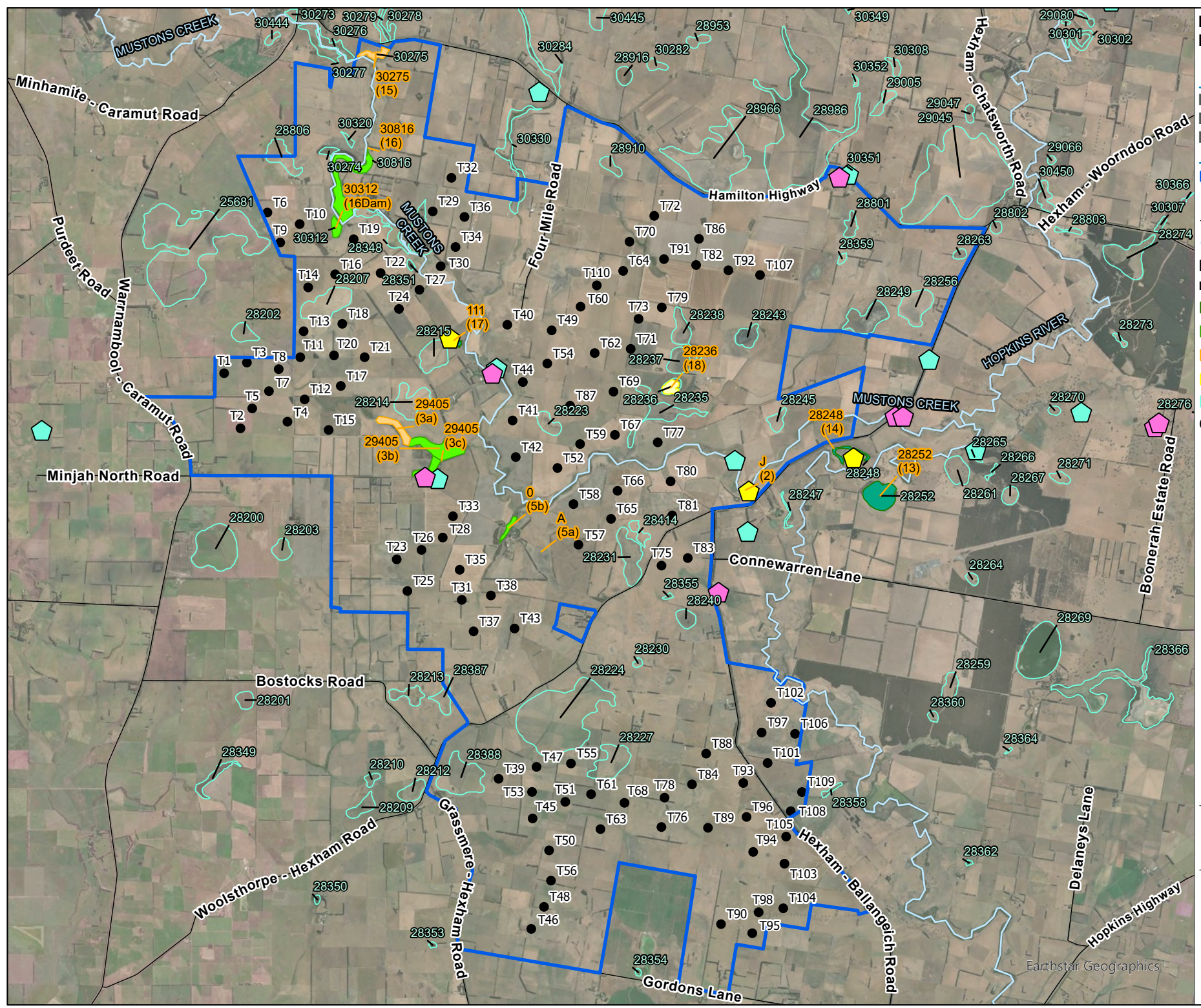


Figure 12: Growling Grass Frog habitat quality

Project No: 18088_25
Project: Hexham Wind Farm, VIC
Date: 3/09/2025

- Wind farm boundary
- Turbines
- Roads
- Watercourse

Habitat quality (with wetland number labelled)

- High
- Medium-high
- Medium
- Low
- DEECA mapped wetland

Growling Grass Frog

- Nature Advisory record
- EHP record
- VBA record

Kilometres
0 1 2 3 4
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12. Fauna Residual Impacts

Following the application of mitigation measures (below), this section presents an assessment of residual impacts on species considered potentially susceptible to impacts.

12.1. Mitigation measures

Impacts on fauna through removal of fauna habitat have been avoided and minimised by avoiding fauna habitat such as woodlands, grasslands and wetlands and siting infrastructure away from these areas where possible. Section 5.4.2 outlines measures that have been taken in design response to facilitate this mitigation measure. In addition, the following measures have been undertaken:

- Development works are sited at least 30 metres from wetlands and waterways where possible to minimise impacts to aquatic values including GGF and Hairy Burrowing Crayfish (except for seven creek crossings, some of which are of low potential for GGF to occur);
- Primary Wind Farm infrastructure (other than ancillary infrastructure) is located mostly more than 100 metres from waterways and wetlands (including confirmed GGF habitat). Wind turbines and associated hardstands have been sited at least 100m from waterways and wetlands;
- Disturbance of banks, channels and vegetation in nearby areas has been minimised (within 30 metres of centre line of streams or within 30 m from the edge of wetlands) (identified as potential waterbird and/or GGF habitat (i.e. marked as 'moderate quality')), as identified in this report (Appendix 10, Figure 12).
- For WTE, as different nests may be used or refurbished each season, a 500m turbine and overhead transmission line exclusion buffer has been applied to all known WTE nests (Figure 11). The buffer is based on the literature (see 10.4) and on previous observations of WTE successfully breeding at this distance from turbines (Nature Advisory, unpublished observations).
- One proposed turbine (T108) was located within 300m of WTE nest 8. This turbine was moved to approximately 600m from this nest. No turbines are located within 500m of any known WTE nests.

The proper implementation of habitat avoidance, as well as mitigation measures during construction and operation outlined below and in the bat and brolga reports are considered to ensure that significant impacts to fauna due to the proposed development are unlikely.

12.1.1. Construction Stage

Indirect impacts on fauna through alteration to habitats, disturbance and direct mortality during construction activities can be avoided through the implementation of best practice construction environmental management measures through the creation and implementation of an approved environmental management plan during construction. Measures will include, but not be limited to;

- For species-specific mitigation measures during construction see Table 32.
- Where essential wind farm infrastructure (e.g. access roads, or transport route swept paths) crosses a creek line or wetland identified as potential habitat of a listed aquatic fauna species, disturbance of banks, channels and nearby vegetation shall be avoided (e.g. through the use of directional drilling under waterways) or kept to a minimum, preferably undertaken during periods when the creek line or wetland is dry and if feasible, restored or enhanced to at least its pre-construction condition.
- Installation of sediment fencing during construction to protect riparian zones if works are to be undertaken (within 30 metres of) near creek crossings. Ensure best practice sedimentation and pollution control measures are always undertaken, in accordance with

Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands.

- It is recommended that habitat suitability surveys are carried out of suitable fauna habitat (including non-native vegetation) prior to clearance by an ecologist or qualified fauna spotter-catcher. This will inform the need for further targeted species surveys and any salvage/translocation to nearest retained habitat.
    - It is recommended that works within areas with potential to harbor Hairy Burrowing Crayfish (creek crossings, and other low lying wet areas) are carried out during drier months. This is when the species retreats closer to permanent water bodies, and therefore when impacts are expected to be lower.
    - Roadside grassland habitat to be removed will be modified over the winter months (slashing, relocation of surface rocks and debris, and placement of tiles outside the removal areas), to facilitate Striped Legless Lizard and Tussock Skinks dispersal outside these areas prior to removal, which will be undertaken in the warmer months.
    - It is recommended that road upgrade works requiring grassland removal are carried out in warmer months. This is when fauna such as Striped Legless lizard and Tussock Skink are more active, enabling them to move out of construction areas, and therefore when impacts are expected to be lower. See previous point.
    - Potential Growling Grass Frog habitat will be surveyed prior to construction to account for presence/absence. If present, works near confirmed habitat will be carried out in accordance to the CEMP instructions and a fauna spotter-catcher will be present. Works are to be carried out in the summer months when the frogs are mostly in the water, active, and outside their wintering harbors, allowing them to move away from machinery.
    - Potential GSM habitat will be surveyed prior to construction to determine presence/absence. If present, further avoid and minimise measures will be explored.
- Monitoring surveys of known and any incidentally recorded WTE nests will be undertaken prior and during the early part of WTE breeding season to determine whether nests are active. Where possible, construction activities may be modified to reduce or avoid disturbance within 500m of active nests until any chicks have fledged. The typical WTE breeding season is generally June to October, depending on conditions. Incubation lasts for approx. 45 days.
- Avoid impacts on native grassland habitat within road reserves where possible.
- Designate NO-GO zones in areas mapped as potential habitat for GSM, SLL, FTD and TS, this is, Plains Grassland and Plains Grassy Woodland EVCs subjected to any removal or removal in vicinity.
- Significant alterations to the site's hydrology from construction works in areas that support native vegetation will be avoided by minimising changes in topography that result in surface runoff changes.
- Retained native vegetation adjacent to construction areas will be temporarily fenced or marked with bunting, and appropriately signposted as 'no-go' zones.
- Machinery, earthworks, lay down areas and stockpiles have been accounted for in impact calculations, and will be located in areas that do not support native vegetation.
- All machinery will enter and exit works sites along defined routes that do not impact on native vegetation beyond the approved footprint, or cause soil disturbance and weed spread; and

- All machinery brought onto the site will be weed and pathogen-free and will be washed down between farming properties (this is important for environmental and agricultural protection: soil-borne pathogens such as Cinnamon Fungus and livestock diseases can be easily transported by machinery).

The proper implementation of environmental management measures should be outlined within a relevant management plan. Adherence to such a management plan will avoid any significant impacts resulting from the development.

12.1.2. Operational stage

A Bat and Avifauna Management Plan (BAMP) has been produced which will implement post-construction monitoring to assess the effectiveness of mitigation measures and identify potential impacts on bird and bat species once the wind farm becomes operational. The data collected will provide insights into changes in species behaviour, species-specific risks, and support the development of adaptive management strategies.

12.2. Residual impacts

Figure 13 provides an overview of impacts to fauna habitats due to the Project. This includes impacts to native vegetation, and waterway crossing points. Close up overviews of native vegetation impact areas can be seen in Figure 2.

A precautionary overview of assumed non-native vegetation with potential for aquatic fauna is provided using a 100m buffer applied to the waterways layer to denote potential terrestrial habitat for aquatic fauna such as Growling Grass Frog and Hairy Burrowing Crayfish. Note that much of this area falls in degraded agricultural paddocks and is not likely to be suitable or good quality habitat for these species.

Similarly, it is assumed that Striped Legless Lizard and Tussock Skink occurrence may extend beyond the defined native vegetation "patches" which are limited by a minimum of 25% native vegetation cover. The extent of impacts to suitable non-native grassland vegetation could not be accurately quantified. Pre-clearance surveys and habitat management will be undertaken to reduce the likelihood of the species being present at the time of vegetation removal.

A significance of impact assessment in accordance with the EES scoping requirements is included in Table 32 which documents the impact criteria for biodiversity impacts, giving consideration to the magnitude, duration, and extent of the impact. This includes a breakdown of proposed impacts to fauna habitat.

Table 31: Overview of fauna habitat removal

Project component	Grassland habitats (ha)			Wetland habitats (ha)			Native Vegetation patches overall		
Project study area (wind farm)	• **0.3 ha** of grassland EVCs (Plains Grassy Woodland, and Plains Grassland).			• **6.122 ha** of wetland vegetation (Plains Grassy Wetland, Plains Sedgy Wetland, Aquatic Herbland). • **3.5 ha** of waterway crossing points (calculated using a 5m buffer either side of the waterway layer)–to be temporarily disturbed across the Project Site. Note this is precautionarily assessed and includes many degraded and ephemeral waterways crossing paddocks which are likely to be unsuitable or be of low-quality habitat for fauna species. • 0.75ha of DEECA mapped wetlands is also intersected by the Project footprint. No native vegetation was recorded in these areas and includes degraded areas likely to be unsuitable or of low quality habitat.			• **6.466 ha** of native vegetation patches would be removed within the wind farm footprint area.		
Road upgrades	**1.175 ha**			**0 ha**			**1.18 ha**		
Transport Route swept paths	Geelong	Portland	Both routes	Geelong	Portland	Both routes	Geelong	Portland	Both routes
	0.241	0.432	0.534	0.008 ha	0 ha	0.008 ha	0.249 ha	0.432 ha	0.542 ha
Total	**1.713**	**1.904**	**2.006**	**Up to 9.63 ha**	**Up to 9.62ha**	**Up to 9.63 ha**	**7.895**	**8.080**	**8.190**

Figure 13: EPBC Act listed fauna species within project study area

Project No: 18088.25
Project location: Hexham Wind Farm, VIC
Date: 18/09/2025

- Wind farm boundary
- Search region (10km buffer of wind farm boundary)
- Turbines

EPBC listed fauna from VBA

- Australian Grayling
- Common Greenshank
- Common Sandpiper
- Curlew Sandpiper
- Eastern Barred Bandicoot
- Gang-gang Cockatoo
- Golden Sun Moth
- Grey-headed Flying-fox
- Growling Grass Frog
- Latham's Snipe
- Little Stint
- Macquarie Perch
- Red-necked Stint
- Sharp-tailed Sandpiper
- Southern Bent-winged Bat (southern ssp.)
- Striped Legless Lizard
- Yarra Pygmy Perch

EPBC listed fauna from Birdata

- Common Greenshank
- Curlew Sandpiper
- Double-banded Plover
- Latham's Snipe
- Red-necked Stint
- Sharp-tailed Sandpiper

Southern Bent-wing Bat calls (NA)

- SBWB calls (number of calls recorded)

Southern Bent-wing Bat calls (EHP)

- SBWB calls (number of calls recorded)

NA record (number of records labelled)

Threatened species

- Blue-winged Parrot

Migratory species

- Common Sandpiper
- Double-banded Plover
- Latham's Snipe
- Sharp-tailed Sandpiper
- Growling Grass Frog (number of records labelled)
- Grey-headed Flying-fox (number of records labelled)
- Grey-headed Flying-fox likely camp
- Potential Striped Legless Lizard habitat

N

Kilometers
0 2 4 6 8

GDA2020 MGA Zone 54

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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Table 32: Significance of impact rating for fauna

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
Australasian Shoveler, Blue-billed Duck, Freckled Duck, Musk Duck	Habitat loss through direct removal of wetland habitat	Construction	▪ Application of the avoid and minimise principles. ▪ Show native vegetation to be removed and retained on all plans. ▪ Proper induction of construction contractors.	Predicted impacts: ▪ Project Site impacts: 6.122 ha of wetland vegetation (Plains Grassy Wetland, Plains Sedgy Wetland, Aquatic Herbland). ▪ Geelong transport route or Combined options impacts: 0.008 ha, ▪ Portland route: 0ha. See Table 31 for a detailed breakdown of habitat impacts.	**Low**, given: ▪ Most of the aquatic native vegetation patches impacted do not hold water in depth and extent suitable for those species most years; ▪ Due to requirements for GGF crossings, many of those locations will be rehabilitated; and ▪ The remaining availability of suitable habitat.
	Habitat loss through indirect impacts to wetlands	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Waterway protection documented in a CEMP including avoiding permanent disturbance of banks, channels and nearby vegetation and restoring temporarily disturbed waterway banks and vegetation to at least its pre-construction condition. ▪ Bridges and culverts designed to allow flow beneath the roads along their natural flow paths. ▪ Sediment fencing installed during construction to protect riparian zones if works are to be undertaken within 30 m of waterways. ▪ Access tracks throughout the site will be designed with culverts to divert flow paths beneath the roads. ▪ Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows. ▪ Preparation of and adherence to CEMP	None anticipated	**Very low**, given; ▪ that mitigation and management measures will protect wetland habitat from indirect impacts.
	Collision with turbines	Operation	▪ Development of a BAM Plan	Minor given these species are unlikely to occur in significant numbers and habitat avoided. Unlikely to fly at RSA height and unlikely to collide with turbines	**Low,** given ▪ habitat avoided, insignificant numbers and unlikely to fly at RSA height.
Black Falcon	Collision with turbines	Operation	▪ Development of a BAM Plan	Unknown	**Low to Medium,** given ▪ The species is expected to occur irregularly, but the species is known to fly at RSA and forage near turbines, with a low number if collisions reported by Nature Advisory in SE Australia.
Little Eagle and Spotted Harrier	Collision with turbines	Operation	▪ Development of a BAM Plan	Unknown	**Low**, given ▪ the species irregular occurrence in the study area.

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
Blue-winged Parrot	Habitat loss through direct removal of hollow-bearing trees and hollow-bearing fence posts.	Construction	▪ Carry out pre-clearance surveys of any potential mature treed habitat to be removed during the breeding season, and avoidance of breeding locations until chicks have fledged. ▪ installation of compensatory nest boxes if potential breeding habitat (hollow bearing trees) are removed ▪ Monitoring of nest box use may be required	Unknown	**Low to Medium**, given: ▪ Potential losses of breeding habitat, if species confirmed to breed on site and depending on type and extent of habitat removed. These included tree hollows (native or planted) and hollows in old fence stumps. ▪ Habitat restoration and improvement (revegetation and nest boxes) will mitigate impacts from removal.
	Collision with turbines	Operation	▪ Development of a BAM Plan	Unknown	**Low to Medium**, given: ▪ Collision with operating turbines as the species is known to fly at RSA and forage near turbines, with a low number if collisions reported by Nature Advisory in SE Australia.
Fork-tailed Swift	Collision with turbines	Operation	▪ Development of a BAM Plan	Unknown	**Very low**, given ▪ the relatively high population numbers, and low number of collisions recorded at other wind farms.
Gang Gang Cockatoo	Habitat loss – up to 5 trees on Portland transport route	Construction	▪ Minimise tree and woody understorey removal in Cavendish swept path site. ▪ Revegetate removed trees and woody understorey after impact ceases. .	Predicted impacts: ▪ Project Site: no impacts ▪ Geelong transport route: no impacts ▪ Portland transport route: Removal of up to 5 roadside foraging trees in one location in Cavendish (assessed precautionarily).	**Very low** given ▪ the small extent of potential impacts which are assessed on a precautionary basis.
ustralian Gull-billed Tern, Common Greenshank, Common Sandpiper, Curlew Sandpiper, Double-banded Plover, Eastern Great Egret, Latham's Snipe, Marsh Sandpiper, Red-necked Stint and Sharp-tailed Sandpiper.	Habitat loss through direct removal of wetland habitat	Construction	▪ Application of the avoid and minimise principles. ▪ Show native vegetation to be removed and retained on all plans. ▪ Proper induction of construction contractors.	Predicted impacts: ▪ Project Site: Impacts to 6.122 ha of wetland vegetation (Plains Grassy Wetland, Plains Sedgy Wetland, Aquatic Herbland). ▪ 3.5ha of waterway crossings, impacting potential Common Sandpiper, Eastern Great Egret, and Latham's Snipe habitat temporarily. ▪ Geelong transport route or Combined options: 0.008 ha, ▪ Portland transport route: 0ha. Over half of the development impact to wetland vegetation is attributed to turbines 57, 108, 109, which impact two shallow	**Low to Medium**, depending on: ▪ The frequency of inundation of the wetlands; ▪ The timing of inundation of the wetlands, being spring/summer is of greater concern due to presence of migratory shorebirds; and ▪ The depth and extent of water sheet when flooded, being shallow extensive wetlands preferred by migratory shorebirds.

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
				ephemeral grassy wetlands that are likely used by migratory shorebirds and some waterbirds seasonally or in wet years. See Table 31 for a detailed breakdown of habitat impacts.	
	Habitat loss through indirect impacts to wetlands	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Waterway protection documented in a CEMP including avoiding permanent disturbance of banks, channels and nearby vegetation and restoring temporarily disturbed waterway banks and vegetation to at least its pre-construction condition. ▪ Bridges and culverts designed to allow flow beneath the roads along their natural flow paths. ▪ Sediment fencing installed during construction to protect riparian zones if works are to be undertaken within 30 m of waterways. ▪ Access tracks throughout the site will be designed with culverts to divert flow paths beneath the roads. ▪ Underground cabling trenches will be refilled with material of the same permeability to mitigate land salinisation and induced groundwater flows. ▪ Preparation of and adherence to CEMP	None anticipated	**Very low**, given ▪ that mitigation and management measures will protect wetland habitat from indirect impacts.
	Collision with turbines	Operation	▪ Development of a BAM Plan	Minor given these species are unlikely to occur in significant numbers and habitat avoided. Unlikely to fly at RSA height for extended periods of time and unlikely to be at significant risk of collision with operating turbines.	**Low to Medium,** ▪ All moderate to high-quality habitats have been avoided by the turbine layout, allowing for migratory shorebirds to reach heights above RSA before interacting with turbines. ▪ The likelihood of occurrence of migratory shorebirds in wetlands impacted by turbines 57, 108, 109 may bring risk from Low to Medium.
White-throated Needletail	Collision with turbines	Operation	▪ Development of a BAM Plan	Minimal, given that this species has not been recorded in the study area, despite undertaking targeted surveys.	**Very low**, given ▪ that this species has not been recorded at the HWF site.
Fat-tailed Dunnart	Direct mortality during construction	Construction	▪ Application of the avoid and minimise principles. ▪ Vegetation protection zones during construction. ▪ Salvage and relocation in areas deemed to be removed. . ▪ Proper induction of construction contractors.	Minimal, given species is unlikely to occur in significant numbers and likely to move away from construction areas.	**Low**, given: ▪ Application of construction stage mitigation measures, ▪ The small quantum of habitat loss within the large wind farm site, and

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
					▪ The remaining availability of habitat.
	Direct habitat loss	Construction	▪ Avoidance and minimisation of removal of high-quality habitat ▪ Vegetation protection zones during construction ▪ Salvage and relocation in areas deemed to be removed ▪ Habitat restoration once impacts cease where applicable	Predicted impacts: ▪ Project Site removal: 0.3 ha of the grassland EVCs; ▪ Local road upgrades removal: 1.175ha; ▪ Geelong transport route: 0.241ha ▪ Portland transport route: 0.432ha ▪ Combined transport routes: 0.534ha (see Table 16 and Figure 2). Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided tussock, soil, and rock structure are present. This has not been quantified but will be managed through pre-clearance mitigation. See Table 31 for a detailed breakdown of native vegetation habitat impacts.	**Low to Medium** depending on ▪ actual occurrence. If occurring in most roadside grasslands, impact would be moderate due to the range contraction the species has experienced in Victoria, surviving in small grassland remnants such as roadsides.
	Habitat loss through indirect impacts to suitable habitat	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Preparation of and adherence to CEMP	None anticipated	**Very low**, given ▪ that mitigation and management measures will protect suitable grassland habitat from indirect impacts.
Growling Grass Frog	Direct mortality during construction	Construction	▪ Application of the avoid and minimise principles. ▪ Vegetation protection zones during construction. ▪ Salvage and relocation in areas deemed to be removed ▪ Seasonally appropriate works to avoid frog activity months. ▪ Proper induction of construction contractors.	Minimal as construction mitigation measures are in place.	**Very low**, given ▪ that mitigation and management measures will be in place.
	Direct habitat loss	Construction	▪ Avoidance and minimisation of removal of high-quality aquatic or terrestrial habitat ▪ Vegetation protection zones during construction ▪ Salvage and relocation in areas deemed to be removed ▪ Habitat restoration once impacts cease where applicable	Predicted impacts: ▪ Project Site: ▫ Impacts to 6.122 ha of wetland vegetation (Plains Grassy Wetland, Plains Sedgy Wetland, Aquatic Herbland). ▫ Impacts to up to up to 3.5ha of waterway crossing points across the Project Site.	**Very low to Low,** depending on ▪ presence in footprint potential habitats.

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
				▪ Geelong or Combined transport routes: 0.008 ha, including some potential impacts to roadside terrestrial vegetation adjacent a small wetland. ▪ Portland route: 0ha. ▪ See Table 31 for a detailed breakdown of habitat impacts.	
	Habitat loss through indirect impacts to suitable habitat	Construction, operation and decommissioning	▪ Avoid siting wind turbines and associated hard stands, within 100 m of confirmed habitat. ▪ Avoid disturbance of banks, channels and vegetation in nearby areas (within 30 m of centre line of streams or within 30 m from the edge of wetlands). ▪ Where essential wind farm infrastructure (e.g. access road) crosses a creek line or wetland identified as potential habitat of a listed aquatic fauna species, disturbance of banks, channels and nearby vegetation shall be kept to a minimum, preferably undertaken during periods when the creek line or wetland is dry and if feasible, restored or enhanced to at least its pre-construction condition. ▪ Install sediment fencing during construction to protect riparian zones if works are to be undertaken near (within 30 m of) creek crossings. ▪ Ensure best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands. ▪ Schedule timing of creek crossing construction and underground cabling near habitat between April and August when frog activity is low to minimise impacts ▪ Preparation of and adherence to CEMP	None anticipated	**Very low**, given ▪ that mitigation and management measures will protect GGF habitat from indirect impacts.
Hairy Burrowing Crayfish	Direct mortality during construction	Construction	▪ Application of the avoid and minimise principles. ▪ Vegetation protection zones during construction. ▪ Seasonally appropriate works when species retreats to permanent waterbodies. ▪ Salvage and relocation in areas deemed to be removed. ▪ Proper induction of construction contractors.	Minimal, given construction mitigation measures will be in place.	**Low**,, given: ▪ Application of construction stage mitigation measures.
	Direct habitat loss	Construction	▪ Avoidance and minimisation of removal of high-quality aquatic or terrestrial habitat ▪ Vegetation protection zones during construction	▪ Project Site: ▫ Impacts to 6.122 ha of wetland vegetation (Plains Grassy	**Low to Medium,** depending on ▪ presence in footprint potential habitats.

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
			▪ Salvage and relocation in areas deemed to be removed ▪ Habitat restoration once impacts cease where applicable	Wetland, Plains Sedgy Wetland, Aquatic Herbland). ▫ Impacts to up to 3.5ha of waterway crossing points to be temporarily disturbed across the Project Site. ▪ Geelong or Combined transport routes: 0.008 ha ▪ Portland route: 0ha. See Figure 2-6, 2-7, 2-9, 2-10, 2-11, 2-14, 2-15, 2-16, 2-17, 2-30, 2-31, 2-45, 2-46, 2-47, 2-49, 2-50. See Table 31 for a detailed breakdown of habitat impacts.	
	Habitat loss through indirect impacts to suitable habitat	Construction, operation and decommissioning ▪	▪ Avoid siting wind turbines and associated hard stands, within 100 m of confirmed habitat. ▪ Avoid disturbance of banks, channels and vegetation in nearby areas (within 30 m of centre line of streams or within 30 m from the edge of wetlands). ▪ Where essential wind farm infrastructure (e.g. access road) crosses a creek line or wetland identified as potential habitat of a listed aquatic fauna species, disturbance of banks, channels and nearby vegetation shall be kept to a minimum, preferably undertaken during periods when the creek line or wetland is dry and if feasible, restored or enhanced to at least its pre-construction condition. ▪ Install sediment fencing during construction to protect riparian zones if works are to be undertaken near (within 30 m of) creek crossings. ▪ Ensure best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands. ▪ Preparation of and adherence to CEMP	None anticipated if mitigation measures are in place.	**Very low**, given that mitigation and management measures will protect habitat from indirect impacts.
	Direct mortality during construction	Construction	▪ Application of the avoid and minimise principles. ▪ Vegetation protection zones during construction ▪ Seasonally appropriate works when species is active. . ▪ Salvage and relocation in areas deemed to be removed ▪ Habitat management in months/weeks prior to works to minimise species presence in areas to be removed ▪ Proper induction of construction contractors.	Minimal, given species is unlikely to occur in significant numbers and likely to move away from construction areas if construction occurs during active periods.	**Low**, given: ▪ Application of construction stage mitigation measures.

Species	Impact pathway	Project phase	Mitigation and management measures	Residual impact	Significance justification and rating
Striped Legless Lizard and Tussock Skink	Direct habitat loss	Construction	▪ Avoidance and minimisation of removal of high-quality habitat ▪ Vegetation protection zones during construction ▪ Salvage and relocation in areas deemed to be removed ▪ Habitat restoration once impacts cease where applicable ▪ Offsets	Predicted removal: ▪ Project Site: Removal of 0.3 ha of grassland EVCs; ▪ Local road upgrades: 1.175 hectares; ▪ Geelong transport route: 0.241ha. ▪ Portland transport route: 0.432ha. ▪ Transport routes combined: 0.534ha Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided tussock, soil, and rock structure are present. This has not been quantified but will be managed through pre-clearance mitigation. See Table 31 for a detailed breakdown of habitat impacts.	**SLL: Low to Medium** depending on ▪ actual occurrence. If occurring in most roadside grasslands and within the project footprint, impact to SLL would be moderate due to the range contraction the species has experienced in Victoria, surviving in small grassland remnants such as roadsides. **Tussock Skink: Low** ▪ the species habitat requirements mean they survive in exotic pasture provided there are shelters such as rocks, debris, and soil cracks.
	Habitat loss through indirect impacts to suitable habitat	Construction, operation and decommissioning	▪ Vegetation protection zones during construction ▪ Proper induction of construction contractors. ▪ Preparation of and adherence to CEMP	None anticipated	**Very low**, given that ▪ mitigation and management measures will protect suitable grassland habitat from indirect impacts.
Golden Sun Moth	Direct Habitat Loss and mortality	Construction	▪ Avoidance and minimisation of removal of high-quality grassland habitat ▪ Vegetation protection (NO-GO) zones during construction ▪ Habitat restoration once impacts cease where applicable	Predicted removal: Note this includes all Plains Grassy Woodland and Plains Grassland EVCs subject to removal. Some patches within the Project footprint are likely too isolated from potential core populations on road reserves. ▪ Project Site: Removal of 0.3 ha of grassland EVCs; ▪ Local road upgrades: 1.175 hectares; ▪ Geelong transport route: 0.241ha. ▪ Portland transport route: 0.432ha. ▪ Transport routes combined: 0.534ha Note that the threshold for a native vegetation patch to be mapped as such is 25% of perennial native cover according to the Guidelines, and that the species may occur in lower native cover provided suitable non-native grass species are present (e.g. Chilean needlegrass). This has not been quantified but will be managed through pre-clearance mitigation. See Table 31 for a detailed breakdown of habitat impacts.	**Low** given that ▪ the species has not been recorded during surveys (EHP, 2014), and low number of records exist in the area which are over 10 years old. Some populations may occur in roadside vegetation subject to partial removal.

13. Cumulative Impacts

The relevant scoping requirements requires consideration of cumulative impacts through collisions with turbines and/or overhead powerlines and in combination with other nearby approved or operating wind energy facilities (including planned projects where possible) to listed threatened, migratory and other protected fauna species under the EPBC Act and/or FFG Act, including, but not limited to:

- Brolga
- Grey-headed Flying-fox
- White-throated Needletail
- Black Falcon
- Southern Bent-wing Bat

Cumulative impacts arising from projects within 25 km of the Project Area have been considered. A distance of 25 km was selected as this distance was considered broad enough to capture other proposed, approved or operating wind farms in the region that may interact with the biodiversity values considered here. This distance is also consistent with other recently exhibited wind farm proposals in Victoria.

Proposed, approved, and operating developments (as per DTP 2025) within 25 km of the Project Area are considered in the cumulative impact assessments (Table 33:).

Table 33: Project screening for potential cumulative impacts

Development	Status & description	Proximity to HWF	Affected receptor	Information source(s)	Possible cumulative impacts
Mortlake South WF	Operational 35 wind turbines with a 105 metre tower and a blade tip height of 186 metres.	13 km E	Bats & Avifauna	EPBC Act Referral (2017/8137) EMP (Acciona 2019)	Black Falcon Southern bent-wing Bat White-throated Needletail
Salt Creek WF	Operational 15 turbines with a 100 metre tower and a blade tip height of 150 metres, and a 50.5 kilometre overhead transmission line.	11 km NE	Bats & Avifauna SLL habitat (0.26 ha TxL) NTGVVP (0.26 ha TxL) Native vegetation	EPBC Act Referrals 2006/3012 and 2016/7763 BAMP monitoring reports (Nature Advisory 2020; Biosis 2020; Biosis 2022a)	SLL NTGVVP Black Falcon Grey-headed Flying Fox
Dundonnell WF	Operational	25 km NE	Bats & Avifauna	EPBC Act Approval (2012/6557)	Black Falcon

Development	Status & description	Proximity to HWF	Affected receptor	Information source(s)	Possible cumulative impacts
	80 wind turbines with a 114 metre tower and a blade tip height of 189 metres, and a 38 kilometre overhead transmission line.		NTGVVP (1.572 ha) SHTWLP (2.057 ha) SRF (5)	EES (TrustPower 2015) BAM Plan Annual Reports (Biosis 2022b, 2023a,b; Aurecon 2025)	Southern bent-wing Bat White-throated Needletail NTGVVP SRF Brolga
Morton's Lane WF	Operational 13 wind turbines with a 105 metre tower and a blade tip height of 150 metres.	14 km NNW	Bats & Avifauna	EPBC Act Referral (2006/3013) Bird and Bat monitoring reports (Biosis 2014, 2015, 2019)	Black Falcon
Hawkesdale WF	Operational 23 wind with a 110 metre tower and a blade tip height of 180 metres, and a 14-16km transmission line.	12 km SW	Bats & Avifauna	EPBC Act Referral (2005/2140) Native vegetation plan (Nature Advisory 2022) BAM Plan (Nature Advisory 2024a)	Southern bent-wing Bat Black Falcon Brolga
McArthur WF	Operational 140 turbines with a 84 metre tower and a blade tip height of 135 metres, and a 15 kilometre transmission line.	23 km W	Bats & Avifauna	Bat and Avifauna Mortality Monitoring (Australian Ecological Research Services 2017)	Southern bent-wing Bat Brolga
Mortlake Power Station BESS	Approved (not operational)	4 km E	Nil	Project Development Plan (Jacobs 2023)	Nil
Mortlake Energy Hub	Approved (not operational)	3 km E	Nil	Moyne Planning Permit PA2402939	Nil

Development	Status & description	Proximity to HWF	Affected receptor	Information source(s)	Possible cumulative impacts
Woolsthorpe WF	Approved (not operational) 20 wind turbines with a 98 metre tower and a blade tip height of 168 metres.	15 km SW	Bats & Avifauna	Moyne Planning permit 2006/0220/D BAM Plan (Nature Advisory 2024b)	Black Falcon White-throated Needletail Grey-headed Flying-fox Southern Bent-wing Bat
Mt Fyans WF	Approved (not operational) 85 wind turbines with a 125 metre tower and a maximum blade tip height of 200 metres.	4 km E	Bats & Avifauna NTGVVP (0.4 ha) SLL habitat (3.773 ha)	EPBC Act Referral (2019/8589) EPBC Act Assessment documentation (Mt Fyans WF 2022) Targeted surveys and impact assessment (Biosis 2022c)	Black Falcon White-throated Needletail NTGVVP SLL SBWB
Swansons Lane WF	Planning Permit Application Lodged 5 wind turbines with a 150m tower and a maximum tip height of 252m.	20 km SE	Bats & Avifauna	EPBC Act Referral (2024/09949) Ecological Assessment (EHP 2025) Southern Bent-wing Bat and Yellow-bellied Sheath-tail Bat Assessment (Nature Advisory 2024)	Black Falcon White-throated Needletail Grey-headed Flying-fox Southern Bent-wing Bat
Darlington WF	Referred under EE Act 45 turbines with a maximum tip height of 240m.	20 km E	Bats & Avifauna	EPBC Act Referral (2023/09610) Detailed Ecological Investigations (EHP 2022)	Black Falcon Southern Bent-wing Bat

Notes: WF = Wind Farm; BESS = Battery Energy Storage System; TxL = Transmission line

13.1. Construction cumulative impacts

Potential cumulative impacts during construction of the Project could occur as a result of the direct clearing of native vegetation and associated loss of habitat. The project could potentially contribute to cumulative impacts to the EPBC Act listed *Natural Temperate Grasslands of the Victorian Volcanic Plain* (NTGVVP), Spiny Rice-flower and Striped Legless Lizard (SLL) habitat, all of which have been or are proposed to be impacted by projects within 25 km. 0.586-0.605 hectares of NTGVVP and 1.74-1.91 hectares of SLL habitat are proposed to be impacted by the project. Cumulative impacts arising from projects within 25 km of HWF are quantified in Table 34.

Table 34: Quantification of cumulative impacts arising from construction

Development	NTGVVP impacts (ha)	SLL habitat impacts (ha)
Hexham Wind Farm	0.586-0.605	1.74-1.91
Salt Creek WF	0.26	0.26
Dundonnell WF	1.572	-
Mt Fyans WF	0.4	3.773
Total	**2.85**	**5.9**

Cumulative impacts to these two MNES are addressed as per the Significant Impact Guidelines (DoE 2013) through the consideration of actions that will reduce the long-term viability of MNES as a whole. Impacts to NTGVVP and SLL habitat are assessed against the Significant Impact Guidelines in Section 14. This assessment found that impacts to NTGVVP and SLL habitat are potentially significant. Cumulative impacts to these MNES are considered minimal given they will be offset in accordance with the EPBC Act environmental offsets policy (DSEWPaC 2012), which has a requirement for additionality and security above what is being impacted.

13.2. Operational cumulative impacts

It is difficult to quantify the operational cumulative impacts, as there is little data available on the extent of impact of operational windfarms on biodiversity and uncertainty about the future extent of impacts arising from each wind farm. Potential impacts include possible barrier effects and collision of bats and avifauna with WTGs and/or collision or electrocution due to overhead transmission lines.

There are six operational wind farms within 25 kilometres of the project site, a further one approved and three for which planning permission is currently being sought (Table 33:). The ecological documentation for these projects indicates that the following species may be at risk of cumulative operational impacts (even if the risk of each project individually has been considered minimal):

- **White-throated Needletail** was considered of Very Low risk of collision at Hexham Wind Farm as it was not observed in the study area during any surveys, and VBA records within 30-40km are scarce. The surrounding projects are located in similar habitats of mostly cleared land which do not provide preferred foraging or roosting habitat. The cumulative risk is considered Low as there is the possibility that some of the proposed Wind Farms in the vicinity will impact White-throated Needletail on occasion as the species can be briefly irruptive during summer cold fronts in non-forested areas. A significant cumulative impact from the proposed project in combination with surrounding projects, is considered unlikely.
- **Grey-headed Flying-fox** is considered unlikely to visit the proposed Hexham Wind Farm regularly to feed. However, there may be flights across the site. Salt Creek WF (operational),

Woolsthorpe WF (approved), and Swansons Lane WF (proposed) may occasionally cause collisions to the species. It is unlikely that Hexham Wind Farm will contribute significantly to cumulative impacts to Grey-headed Flying fox with the surrounding proposed projects. However, specific measures will be included in the BAM Plan to address impacts to these species.

- **Southern Bent-wing Bat** collision risk and overall risk to the species is Low compared with other species. However, given that there have been recorded mortality of this species in SW Victorian Wind Farms (32 SBWB collisions recorded to date in SW Victoria (DEECA communication)), it is possible that despite the pre- and post-operation mitigation measures proposed, mortality will occur in Hexham Wind Farm and surrounding projects, which may lead to cumulative effects. The implementation of the BAM Plan with escalating mitigation measures to be implemented, if required, in response to mortalities, will further minimise the ongoing risk to the species in Hexham Wind Farm.
- **Brolga** is a species of concern for Hexham Wind Farm, Mortlake South WF, Dundonnell WF, Hawkesdale WF, and McArthur WF. Implementation of the Interim Brolga Guidelines has aimed to ensure that Hexham Wind farm does not contribute to the cumulative impact of the wind energy industry in southwestern Victoria on the Victorian Brolga population. All projects are required to avoid impacts to Brolga according to the Brolga Guidelines. As only Very Low residual risk ratings for the species are acceptable for all projects, it is unlikely that there would be overall cumulative impacts to Brolga due to these projects in combination. Furthermore, the distance between projects means that the turbines will not form a large cluster collectively that could pose a barrier to Brolga movements across the landscape in flocking season.
- **Black Falcon** is increasingly reported in Western Victoria year-round as there is further research in the region and ID skills in casual observers improve. There is potential for impacts to this species during the operational stage through collision with turbines and/or transmission lines. Some collisions of Black Falcon have occurred at wind farms within the species range in Western Victoria and NSW in recent years. This species is considered susceptible to impacts, however, as this species is considered to occur in Hexham Wind Farm only irregularly, collisions would be expected to be highly infrequent and overall low. Collectively, any of the proposed projects in the region may produce occasional collisions that may lead to cumulative impacts. Collisions are expected to fluctuate between years as the species local abundance in southern Victoria varies among wet and dry years. Mitigation measures such as turbine curtailment during stubble burns and during machinery harvesting crops would help to reduce risk of turbine collisions, as these farming activities attract large numbers of individuals from neighbouring territories into small areas, increasing the collision risk.

Detailed, adaptive management plans, such as an operational Bird and Bat Adaptive Management Plan, will be required to be developed and implemented to effectively monitor these species, and potential impacts to them. These will include strategies to manage and mitigate construction and operational issues in order to reduce the likelihood of the Hexham Windfarm contributing to cumulative impacts in the region.

14. Matters of National Environmental Significance

This section of the report assesses the potential impacts of the proposed wind farm on the listed communities and species either recorded or assessed as potentially occurring on the project site.

14.1. Ecological communities

Three EPBC Act-listed ecological communities were recorded within the HWF site.

The proposed current development footprint will result in the following losses:

- 0.247 hectares of Grassy Eucalypt Woodland of the Victorian Volcanic Plain.
- 0.586 – 0.605 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain.

14.2. Flora Species

The analysis of the likelihood of occurrence of listed flora species (Appendix 5) identified that seven EPBC Act-listed species could occur in remnant native vegetation within the study area:

- Trailing Hop-bush (*Dodonaea procumbens*)
- Clover Glycine (*Glycine latrobeana*)
- Matted Flax-lily (*Dianella amoena*)
- Adamson's Blown-grass (*Lachnagrostis adamsonii*)
- White Sunray (*Leucochrysum albicans* subsp. *tricolor*)
- Fragrant Leek-orchid (*Prasophyllum suaveolens*)
- Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*).

With the exception of Spiny Rice-flower and possibly Matted Flax-lily (unconfirmed), these EPBC Act-listed flora species have not been recorded in any of the vegetation surveys completed to date.

All Spiny Rice-flower individuals have been avoided, and the proposed current development footprint will therefore not result in any losses to this species. The potential Matted Flax-lily record, also falls outside the development footprint. Therefore, no impacts to EPBC Act listed flora species are anticipated.

14.3. Fauna Species

This assessment found the following EPBC Act-listed fauna species have the potential, are likely to occur, or have been recorded during surveys at the HWF (Figure 14), including:

- Migratory birds: Common Greenshank, Curlew Sandpiper, Common Sandpiper, Marsh Sandpiper, Double-banded Plover, Fork-tailed Swift, Latham's Snipe, Red-necked Stint, Sharp-tailed Sandpiper and White-throated Needletail;
- Non-migratory birds: Blue-winged Parrot, Gang Gang Cockatoo;
- Bats: Southern Bent-wing Bat, and Grey-headed Flying Fox (see Bat Assessment report);
- Reptiles: Striped Legless Lizard;
- Frogs: Growling Grass Frog; and
- Golden Sun Moth.

Potential impacts on these matters of national environmental significance are considered in (Table 35).

Figure 14: EPBC Act listed fauna species within project study area

Project No: 18088.25
Project location: Hexham Wind Farm, VIC
Date: 19/11/2025

- Wind farm boundary
- Search region (10km buffer of wind farm boundary)
- Turbines

EPBC listed fauna from VBA

- Australian Grayling
- Common Greenshank
- Common Sandpiper
- Curlew Sandpiper
- Eastern Barred Bandicoot
- Gang-gang Cockatoo
- Golden Sun Moth
- Grey-headed Flying-fox
- Growling Grass Frog
- Latham's Snipe
- Little Stint
- Macquarie Perch
- Red-necked Stint
- Sharp-tailed Sandpiper
- Southern Bent-winged Bat (southern ssp.)
- Striped Legless Lizard
- Yarra Pygmy Perch

EPBC listed fauna from Birdata

- Common Greenshank
- Curlew Sandpiper
- Double-banded Plover
- Latham's Snipe
- Red-necked Stint
- Sharp-tailed Sandpiper

Southern Bent-wing Bat calls (NA)

- SBWB calls (number of calls recorded)

Southern Bent-wing Bat calls (EHP)

- SBWB calls (number of calls recorded)

NA record (number of records labelled)

Threatened species

- Blue-winged Parrot

Migratory species

- Common Sandpiper
- Double-banded Plover
- Latham's Snipe
- Sharp-tailed Sandpiper
- Growling Grass Frog (number of records labelled)
- Grey-headed Flying-fox (number of records labelled)
- Grey-headed Flying-fox likely camp
- Potential Striped Legless Lizard habitat

N

Kilometers
0 2 4 6 8

GDA2020 MGA Zone 54

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Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Table 35: Matters of National Environmental Significance (MNES)

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
Flora							
Fragrant Leek-orchid *Prasophyllum suaveolens*	EN	Targeted flora surveys	Not recorded during surveys. Targeted surveys in impact area complete – **unlikely to occur**	▪ Long-term decrease of population size ▪ reduction of area of occupancy ▪ fragmentation of populations ▪ affect habitat critical for survival of species	Impacts on remnant native vegetation have been avoided and minimised.	No, none recorded.	Section 5.3.3
Spiny Rice-flower *Pimelea spinescens subsp. spinescens*	CR	Targeted flora surveys	Recorded during targeted surveys in Habitat Zone 1N – **does occur**	▪ Long-term decrease of population size ▪ reduction of area of occupancy ▪ fragmentation of populations ▪ affect habitat critical for survival of species	Impacts on remnant native vegetation have been avoided and minimised.	No, all individuals recorded occur in Habitat Zone 1N. All impacts to this habitat zone have been avoided.	Section 5.3.3
Ecological Communities							
Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)	CR	Detailed vegetation assessment and mapping	Present – mostly within road reserves	▪ reduce the extent of an ecological community ▪ fragment or increase fragmentation of an ecological community	Impacts on remnant native vegetation have been avoided and minimised	Potential – 0.586 – 0.605 ha removed	Section 5.3.4
Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)	CR	Detailed vegetation assessment and mapping	Present – mostly within road reserves	▪ reduce the extent of an ecological community ▪ fragment or increase fragmentation of an ecological community	Impacts on remnant native vegetation have been avoided	Potential – 0.247 ha removed	Section 5.3.4

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
Fauna							
Common Greenshank *Tringa nebularia*	M (Bonn A2H, JAMBA, CAMBA)	Habitat assessment and fauna survey, bird utilisation survey	Not recorded during surveys – potential to occur	▪ Substantially modify destroy or isolate an area of important habitat for a migratory species; ▪ Seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species (0.1% of flyway population)	Turbines are well separated from moderate-high quality wetlands, in most cases at least 700m from wetland edges.	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Common Sandpiper *Actitis hypoleucos*	M (Bonn A2H, JAMBA, CAMBA)	Habitat assessment and fauna survey, bird utilisation survey	Known to occur.	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Curlew Sandpiper *Calidris ferruginea*	CR and M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	Habitat assessment and fauna survey, bird utilisation survey	Potential to occur.	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Double-banded Plover *Charadrius bicinctus*	M (Bonn A2H)	Habitat assessment and fauna survey, bird utilisation survey	Known to occur.	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
Marsh Sandpiper *Tringa stagnatilis*	BONNA2H,ROKAMBA,JAMBA,CAMBA	Habitat assessment and fauna survey, bird utilisation survey	Potential to occur	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Red-necked Stint *Calidris ruficollis*	M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	Habitat assessment and fauna survey, bird utilisation survey	Known to occur.	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Sharp-tailed Sandpiper *Calidris acuminata*	VU and M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	Habitat assessment and fauna survey, bird utilisation survey	Likely to occur.	As above (Greenshank)	As above (Greenshank)	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9
Latham's Snipe *Gallinago hardwickii*	VU and M (JAMBA, ROKAMBA, Bonn)	Habitat assessment and fauna survey, BUS	Recorded in small numbers, below the 18 “important population” threshold.	Impacts on important habitat: ▪ areas that support at least 18 individuals of this species ▪ naturally occurring open freshwater wetland with vegetation cover nearby	Turbines are well separated from wetlands, in most cases at least 700 m from wetland edges and 100 m from all major waterways.	No, unlikely to occur in nationally or internationally significant numbers and habitat avoided. Unlikely to fly at RSA height. for sustained periods of time in the vicinity of turbines and unlikely to collide with turbines.	Section 9

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
White-throated Needletail *Hirundapus caudacutus*	VU and M (CAMBA, JAMBA, ROKAMBA)	BUS	None recorded but likely to occur occasionally in summer	▪ Substantially modify destroy or isolate an area of important habitat for a migratory species; ▪ Seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species (0.1% of flyway population = 10 birds)	None	No, flies at RSA height, but due to the lack of extensive woodlands in the region, the species is unlikely to occur in large numbers or frequently.	Sections 7.5.3 and 9
Fork-tailed Swift *Apus pacificus*	M (CAMBA, JAMBA, ROKAMBA)	BUS	None recorded but likely to occur occasionally in summer	▪ Substantially modify destroy or isolate an area of important habitat for a migratory species; ▪ Seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species (0.1% of flyway population = 10 birds)	None	No, flies at RSA height, but species is expected to occur in late summer in brief occasions. Low number of collisions recorded in operating wind farms in Victoria, stable population trends, and large population numbers.	Sections 7.5.3 and 9
Blue-winged Parrot *Neophema chrysostoma*	VU	BUS	Recorded	▪ Long-term decrease of population size ▪ reduction of area of occupancy ▪ fragmentation of populations ▪ affect habitat critical for survival of species	Inspection of hollow-bearing trees and hollow-bearing fence posts to be removed. Avoidance of active nests. Installation of nest boxes if a suitable nesting tree/fence stump is removed. Nest box design will be in consultation with BirdLife Bass Coast BWP Project.	No, infrequent collisions are unlikely to result in a long-term decrease of the population size. The project will not reduce the area of occupancy or fragment any populations. Habitat critical for the survival of the species is not proposed to be removed. Not a significant impact.	Section 7.1

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
Gang-gang Cockatoo *Callocephalon fimbriatum*	EN	Habitat assessment	Recorded in surrounds of suitable habitat in roadside woodland in Cavendish.	▪ reduction of area of occupancy ▪ affect habitat critical for survival of species	Minimise tree and woody understorey removal in Cavendish swept path site. Revegetate removed trees and woody understorey after impact ceases. .	Unlikely - The extent of removal is likely to be very restricted (up to 5 roadside trees) and affecting limited habitat.	Section 7.1
Southern Bent-wing Bat *Miniopterus orianae bassanii*	CR	Habitat assessment and targeted survey	Recorded	▪ Long-term decrease of population size ▪ reduction of area of occupancy ▪ fragmentation of populations ▪ affect habitat critical for survival of species	Turbines located away from remnant and planted native trees	Unlikely	See Bat Assessment report
Grey-headed Flying-fox *Pteropus poliocephalus*	EN	Habitat assessment and targeted survey	Recorded	▪ Long-term decrease of population size ▪ reduction of area of occupancy ▪ fragmentation of populations ▪ affect habitat critical for survival of species	Turbines located away from remnant and planted native trees	Unlikely	See Bat Assessment report
Striped Legless Lizard *Delma impar*	VU	Habitat assessment	Suitable habitat within road reserves	▪ Long-term decrease of size of an important population ▪ reduction of area of occupancy of an important population ▪ fragmentation of important populations ▪ affect habitat critical for survival of species	Impacts on remnant native vegetation have been avoided and minimised. Salvage and translocation in roadside upgrade areas.	Potential – the species is likely to occur in roadsides and has potential to occur in the development footprint. Some areas of suitable habitat within road reserves and the development footprint are proposed to be removed, which may lead to a reduction in the area of occupancy of an important population, and affect habitat critical for the survival of the species.	Section 7.1Section 6

MNES name	EPBC Act status	MNES assessment level	MNES status in study area	Relevant Significant Impact Criteria	Proposed avoidance & mitigation	Likely significant impact on MNES	Report section
Growling Grass Frog *Litoria raniformis*	VU	Habitat assessment and fauna survey	Recorded on the wind farm	▪ Long-term decrease of size of an important population ▪ reduction of area of occupancy of an important population ▪ fragmentation of important populations ▪ affect habitat critical for survival of species	Apply turbine buffer of 100m around confirmed habitat. Avoid disturbance within 30 m of potential habitat. Sediment fencing and pollution control.	Unlikely – Impacts to known habitat have been avoided and impacts to potential habitat in other waterways have been minimised. Creek crossings will be built in seasons where either creeks are dry or frog activity is minimal.	Section 11
Golden Sun Moth *Synemon plana*	VU	Habitat assessment	Suitable habitat within road reserves	▪ Long-term decrease of size of an important population ▪ reduction of area of occupancy of an important population ▪ fragmentation of important populations ▪ affect habitat critical for survival of species	Impacts on remnant native vegetation have been avoided and minimised.	Unlikely – Given the low number of records in the area and lack of observations during surveys (EHP, 2014), it is considered unlikely that an important population occurs at the site. There will be removal of some areas of roadside grassland habitat but it is not anticipated that the relatively small degree of impacted habitat represents habitat critical to the survival of this species.	Section 7.1

14.4. Offset strategy

In accordance with Table 35: , the following MNES could potentially be significantly impacted by the project and would therefore require offsets under the EPBC Act:

- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)
- Striped Legless Lizard (NTGVVP offsets)

Direct offsets will be secured in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (DSEWPaC 2012). The proponent is currently in discussions with Vegetation Link, an offset broker, to identify potential sites to satisfy the project's offset requirements. Vegetation Link has advised the following:

- NTGVVP: No offset sites currently available. Vegetation Link are confident of bringing one or two sites on by the end of the calendar year to cover off on NTGVVP offset requirement.
- GEWVVP: Vegetation Link is in discussion with a number of landowners but supply is very challenging for this community. They do not anticipate having any supply this year, and will likely need to carry out further searches in Spring 2026.
- SLL: Vegetation Link has availability to meet these offset requirements. A site has been proposed, other portions of which have recently been approved and registered as SLL offsets.

Sites would be secured (if not already secured) with a conservation covenant registered on title under the Victorian Conservation Trust Act 1972 or a S69 Landowner Agreement. An Offset Management Plan (OMP) will be created for each site to the satisfaction of DCCEEW, TFN/DEECA and the landowner, to be implemented by the landowner following purchase of the offsets and registration of the covenants on title. Each OMP would include identification of threats, management actions to be undertaken (including timing, responsibility and standards to be achieved) and a demonstration of how the site will meet the *EPBC Act Environmental Offsets Policy* (DSEWPaC 2012). The offsets will be secured by the Proponent following approval of the Project. This is important as the finalisation of the Project's design at the ultimate consent phase may present opportunities to further reduce impacts potentially resulting in less required offsets.

The next steps for prospective sites will include determining their suitability in accordance with the *EPBC Act Environmental Offsets Policy* (DSEWPC 2012), which will involve site assessment by ecologists and liaising with DCCEEW to ensure the sites align with their requirements. The OMP will include the following report sections:

- The OMP's environmental objectives relevant to protected matters.
- Outline/allow for access to the Offset Site including for scientific research on protected matters.
- A table of where the plan addresses relevant EPBC Act approval conditions.
- A table of commitments made in the OMP to achieve the objectives, and a reference to where the commitments are detailed in the OMP.
- Details of the parties responsible for undertaking management actions.
- Reporting and review mechanisms, and documentation standards to demonstrate compliance with the OMP.
- An assessment of risks to achieving the OMP's environmental objectives and risk management strategies that will be applied.
- Impact avoidance, mitigation and/or repair measures, and their timing.

- A monitoring program, which must include:
  - measurable performance indicators
  - trigger values for corrective actions
  - the timing and frequency of monitoring to detect changes in the performance indicators and trigger values
  - proposed corrective actions, if trigger values are reached.
- Description of long-term funding mechanism for measures outlined in the OMP.

Potential offset site searches

In addition to discussion with Vegetation Link, NA is also carrying out searches for potential offset sites. This includes:

Based on Nature Advisory's native vegetation assessments undertaken within the Hexham Wind Farm project area, it is considered unlikely that the project site itself would support sufficient areas of either NTGVVP or GEWVVP to use as an offset, given:

- The low relief, high-rainfall, relatively rock free landscape has facilitated the conversion of private land to high-value agricultural land (cropping or improved pastures); and
- No NTGVVP or GEWVVP has been mapped on private land within the HWF site.

As such, Nature Advisory has considered potential occurrences on private land beyond the HWF site.

This involved initially screening areas using GIS analysis based on the following criteria:

- Occurs within the Victorian Volcanic Plain bioregion;
- Occurs on private land;
- Not within currently reserved land;
- 2005 Ecological Vegetation Classes Plains Grassland (EVC 132), Plains Grassy Woodland (EVC 55) or Plains Grassland/Plains Grassy Woodland Mosaic (EVC 897); and
- Minimum 1 ha.

A shortlist of sites was prepared by Nature Advisory through focussing on areas with a high concentration of polygons meeting the above criteria, verified through aerial imagery, StreetView (where available), and Nature Advisory's local knowledge.

Botanists then undertook fieldwork to assess potential sites. Of these blocks, a potential NTGVVP offset was identified in areas North of Stockyard Hill. Additionally, potential GEWVVP offset sites were identified near Shelford and Bannockburn. These will require landholder outreach and further assessments to confirm suitability. However, if secured, it is anticipated that these options could provide all required NTGVVP and GEWVVP offsets.

Additional searches for NTGVVP and GEWVVP offsets may also be required if these properties are determined to be unsuitable or cannot be secured.

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Appendix 1: Detailed habitat hectare assessment results

Habitat Zone			1F	1G	1I	1L	1M	1U	1W	1AA	1AD	1AG	1AK	1AM	1AN	1AO	1AP
Bioregion			DunT	DunT	DunT	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			55	55	55	55_61	55_61	55_61	132_61	132_61	647	55_61	55_61	55_61	55_61	55_61	132_61
Total area of Habitat Zone (ha)			0.111	0.325	0.131	0.007	0.132	0.077	0.235	0.005	0.135	0.236	0.014	0.011	0.006	0.013	0.008
Site Condition	Large Trees	/10	10	10	10	0	0	0	N/A	N/A	N/A	0	0	0	0	0	N/A
	Tree Canopy Cover	/5	5	5	3	0	0	0	N/A	N/A	N/A	0	0	0	0	0	N/A
	Lack of Weeds	/15	7	7	0	0	0	0	0	0	11	0	0	0	0	0	0
	Understorey	/25	15	15	5	5	5	5	5	0	5	5	5	5	5	5	0
	Recruitment	/10	3	3	0	5	0	0	0	0	6	5	0	0	0	0	0
	Organic Matter	/5	3	3	3	5	2	4	4	2	5	4	2	2	2	2	2
	Logs	/5	4	2	0	4	0	0	N/A	N/A	N/A	0	4	4	4	4	N/A
	Site condition standardising multiplier*		1.00	1.00	1.00	1.00	1.00	1.00	1.36	1.36	1.36	1.00	1.00	1.00	1.00	1.00	1.36
	Site Condition subtotal		47	45	21	19	7	9	12	3	37	14	11	11	11	11	3
Landscape Context	Patch Size	/10	4	4	8	1	1	1	1	1	2	1	1	1	1	1	1
	Neighbourhood	/10	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	/5	3	3	3	1	0	0	0	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**56**	**54**	**33**	**21**	**8**	**10**	**13**	**4**	**39**	**15**	**12**	**12**	**12**	**12**	**4**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

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Habitat Zone			1AQ	2C	3D	3G	3I	3J	3L	3M	3R	3S	3AA	3AF	3AH
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			132_61	55_61	55_61	55_61	55_61	55_61	55_61	55_61	132_61	132_61	55_61	125	125
Total area of Habitat Zone (ha)			0.002	0.017	0.431	0.4	0.313	0.088	0.006	0.018	0.047	0.134	0.023	0.254	14.091
Site Condition	Large Trees	/10	N/A	0	0	0	0	0	0	0	N/A	N/A	0	N/A	N/A
	Tree Canopy Cover	/5	N/A	0	0	0	0	0	0	0	N/A	N/A	0	N/A	N/A
	Lack of Weeds	/15	0	0	4	4	6	2	0	0	4	4	6	5	5
	Understorey	/25	0	5	5	15	5	5	5	5	0	5	5	4	4
	Recruitment	/10	0	1	3	3	5	3	3	3	0	3	3	3	3
	Organic Matter	/5	2	2	2	3	3	2	2	2	3	3	2	4	4
	Logs	/5	N/A	0	2	2	0	0	0	4	N/A	N/A	4	N/A	N/A
	Site condition standardising multiplier*		1.36	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.36	1.36	1.00	1.36	1.36
	Site Condition subtotal		3	8	16	27	19	12	10	14	10	20	20	22	22
Landscape Context	Patch Size	/10	1	1	1	1	1	1	1	1	1	1	1	1	6
	Neighbourhood	/10	0	1	0	0	0	0	0	0	0	0	0	0	2
	Distance to Core	/5	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**4**	**10**	**17**	**28**	**20**	**13**	**11**	**15**	**11**	**21**	**21**	**23**	**30**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

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Habitat Zone			3AI	3AJ	3AK	3BN	3BO	3BP	3BT	3BU	3BV	3BW	3BY
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			125	125	125	55_61	132_61	132_61	132_61	132_61	55_61	55_61	55_61
Total area of Habitat Zone (ha)			0.065	0.068	0.771	0.037	5.76	0.26	0.226	0.177	0.092	0.064	0.053
Site Condition	Large Trees	/10	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	0	0
	Tree Canopy Cover	/5	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	0	0
	Lack of Weeds	/15	5	5	5	4	13	13	4	4	4	4	0
	Understorey	/25	4	4	4	5	10	10	5	5	5	5	15
	Recruitment	/10	3	3	3	0	10	10	0	0	0	0	0
	Organic Matter	/5	4	4	4	5	3	3	2	2	2	2	3
	Logs	/5	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	4	4	0
	Site condition standardising multiplier*		1.36	1.36	1.36	1.00	1.36	1.36	1.36	1.36	1.00	1.00	1.00
	Site Condition subtotal		22	22	22	14	49	49	15	15	15	15	18
Landscape Context	Patch Size	/10	1	1	1	1	4	4	1	1	1	1	1
	Neighbourhood	/10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	/5	0	0	0	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**23**	**23**	**23**	**15**	**53**	**53**	**16**	**16**	**16**	**16**	**19**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

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Habitat Zone			3BZ	3CA	3CB	3DC	3DD	3DE	3DF	4A	5D	5E	5F
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			132_61	55_61	55_61	0	0	55_61	55_61	132_61	132_61	55_61	132_61
Total area of Habitat Zone (ha)			1.835	0.049	0.024	0.066	0.047	0.267	0.006	0.501	0.177	0.008	1.212
Site Condition	Large Trees	/10	N/A	0	0	0	0	0	0	N/A	N/A	0	N/A
	Tree Canopy Cover	/5	N/A	0	0	0	0	0	0	N/A	N/A	0	N/A
	Lack of Weeds	/15	13	0	0	4	4	6	4	4	7	7	7
	Understorey	/25	10	5	5	5	5	5	5	5	5	5	10
	Recruitment	/10	10	0	0	3	0	0	0	0	3	0	3
	Organic Matter	/5	3	2	2	4	3	3	2	2	3	2	3
	Logs	/5	N/A	5	5	2	2	0	4	N/A	N/A	0	0
	Site condition standardising multiplier*		1.36	1.00	1.00	1.00	1.00	1.00	1.00	1.36	1.36	1.00	1.36
	Site Condition subtotal		49	12	12	18	14	14	15	15	25	14	31
Landscape Context	Patch Size	/10	4	1	1	1	1	1	1	1	1	1	1
	Neighbourhood	/10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	/5	0	0	0	0	0	0	3	0	0	0	0
Total Condition Score		**/100**	**53**	**13**	**13**	**19**	**15**	**15**	**19**	**16**	**26**	**15**	**32**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

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Habitat Zone			5G	5H	5I	5J	5K	5L	5O	5P	5U	BW	BX
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			55_61	55_61	55_61	55_61	132_61	132_61	55_61	55_61	132_61	55_61	55_61
Total area of Habitat Zone (ha)			0.619	0.401	0.873	1.104	0.73	3.444	0.057	0.008	0.135	0.077	0.09
Site Condition	Large Trees	/10	0	0	0	0	0	0	0	0	N/A	0	0
	Tree Canopy Cover	/5	0	0	0	0	N/A	N/A	0	0	N/A	0	0
	Lack of Weeds	/15	2	4	7	4	4	13	0	0	0	7	7
	Understorey	/25	5	10	5	10	10	10	5	5	0	5	5
	Recruitment	/10	0	0	0	3	3	10	0	0	0	0	0
	Organic Matter	/5	4	3	3	3	3	3	2	2	2	4	4
	Logs	/5	0	0	0	0	N/A	0	0	5	N/A	0	0
	Site condition standardising multiplier*		1.00	1.00	1.00	1.00	1.36	1.36	1.00	1.00	1.36	1.00	1.00
	Site Condition subtotal		11	17	15	20	27	49	7	12	3	16	16
Landscape Context	Patch Size	/10	1	1	1	1	1	1	1	1	1	2	2
	Neighbourhood	/10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	/5	0	0	0	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**12**	**18**	**16**	**21**	**28**	**50**	**8**	**13**	**4**	**18**	**18**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

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Habitat Zone			BY	CN	CO	DA3	DF	DH	DV	DW	DX	DZ	EA
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			68	55_61	647	55_61	55_61	55_61	55_61	55_61	55_61	68	55_61
Total area of Habitat Zone (ha)			0.588	0.584	0.088	1.455	0.235	0.1	1.9	0.25	0.345	0.028	0.505
Site Condition	Large Trees	/10	0	9	N/A	0	0	0	0	0	0	0	0
	Tree Canopy Cover	/5	0	3	N/A	0	0	4	0	0	0	0	0
	Lack of Weeds	/15	7	0	11	7	0	15	7	4	4	0	7
	Understorey	/25	10	5	5	15	5	5	15	15	15	5	15
	Recruitment	/10	0	0	6	2	5	4	2	5	5	5	5
	Organic Matter	/5	2	2	5	3	2	0	3	4	4	3	3
	Logs	/5	0	4	N/A	0	0	0	0	0	0	0	0
	Site condition standardising multiplier*		1.00	1.00	1.36	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Site Condition subtotal		19	23	37	27	12	28	27	28	28	13	30
Landscape Context	Patch Size	/10	2	1	2	1	1	1	1	1	1	1	1
	Neighbourhood	/10	0	0	0	0	0	0	0	0	0	0	0
	Distance to Core	/5	0	0	0	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**21**	**24**	**39**	**28**	**13**	**29**	**28**	**29**	**29**	**14**	**31**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

Nature Advisory

Habitat Zone			EY	EZ	FI	HA	HB	HD	XAH	XAJ	XAT	XAX	XAY
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			55_61	55_61	125	55_61	55_61	55_61	125	125	653	653	653
Total area of Habitat Zone (ha)			0.007	0.037	0.016	0.079	0.037	0.004	19.107	0.008	0.076	0.035	0.039
Site Condition	Large Trees	/10	0	0	N/A	0	0	0	N/A	N/A	N/A	N/A	N/A
	Tree Canopy Cover	/5	0	0	N/A	0	0	0	N/A	N/A	N/A	N/A	N/A
	Lack of Weeds	/15	0	0	0	0	0	0	6	4	11	15	15
	Understorey	/25	5	5	10	5	5	5	10	10	15	15	15
	Recruitment	/10	5	5	3	5	5	5	3	6	0	0	0
	Organic Matter	/5	2	2	4	2	2	2	5	4	5	5	5
	Logs	/5	0	0	N/A	0	0	0	N/A	N/A	N/A	N/A	N/A
	Site condition standardising multiplier*		1.00	1.00	1.36	1.00	1.00	1.00	1.36	1.36	1.36	1.36	1.36
	Site Condition subtotal		12	12	23	12	12	12	33	33	42	48	48
Landscape Context	Patch Size	/10	1	1	1	1	1	1	4	1	2	2	2
	Neighbourhood	/10	0	0	0	0	0	0	0	1	0	0	0
	Distance to Core	/5	0	0	0	0	0	0	1	0	0	0	0
Total Condition Score		**/100**	**13**	**13**	**24**	**13**	**13**	**13**	**38**	**35**	**44**	**50**	**50**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

Nature Advisory

Habitat Zone			XBA	XBE	XBF	XBG	XBH	XDE	XDK	XDL
Bioregion			VVP	VVP	VVP	VVP	VVP	VVP	VVP	VVP
EVC Number			125	125	647	125	647	653	125	647
Total area of Habitat Zone (ha)			0.078	0.123	0.132	0.202	0.011	0.068	0.155	0.49
Site Condition	Large Trees	/10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Tree Canopy Cover	/5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Lack of Weeds	/15	7	7	4	0	4	9	4	7
	Understorey	/25	15	15	5	5	5	9	10	15
	Recruitment	/10	0	0	0	0	3	5	3	3
	Organic Matter	/5	5	5	5	5	0	5	5	5
	Logs	/5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Site condition standardising multiplier*		1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
	Site Condition subtotal		37	37	19	14	16	38	30	41
Landscape Context	Patch Size	/10	1	1	1	1	2	2	1	2
	Neighbourhood	/10	0	0	0	0	0	0	1	0
	Distance to Core	/5	0	0	0	0	0	0	0	0
Total Condition Score		**/100**	**38**	**38**	**20**	**15**	**18**	**40**	**32**	**43**

* Modified approach to habitat scoring - refer to Table 14 of DELWP's Vegetation Quality Assessment Manual (DSE 2004).

Nature Advisory

Appendix 2: Large Trees in Patches and Scattered trees recorded in the project study area

Tree No.	Common Name	Scientific Name	DBH (cm)	Circumference	Habitat Category	Radius of TPZ (m)	Remove/Retain	Notes
1	River Red-gum	*Eucalyptus camaldulensis*	13	41	Small Scattered Tree	2	Retained	
2	Eucalypt	*Eucalyptus sp.*	80	251	Large Tree in Habitat Zone 1F	9.6	Retained	
3	Eucalypt	*Eucalyptus sp.*	100	314	Large Tree in Habitat Zone 1F	12	Removed	
4	Eucalypt	*Eucalyptus sp.*	80	251	Large Tree in Habitat Zone 1G	9.6	Retained	DBH estimated. Surrounded by Hedge Wattle.
5	Eucalypt	*Eucalyptus sp.*	98	308	Large Tree in Habitat Zone 1G	11.76	Retained	
6	River Red-gum	*Eucalyptus camaldulensis*	88	276	Large Tree in Habitat Zone 1G	10.56	Removed	
7	River Red-gum	*Eucalyptus camaldulensis*	118	371	Large Tree in Habitat Zone 1G	14.16	Retained	
8	River Red-gum	*Eucalyptus camaldulensis*	96	302	Large Tree in Habitat Zone 1G	11.52	Removed	
9	River Red-gum	*Eucalyptus camaldulensis*	103	324	Large Tree in Habitat Zone 1G	12.36	Removed	
10	River Red-gum	*Eucalyptus camaldulensis*	95	298	Large Tree in Habitat Zone 1G	11.4	Retained	
11	River Red-gum	*Eucalyptus camaldulensis*	90	283	Large Tree in Habitat Zone 1H	10.8	Retained	DBH estimated. Private property.
12	River Red-gum	*Eucalyptus camaldulensis*	80	251	Large Tree in Habitat Zone 1H	9.6	Retained	DBH estimated. Private property.
13	River Red-gum	*Eucalyptus camaldulensis*	85	267	Large Tree in Habitat Zone 1I	2	Removed	DBH estimated. Private property.
14	River Red-gum	*Eucalyptus camaldulensis*	137	430	Large Tree in Habitat Zone 1I	2	Retained	
15	River Red-gum	*Eucalyptus camaldulensis*	126	396	Large Scattered Tree	2	Retained	
16	River Red-gum	*Eucalyptus camaldulensis*	255	801	Large Tree in Habitat Zone 1J	2	Retained	

Notes: DBH = Diameter at breast height (130 cm from the ground); TPZ = Tree Protection Zone.

Nature Advisory

Tree No.	Common Name	Scientific Name	DBH (cm)	Circumference	Habitat Category	Radius of TPZ (m)	Remove/Retain	Notes
17	River Red-gum	*Eucalyptus camaldulensis*	207	650	Large Tree in Habitat Zone 1J	2	Retained	
18	River Red-gum	*Eucalyptus camaldulensis*	82	258	Large Scattered Tree	2	Retained	
19	River Red-gum	*Eucalyptus camaldulensis*	37	116	Small Scattered Tree	2	Retained	
20	River Red-gum	*Eucalyptus camaldulensis*	7	22	Small Scattered Tree	2	Retained	
21	River Red-gum	*Eucalyptus camaldulensis*	34	107	Small Scattered Tree	2	Retained	
22	River Red-gum	*Eucalyptus camaldulensis*	33	104	Small Scattered Tree	2	Retained	
24	River Red-gum	*Eucalyptus camaldulensis*	59	185	Small Scattered Tree	2	Retained	
25	River Red-gum	*Eucalyptus camaldulensis*	41	129	Small Scattered Tree	2	Removed	
26	River Red-gum	*Eucalyptus camaldulensis*	30	94	Small Scattered Tree	2	Retained	
27	River Red-gum	*Eucalyptus camaldulensis*	42	132	Small Scattered Tree	2	Retained	
28	River Red-gum	*Eucalyptus camaldulensis*	38	119	Small Scattered Tree	2	Retained	
29	River Red-gum	*Eucalyptus camaldulensis*	23	72	Small Scattered Tree	2	Removed	
30	River Red-gum	*Eucalyptus camaldulensis*	52	163	Small Scattered Tree	2	Retained	
31	River Red-gum	*Eucalyptus camaldulensis*	46	145	Small Scattered Tree	2	Retained	
32	River Red-gum	*Eucalyptus camaldulensis*	34	107	Small Scattered Tree	2	Retained	
33	River Red-gum	*Eucalyptus camaldulensis*	120	377	Large Scattered Tree	2	Retained	

Notes: DBH = Diameter at breast height (130 cm from the ground); TPZ = Tree Protection Zone.

Tree No.	Common Name	Scientific Name	DBH (cm)	Circumference	Habitat Category	Radius of TPZ (m)	Remove/Retain	Notes
34	River Red-gum	*Eucalyptus camaldulensis*	71	223	Small Scattered Tree	2	Retained	
35	River Red-gum	*Eucalyptus camaldulensis*	57	179	Small Scattered Tree	2	Retained	
36	Eucalypt	*Eucalyptus sp.*	45	141	Large Tree in Habitat Zone CN	2	Retained	Dead.
37	Eucalypt	*Eucalyptus sp.*	60	188	Large Tree in Habitat Zone CN	2	Retained	Dead.
38	River Red-gum	*Eucalyptus camaldulensis*	95	298	Large Tree in Habitat Zone CN	2	Retained	
39	River Red-gum	*Eucalyptus camaldulensis*	91	286	Large Tree in Habitat Zone CN	2	Removed	Removal can be easily avoided.
40	River Red-gum	*Eucalyptus camaldulensis*	99	311	Large Tree in Habitat Zone CN	2	Removed	Removal can be easily avoided.
41	River Red-gum	*Eucalyptus camaldulensis*	104	327	Large Tree in Habitat Zone CN	2	Retained	
42	Eucalypt	*Eucalyptus sp.*	52	163	Large Tree in Habitat Zone CN	2	Retained	Dead.
43	Eucalypt	*Eucalyptus sp.*	67	210	Large Tree in Habitat Zone CN	2	Retained	Dead.
44	River Red-gum	*Eucalyptus camaldulensis*	98	308	Large Tree in Habitat Zone CN	2	Retained	
45	River Red-gum	*Eucalyptus camaldulensis*	88	276	Large Tree in Habitat Zone CN	2	Retained	
46	Eucalypt	*Eucalyptus sp.*	64	201	Large Tree in Habitat Zone CN	2	Retained	Dead.
47	Eucalypt	*Eucalyptus sp.*	59	185	Large Tree in Habitat Zone CN	2	Retained	Dead.
48	River Red-gum	*Eucalyptus camaldulensis*	132	415	Large Tree in Habitat Zone CN	2	Removed	Removal can be easily avoided.
49	River Red-gum	*Eucalyptus camaldulensis*	95	298	Large Tree in Habitat Zone CN	2	Removed	Removal can be easily avoided.

Notes: DBH = Diameter at breast height (130 cm from the ground); TPZ = Tree Protection Zone.

Tree No.	Common Name	Scientific Name	DBH (cm)	Circumference	Habitat Category	Radius of TPZ (m)	Remove/Retain	Notes
50	Eucalypt	*Eucalyptus sp.*	67	210	Large Tree in Habitat Zone CN	2	Retained	Dead.
51	Eucalypt	*Eucalyptus sp.*	84	264	Large Scattered Tree	10.08	Retained	Dead. Most likely River Red-gum
52	Eucalypt	*Eucalyptus sp.*	103	324	Large Scattered Tree	12.36	Removed	Dead. Most likely River Red-gum. Removal can be easily avoided.
53	River Red-gum	*Eucalyptus camaldulensis*	82	258	Large Scattered Tree	9.84	Removed	Removal can be easily avoided.
54	River Red-gum	*Eucalyptus camaldulensis*	143	449	Large Scattered Tree	15	Removed	Removal can be easily avoided.
55	River Red-gum	*Eucalyptus camaldulensis*	148	465	Large Scattered Tree	15	Retained	
56	River Red-gum	*Eucalyptus camaldulensis*	117	368	Large Scattered Tree	14.04	Retained	
57	River Red-gum	*Eucalyptus camaldulensis*	120	377	Large Scattered Tree	14.4	Retained	
58	River Red-gum	*Eucalyptus camaldulensis*	85	267	Large Scattered Tree	10.2	Retained	
59	River Red-gum	*Eucalyptus camaldulensis*	190	597	Large Scattered Tree	15	Retained	
60	River Red-gum	*Eucalyptus camaldulensis*	134	421	Large Scattered Tree	15	Retained	
61	River Red-gum	*Eucalyptus camaldulensis*	148	465	Large Scattered Tree	15	Removed	Removal can be easily avoided.
62	River Red-gum	*Eucalyptus camaldulensis*	86	270	Large Tree in Habitat Zone AA	10.32	Retained	
63	River Red-gum	*Eucalyptus camaldulensis*	105	330	Large Tree in Habitat Zone AA	12.6	Retained	
64	River Red-gum	*Eucalyptus camaldulensis*	103	324	Large Scattered Tree	12.36	Retained	
65	Eucalypt	*Eucalyptus sp.*	46	145	Large Tree in Habitat Zone DX	5.52	Retained	Dead.
66	River Red-gum	*Eucalyptus camaldulensis*	83	261	Large Tree in Habitat Zone AA	9.96	Retained	

Notes: DBH = Diameter at breast height (130 cm from the ground); TPZ = Tree Protection Zone.

Appendix 3: Flora species recorded in the project study area

Origin	Common name	Scientific name	EPBC	FFG-T	FFG-P	CaLP Act
	Silver Wattle	*Acacia dealbata*				
	Black Wattle	*Acacia mearnsii*				
	Blackwood	*Acacia melanoxylon*				
	Golden Wattle	*Acacia pycnantha*				
	Sheep's Burr	*Acaena echinata*				
	Bidgee-widgee	*Acaena novae-zelandiae*				
*	Sheep Sorrel	*Acetosella vulgaris*				
*	Brown-top Bent	*Agrostis capillaris*				
*	Hair Grass	*Aira spp.*				
	Common Swamp Wallaby-grass	*Amphibromus nervosus*				
	Common Wheat-grass	*Anthosachne scabra s.l.*				
*	Sweet Vernal-grass	*Anthoxanthum odoratum*				
*	Cape weed	*Arctotheca calendula*				
	Chocolate Lily	*Arthropodium strictum s.l.*				
	Common Woodruff	*Asperula conferta*				
*	Hastate Orache	*Atriplex prostrata*				
	Fine-head Spear-grass	*Austrostipa oligostachya*				
	Tall Spear-grass	*Austrostipa pubinodis*				
	Rough Spear-grass	*Austrostipa scabra subsp. falcata*				
	Spear Grass	*Austrostipa spp.*				
*	Oat	*Avena spp.*				
	Marsh Club-sedge	*Bolboschoenus medianus*				
*	Great Brome	*Bromus diandrus*				
*	Soft Brome	*Bromus hordeaceus*				
	Blue Grass-lily	*Caesia calliantha*				
	Lemon Beauty-heads	*Calocephalus citreus*				
	Milky Beauty-heads	*Calocephalus lacteus*				
	Tall Sedge	*Carex appressa*				
	Sedge	*Carex spp.*				
	Common Cassinia	*Cassinia aculeata subsp. aculeata*				
*	Common Centaury	*Centaurium erythraea*				
	Common Sneezeweed	*Centipeda cunninghamii*				
*	Common Mouse-ear Chickweed	*Cerastium glomeratum s.l.*				
*	Common Chamomile	*Chamaemelum nobile*				
*	Spear Thistle	*Cirsium vulgare*				R
	Pink Bindweed	*Convolvulus erubescens s.l.*				
*	Mirror Bush	*Coprosma repens*				
*	Water Buttons	*Cotula coronopifolia*				
	Common Water-ribbons	*Cycnogeton procerum s.s.*				
*	Rough Dog's-tail	*Cynosurus echinatus*				
*	Cocksfoot	*Dactylis glomerata*				
	Flax-lily	*Dianella spp.*				
	Long-hair Plume-grass	*Dichelachne crinita*				
*	South African Orchid	*Disa bracteata*				

Origin	Common name	Scientific name	EPBC	FFG-T	FFG-P	CaLP Act
	Australian Salt-grass	*Distichlis distichophylla*				
	Sundew	*Drosera spp.*				
	Nodding Saltbush	*Einadia nutans*				
	Common Spike-sedge	*Eleocharis acuta*				
	Tall Spike-sedge	*Eleocharis sphacelata*				
	Hairy Willow-herb	*Epilobium hirtigerum*				
	Blue Devil	*Eryngium ovinum*				
	Prickfoot	*Eryngium vesiculosum*				
	River Red-gum	*Eucalyptus camaldulensis*				
*	Sugar Gum	*Eucalyptus cladocalyx*				
	Bog Gum	*Eucalyptus kitsoniana*	CR			
	Swamp Gum	*Eucalyptus ovata subsp. ovata*				
	Star Cudweed	*Euchiton involucratus s.s.*				
*	Tall Fescue	*Festuca arundinacea*				
	Knobby Club-sedge	*Ficinia nodosa*				
*	Desert Ash	*Fraxinus angustifolia*				
*	Cleavers	*Galium aparine*				
	Australian Sweet-grass	*Glyceria australis*				
	Varied Raspwort	*Haloragis heterophylla*				
*	Ox-tongue	*Helminthotheca echioides*				
*	Yorkshire Fog	*Holcus lanatus*				
*	Barley Grass	*Hordeum spp.*				
	Pennywort	*Hydrocotyle spp.*				
*	Flatweed	*Hypochaeris radicata*				
	Nodding Club-sedge	*Isolepis cernua var. cernua*				
	Club Sedge	*Isolepis spp.*				
	Toad Rush	*Juncus bufonius*				
	Gold Rush	*Juncus flavidus*				
	Joint-leaf Rush	*Juncus holoschoenus*				
	Pale Rush	*Juncus pallidus*				
	Rush	*Juncus spp.*				
	Running Postman	*Kennedia prostrata*				
	Common Blown-grass	*Lachnagrostis filiformis s.l.*				
	Purple Blown-grass	*Lachnagrostis semibarbata* var. *filifolia*		EN	p	
	Common Duckweed	*Lemna disperma*				
	Variable Sword-sedge	*Lepidosperma laterale*				
	Scaly Buttons	*Leptorhynchos squamatus*				
	Salt Pratia	*Lobelia irrigua*				
	Poison Lobelia	*Lobelia pratioides*				
*	Rye Grass	*Lolium spp.*				
	Wattle Mat-rush	*Lomandra filiformis*				
*	Tall Wheat-grass	*Lophopyrum ponticum*				
*	African Box-thorn	*Lycium ferocissimum*				C
*	Pimpernel	*Lysimachia arvensis*				
	Small Loosestrife	*Lythrum hyssopifolia*				

Origin	Common name	Scientific name	EPBC	FFG-T	FFG-P	CaLP Act
*	Burr Medic	*Medicago polymorpha*				
#	Giant Honey-myrtle	*Melaleuca armillaris subsp. armillaris*		EN	p	
	Moonah	*Melaleuca lanceolata*				
	Common Onion-orchid	*Microtis unifolia*			p	
	Upright Water-milfoil	*Myriophyllum crispatum*				
	Grassland Wood-sorrel	*Oxalis perennans*				
*	Paspalum	*Paspalum dilatatum*				
	Five-awned Spear-grass	*Pentapogon quadrifidus var. quadrifidus*				
*	Toowoomba Canary-grass	*Phalaris aquatica*				
*	Lesser Canary-grass	*Phalaris minor*				
	Common Reed	*Phragmites australis*				
	Spiny Rice-flower	*Pimelea spinescens* subsp. *spinescens*	CR	CR	p	
*	Radiata Pine	*Pinus radiata*				
*	Rice Millet	*Piptatherum miliaceum*				
*	Buck's-horn Plantain	*Plantago coronopus*				
	Narrow Plantain	*Plantago gaudichaudii*				
*	Ribwort	*Plantago lanceolata*				
*	Annual Meadow-grass	*Poa annua s.l.*				
	Common Tussock-grass	*Poa labillardierei*				
	Common Tussock-grass	*Poa labillardierei var. labillardierei*				
	Grey Tussock-grass	*Poa sieberiana*				
*	Annual Beard-grass	*Polypogon monspeliensis*				
	Common Purslane	*Portulaca oleracea*				
	Thin Pondweed	*Potamogeton australiensis*				
	Austral Bracken	*Pteridium esculentum subsp. esculentum*				
	Buttercup	*Ranunculus spp.*				
*	Onion Grass	*Romulea rosea*				
*	Sweet Briar	*Rosa rubiginosa*				C
*	Blackberry	*Rubus fruticosus spp. agg.*				C
*	Clustered Dock	*Rumex conglomeratus*				
*	Curled Dock	*Rumex crispus*				
	Wiry Dock	*Rumex dumosus*				
	Common Wallaby-grass	*Rytidosperma caespitosum*				
	Short Wallaby-grass	*Rytidosperma carphoides*				
	Brown-back Wallaby-grass	*Rytidosperma duttonianum*				
	Bristly Wallaby-grass	*Rytidosperma setaceum var. setaceum*				
	Wallaby Grass	*Rytidosperma spp.*				
*	Willow	*Salix spp.*				R
	Creeping Brookweed	*Samolus repens var. repens*				
	Shiny Swamp-mat	*Selliera radicans*				
	Large Kangaroo Apple	*Solanum laciniatum*				
*	Black Nightshade	*Solanum nigrum s.l.*				
	Smooth Solenogyne	*Solenogyne dominii*				
*	Common Sow-thistle	*Sonchus oleraceus*				
	Lesser Sea-spurrey	*Spergularia marina s.s.*				

Origin	Common name	Scientific name	EPBC	FFG-T	FFG-P	CaLP Act
	Swamp Starwort	*Stellaria angustifolia subsp. angustifolia*				
	Sun Orchid	*Thelymitra spp.*			p	
	Kangaroo Grass	*Themeda triandra*				
	Creeping Monkey-flower	*Thyridia repens*				
	Yellow Rush-lily	*Tricoryne elatior*				
*	Strawberry Clover	*Trifolium fragiferum var. fragiferum*				
*	White Clover	*Trifolium repens var. repens*				
*	Clover	*Trifolium spp.*				
	Narrow-leaf Cumbungi	*Typha domingensis*				
*	Small Nettle	*Urtica urens*				
	Slender Speedwell	*Veronica gracilis*				
*	Common Vetch	*Vicia sativa*				
*	Squirrel-tail Fescue	*Vulpia bromoides*				
	Sprawling Bluebell	*Wahlenbergia gracilis*				

Notes: EPBC = threatened species status under EPBC Act: CR = Critically Endangered; EN = Endangered; VU = Vulnerable; **FFG-T** = threatened species status under FFG Act: CR = Critically Endangered; EN = Endangered; VU = Vulnerable; **FFG-P** = protected species status under the FFG Act: p = listed as generally protected; **CaLP Act** = declared noxious weeds status under the CaLP Act; S = State Prohibited Weeds (any infestations are to be reported to DEECA. DEECA is responsible for control of State Prohibited Weeds); P = Regionally Prohibited Weeds (Land owners must take all reasonable steps to eradicate regionally prohibited weeds on their land); C = Regionally Controlled Weeds (Land owners have the responsibility to take all reasonable steps to prevent the growth and spread of Regionally controlled weeds on their land); R = Restricted Weeds (Trade in these weeds and their propagules, either as plants, seeds or contaminants in other materials is prohibited); **WONS** = Weeds of National Significance

* = introduced to Victoria

= Victorian native taxa occurring outside their natural range

Appendix 4: Example photographs of vegetation within the Hexham Wind Farm site



Plains Grassland vegetation (EVC 132_61) in Habitat Zone 4A on Woolsthorpe-Hexham Road (10/06/2025), which also qualifies at NTGVVP and WBPGC



Plains Grassy Wetland vegetation (EVC 125) in Habitat Zone XAH (9/11/2021)



Creekline Tussock Grassland vegetation (EVC 68) in Habitat Zone XAU on Mustons Creek (10/11/2021)



Aquatic Herbland vegetation (EVC 653) in Habitat Zone XDE, on Mustons Creek (10/11/2021)



Plains Sedgy Wetland (EVC 647) in Habitat Zone XAA (8/11/2021)



Plains Grassy Woodland (EVC 55_61) in Habitat Zone XAL (11/11/2021)



Plains Grassy Woodland vegetation (EVC 55_61) (derived grassland form) in Habitat Zone DA3 on Hexham-Ballangeich Road (17/06/2025), which also qualifies as GEWVVP

Appendix 5: FFG Act and EPBC Act listed flora species and likelihood of occurrence

Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Casterton Wattle	*Acacia exudans*		Critically Endangered	Restricted to the far southwest of Victoria near Casterton, this species is found in heath or low eucalypt woodlands, frequently along degraded roadside verges (VicFlora 2025).	VBA	1	30/06/2009	Suitable habitat present within the Plains Grassy Woodland patches (1F & 1G) mapped along Dunkeld-Cavendish Rd, Cavendish. While records in the vicinity of this swept path intersection are scarce, it is within the overall distribution of the species, and the locality has been poorly surveyed historically. **Potential to occur.**	Swept path - Dunkeld-Cavendish Road, Cavendish.
Sticky Wattle	*Acacia howittii*		Vulnerable	Occurs in moist forest habitat in eastern Victoria, though the species is also widely cultivated and naturalised. Distributed in the vicinity of the Upper Macallistar River area near Mount Howitt, Yarram and Tabberabbera. Flowers October (RBVG 2023).	VBA	1	11/01/2016	Study area is outside of the natural species distribution. Commonly cultivated as an ornamental shrub. Local record likely refers to a planted specimen. **Unlikely to occur.**	Swept paths - Portland Transport Route.
Grampians Sheoak	*Allocasuarina grampiana*		Endangered	Victoria, endemic, known only from sandstone outcrops in Grampians (e.g. Victoria Range, Mt William) (VicFlora 2022).	VBA	1	7/03/2011	Study area outside natural distribution and nearby records are restricted to Grampians National Park. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
River Swamp Wallaby-grass	*Amphibromus fluitans*	Vulnerable		River Swamp Wallaby-grass grows mostly in permanent swamps and also lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground; conditions that are caused by seasonally-fluctuating water levels (DCCEEW 2023).	PMST	No VBA records	N/A	Suitable (but sub-optimal) habitat along watercourses. No records within the search region. **Unlikely to occur**.	All.
Plump Swamp Wallaby-grass	*Amphibromus pithogastrus*		Critically Endangered	Grows in seasonally wet grassland and sedgeland habitat, primarily on basalt-derived soils. This species is very rare, with less than 20 plants recorded across seven sites in Victoria. This species has been detected in Mansfield, Donnybrook, Craigieburn, Derrimut, Mount Ercildoune and Creswick. Flowers October to December (DSE 2004).	VBA	4	14/11/2012	This species occurs within the search region around four of the swept path locations along the Portland Transport Route. These locations lack suitable habitat as they are heavily degraded and there few recent nearby records. **Unlikely to occur.**	Swept paths - Dunkeld-Cavendish Road, Dunkeld and the three intersections in Hamilton.
Rough-barked Apple	*Angophora floribunda*		Endangered	This species is found in near-coastal lowland forest habitat, supporting sandy soils. Distribution is restricted to far eastern Victoria, around Mallacoota and its surrounding river systems. The species is also known to be occasionally planted for ornamental purposes in other parts of the state. Flowers September to February (RBGV 2023).	VBA	1	10/04/2010	Study area outside natural distribution. Common street and ornamental tree. Local record likely refers to a planted specimen. **Unlikely to occur.**	Swept path - Henty Highway, Hamilton.
Downy Star-Bush	*Asterolasia phebalioides*	Vulnerable	Vulnerable	Victoria, occurs in Grampians and Little Desert in open woodland, forest and heath on sandstone and sandy soils (Duretto 1999).	PMST & VBA	13	17/10/2022	Local records are restricted to the Grampians National Park and no similar geology was found in any of the swept path areas. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Half-bearded Spear-grass	*Austrostipa hemipogon*		Vulnerable	A rare species found in mallee-scrub, woodland and grassland habitat. Known from Sunset Country and Big Desert, Stawell and Toolern Vale. Flowers October to December (RBGV 2023).	VBA	2	27/03/1978	Suitable habitat present within the Plains Grassy Woodland patches (1F & 1G) mapped along Dunkeld-Cavendish Rd, Cavendish. While records in the vicinity of this swept path intersection are scarce, it is within the overall distribution of the species, and the locality has been poorly surveyed historically. **Potential to occur**.	Swept path - Dunkeld-Cavendish Road, Cavendish.
Annual Spear-grass	*Austrostipa macalpinei*		Vulnerable	Occurs in sandy heathland, mallee and heathy woodlands of the Little Desert, southern Grampians, Mt Arapiles and southern parts of the Big Desert. Rare in Victoria, but may be locally abundant following fires (VicFlora 2025).	VBA	3	30/12/1968	Local records are restricted to the Grampians National Park and no suitable habitat was present within the swept path area. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Dunkeld.
River Leafless Bossiaea	*Bossiaea riparia*		Endangered	In Victoria, uncommon to rare, in south-west, Grampians and east, growing on streambanks, and in moist and dry situations in dry sclerophyll forest, often at relatively high altitudes (VicFlora 2022).	VBA	3	10/10/2010	Known species distribution is along streambanks and in forests. The few nearby records are from along the Wannon River. **Unlikely to occur.**	Swept path - Henty Highway, Hamilton.
Cactus Bossiaea	*Bossiaea walkeri*		Endangered	In Victoria, rare, restricted to north-west, occurring mainly in deep sand near Murray River and in Wyperfeld National Park, usually in mallee communities (VicFlora 2022).	VBA	1	13/08/1951	Study area outside natural distribution and lacks habitat. The locality of the nearby record in Hamilton is incorrect. **Unlikely to occur.**	Swept paths - The three intersections in Hamilton.
Spreading Brachyloma	*Brachyloma depressum*		Endangered	In Victoria, restricted to a few locations in Grampians, growing on sandy or rocky slopes of ranges or peaks, in woodland with a shrubby understorey (VicFlora 2022).	VBA	17	17/10/2022	Local records are restricted to the Grampians National Park and no similar geology was found in any of the swept path areas. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Reader's Daisy	*Brachyscome readeri*		Endangered	In Victoria, usually in areas subject to inundation in south-west and north near Murray River, between Swan Hill and Ulupna Island (VicFlora 2022).	VBA	1	1/11/1907	This species occurs within the search region around the swept path location in Penshurst along the Portland Transport Route. This location lacks suitable habitat as it is heavily degraded and there is only a single recent nearby record. **Unlikely to occur.**	Swept path - Penshurst-Dunkeld Road, Penshurst.
Crimson Spider-orchid	*Caladenia concolor*	Vulnerable	Endangered	Found in open Box-Ironbark forest communities, usually supporting an understory of scattered heaths and grasses. Favoured soils include well-drained stony sands and clay loams. Distributed around Beechworth and Chiltern in north-eastern Victoria, with additional populations possibly occurring in the Broadford and Tyaak areas. Flowers September to October (Coates 2003c).	PMST	No VBA records	N/A	There are no recent records, and study area is outside of the known species distribution. **Unlikely to occur.**	Swept paths - Dunkeld-Cavendish Road, Cavendish and Dunkeld-Cavendish Road, Dunkeld.
Elegant Spider-orchid	*Caladenia formosa*	Vulnerable	Critically Endangered	Dry woodlands of western Victoria and southeast South Australia mostly on Quaternary sand deposits that are moist in winter and dry in summer. Known extent between Edenhope and Cavendish (Todd 2000).	VBA	1	20/10/1946	Study area lacks suitable geology and there is a lack of recent nearby records. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Cavendish.
Ornate Pink-fingers	*Caladenia ornata*	Vulnerable	Endangered	Distributed in the south-west of Victoria, where it occurs in heathy forest and among shrubs on seasonally moist sandy loams (Jones 2006; RBGV 2025).	PMST	No VBA records	N/A	Study area outside of known distribution and there are no recent nearby records. **Unlikely to occur.**	Swept paths - Dunkeld-Cavendish Road, Cavendish and Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Rigid Spider-orchid	*Caladenia tensa*	Endangered		Known to occur in Eucalyptus and Callitris woodland in well-drained sandy loams, among shrubs. Widespread within and near Little Desert (Jones 2006).	PMST	No VBA records	N/A	Study area outside of known distribution and there are no recent nearby records. **Unlikely to occur.**	Swept paths - Dunkeld-Cavendish Road, Cavendish and Dunkeld-Cavendish Road, Dunkeld.
Large White Spider-orchid	*Caladenia venusta*		Endangered	Grows in woodland and heathy woodland habitat, on well-drained to moist soils. Usually found in coastal and sub-coastal areas, though the species is also known from the Grampians. Flowers September to November (RBGV 2023).	VBA	3	6/03/2006	Local records are restricted to the Grampians National Park. **Unlikely to occur**.	Swept paths - Dunkeld-Cavendish Road, Cavendish and Dunkeld-Cavendish Road, Dunkeld.
Cut-leaf Burr-daisy	*Calotis anthemoides*		Critically Endangered	A rare species that grows in habitat prone to waterlogging, on heavy soils. Distributed in the north and west of Victoria. Flowers September to December (RBGV 2023).	VBA	3	21/10/2010	Suitable habitat in EVCs 132_61 and 55. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Curly Sedge	*Carex tasmanica*		Endangered	Grows on heavy basalt clay soils in grassy and sedgy habitat, around the margins of drainage lines and freshwater swamps (Carter 2010). The species is found north of Melbourne around the Craigieburn area, and in the west of Victoria around Portland and Heywood. Flowers September to November (RBGV 2023).	VBA	1	8/12/2005	Suitable habitat along drainage lines in EVCs 125, 641 and 821. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas**.	All.
Small Milkwort	*Comesperma polygaloides*		Critically Endangered	Grows in remnant native grassland of the Western (Basalt) Plains, in association with Kangaroo Grass Themeda triandra, Common Tussock-grass Poa labillardieri, Wallaby-grass Rytidosperma spp. and Spear-grass Austrostipa spp. The species is also known from Grey Box Eucalyptus microcarpa and Yellow Gum Eucalyptus leucoxylon grassy woodlands in the Wimmera and Bendigo areas. Flowers November to February (DSE 2004).	VBA	2	20/10/2021	Suitable habitat in EVCs 132_61 and 55. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Branched Everlasting	*Coronidium adenophorum*		Endangered	Known from dune mallee of the Big Desert and heathy woodland on Mt Abrupt in the Grampians (RBGV 2025).	VBA	3	6/01/1969	Study area lacks habitat. Local records are restricted to the Grampians National Park. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Pale Swamp Everlasting	*Coronidium gunnianum*		Critically Endangered	Occurs predominantly in grasslands and riverine River Red-gum woodland of fertile plains on soils that are prone to inundation (e.g., gilgai depressions and seasonal herbaceous wetlands) (DEECA 2023; RBGV 2023). The species is widespread throughout the state, with the exception of alpine areas and north-west Victoria (RBGV 2025).	VBA	4	13/12/2013	Suitable habitat in EVCs 55, 125, 132_61 and 654. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Hairy Correa	*Correa aemula*		Endangered	It occurs in heathy and shrubby woodland on well drained soiled derived from sandstone and granite. Sites are usually rocky, often with exposure of boulders and cliffs. The taxon's distribution is widespread in the Grampians, with outlying populations in the Mt Langi Ghiran area, the Black Range, and Mt Dundas (DELWP 2021).	VBA	10	17/10/2022	Study area outside of natural distribution and lacks suitable geology. This species is largely confined to areas of high-quality native vegetation (e.g., Grampians National Park). **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Dwarf Boronia	*Cyanothamnus nanus var. pubescens*		Endangered	Grows in open-forest, woodland and heath on rocky or sandy substrates (VicFlora 2021), and is apparently endemic to Victoria, occurring between the Grampians and Ben Major near Lexton (VicFlora 2021). This taxon apparently only occurs in the Grampians and nearby ranges to the east towards Beaufort. Records from the south west, Otways and the north east are likely to be misidentified plants of either var. nana, which can occasionally be slightly hairy, or possibly B. pilosa var. torquata, which is also very hairy and occasionally sub-erect to spreading shrub (DELWP 2021).	VBA	2	5/02/2000	Study area outside of natural distribution and lacks suitable geology. This species is largely confined to areas of high-quality native vegetation (e.g., Grampians National Park). **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Matted Flax-lily	*Dianella amoena*	Endangered	Critically Endangered	Mostly found in drier lowland grassland and grassy woodlands on well-drained to seasonally waterlogged fertile sandy loams to heavy cracking soils derived from sedimentary or volcanic geology. Commonly associated native species include Themeda triandra, Microlaena stipoides var. stipoides, Anthosachne scaber, Poa labillardierei and Rytidosperma racemosum var. racemosum. Most sites contain a high cover of introduced plant species and the surrounding landscape is often highly altered. Widely distributed from eastern to south-western Victoria. Flowers December to February (Carter 2010; RBGV 2023).	PMST & VBA	1	22/12/2011	Suitable habitat in EVCs 55 and 132_61. While records in the vicinity are scarce, the study area is within the overall distribution of the species, and the locality has been poorly surveyed historically. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Swamp Flax-lily	*Dianella callicarpa*		Endangered	Found in grassland, woodland and swamp scrub on sandy soils or clay soils derived from basalt in the southwest of Victoria. Flowers October to February (RBGV 2023).	VBA	5	31/10/2023	Suitable habitat in EVCs 55 and 132_61. While records in the vicinity are scarce, the study area is within the overall distribution of the species, and the locality has been poorly surveyed historically. **Potential to occur.**	All.
Glaucous Flax-lily	*Dianella longifolia var. grandis* s.*l.*		Critically Endangered	Occurs in lowland plains grassland and grassy woodlands as well as around rocky outcrops. Flowers November to December (RBGV 2023).	VBA	3	5/02/1978	Suitable habitat in EVCs 55 and 132_61. While records in the vicinity are scarce, the study area is within the overall distribution of the species, and the locality has been poorly surveyed historically. **Potential to occur.**	All.
Grampians Parrot-pea	*Dillwynia oreodoxa*		Vulnerable	The taxon is found on rocky hillsides in heathy woodlands and open forests (VicFlora 2017). Most sites are in open forest rather than heathy woodland and not all sites are rocky hillsides with some associated species such as Correa aemula and Marianthus bignoniaceus. This suggests that the habitat range extends to damper sheltered sites while other associates such as Hypolaena fastigiata, Lepidosperma viscidum or Caustis flexuosa, suggesting sandier profiles (DELWP 2021).	VBA	2	6/03/2006	Study area outside of natural distribution and lacks suitable habitat and geology. This species is largely confined to areas of high-quality native vegetation (e.g., Grampians National Park). **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Bell-flower Hyacinth-orchid	*Dipodium campanulatum*	Endangered	Endangered	Reported from only a few scattered localities west of Melbourne to Portland (Entwisle 1994).	PMST	No VBA records	N/A	There are no recent records, and study area is outside of the known species distribution. **Unlikely to occur.**	Swept path - Portland Road, Hamilton.
Golden Cowslips	*Diuris behrii*		Endangered	Scattered across western Victoria, where the species is locally common in grassland and open woodland habitat. Flowers September to November (EBGV 2023).	VBA	12	20/10/2021	Suitable habitat in EVCs 55 and 132_61. **Potential to occur**.	All.
Western Purple Diuris	*Diuris daltonii*		Critically Endangered	Apparently confined to western Victoria between Mt Arapiles and the Grampians, in heathy forests and River Red-gum (Eucalyptus camaldulensis) woodlands on water-retentive soils (Jeanes 2015).	VBA	2	15/11/1969	Suitable habitat present within the Plains Grassy Woodland patches (1F & 1G) mapped along Dunkeld-Cavendish Rd, Cavendish. Whilst there is a lack of recent nearby records, the locality has been poorly surveyed historically. **Potential to occur.**	Swept path - Dunkeld-Cavendish Road, Cavendish

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Clumping Golden Moths	*Diuris gregaria*		Critically Endangered	Grassland dominated by Kangaroo Grass and among rocks on basalt outcrops in red-brown to blackish loams. Highly localised in Derrinallum-Chatsworth area (Jones 2006).	VBA	4	21/10/2010	Suitable habitat in several patches of EVC 132_61, particularly in roadside patches which are more commonly dominated by Kangaroo Grass. While the study area is on the southern edge of species distribution, the locality has been poorly surveyed historically, **Potential to occur.**	All.
Trailing Hop-bush	*Dodonaea procumbens*	Vulnerable		Grows in a variety of habitats, including woodland, low open forest, grassland and heathland, where the species is found in winter-wet areas on clays and sands. Largely restricted to the south-west of the state, between Castlemaine, Dergholm and Cressy. Flowers spring to summer (Carter 2010).	PMST & VBA	11	9/04/2011	Suitable habitat within EVCs 132_61 and 55. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Cane Grass	*Eragrostis australasica*		Critically Endangered	Largely confined to clay-pans and shallow lakes in the north-west, from near Kerang to the SA border. More southerly records are often associated with irrigation channels and it's likely that these plants have established through inadvertent transport of seed.	VBA	1	24/08/1977	Lack of suitable habitat within the study area and a paucity of recent nearby records. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Cavendish.
Buxton Gum	*Eucalyptus crenulata*	Endangered	Endangered	Grows in swampy habitat in the foothills of the Great Dividing Range. Distributed around Buxton, Narbethong and Yarra Glen. Flowers September to February (RBGV 2023).	VBA	1	22/05/2011	Study area is outside of the natural species distribution. Commonly cultivated as an ornamental tree. Local record likely refers to a planted specimen. **Unlikely to occur.**	Swept path - Henty Highway, Hamilton.
Western Peppermint	*Eucalyptus falciformis*		Vulnerable	Occurs on sandy soils in near-coastal heathy woodland from Anglesea area west to the SA border, sometimes adjacent to wetter vegetation. Also locally common in broadly similar vegetation in the Grampians (RBGV 2025).	VBA	2	5/02/2000	Local records are restricted to the Grampians National Park and no similar geology was found in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Southern Blue-gum	*Eucalyptus globulus subsp. globulus*		Endangered	Occurs in wet forests on a range of aspects, often in association with Mountain Ash or Mountain Grey-gum (DEECA 2023). In Victoria, the natural distribution of subsp. globulus is thought to be the area south of the Strzelecki Range, e.g. Port Franklin, Wilsons Promontory, and that other populations in south Gippsland and the Otway Ranges probably represent intergrades between the other subsp. (RBGV 2023). Indigenous occurrences of the taxon are reliably recorded also for French Island and Phillip Island in Western Port Bay (DEECA 2023). The taxon intergrades extensively with subspp. globulus, bicostata and pseudoglobulus which can make it almost impossible to attribute definitely to a certain subspecies (RBGV 2023). All other records of the taxon throughout Victoria, particularly in the Melbourne and Ballarat regions, but extending as far as Hamilton, Bendigo and the La Trobe Valley, are either plantings, garden escapes or wildings from plantations (DEECA 2023).	VBA	1	10/04/2010	Study area is outside of the natural species distribution. Commonly cultivated in plantations and as an ornamental tree. Local record likely refers to a planted specimen. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Large-fruit Yellow-gum	*Eucalyptus leucoxylon subsp. megalocarpa*		Critically Endangered	Found in coastal shrubland, on loamy soils overlying limestone. Primarily concentrated in the south-west of the state, south of Nelson. Flowers spring to summer (Nicolle 2006).	VBA	1	21/11/2012	Study area is outside of the natural species distribution. Commonly cultivated as an ornamental tree. Local record likely refers to a planted specimen. **Unlikely to occur.**	Swept paths - The three intersections in Hamilton.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Wimmera Scentbark	*Eucalyptus sabulosa*		Vulnerable	Populations of the taxon are small and sporadic, and are always on sandy soils. E. sabulosa and E. aromaphloia overlap on the eastern edge of the Grampians in the Hall's Gap-Pomonal area. Associated taxa include E. alaticaulis, E. baxteri, E. melliodora, two forms of E. goniocalyx, and E. obliqua. In other areas such as the Little Desert, E. arenacea is a common associate, whilst E. leucoxylon subsp. stephaniae and various mallee taxa may occur nearby (DELWP 2021).	VBA	7	17/10/2022	Local records are restricted to the Grampians National Park and no similar geology was found in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Mt Abrupt Stringybark	*Eucalyptus verrucata*		Vulnerable	Endemic to Victoria where it occurs on exposed, rugged, rocky sites on the southern end of the Serra Range (e.g., Mt Abrupt) in the Grampians National Park.	VBA	9	22/09/2017	Local records are restricted to the Grampians National Park and no similar geology was found in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Yarra Gum	*Eucalyptus yarraensis*		Critically Endangered	Found in valley sclerophyll forest communities, usually in association with low-lying riparian plains. The species is distributed from Ararat in the northwest, to Glengarry in the east. Flowers September to December (RBGV 2023).	VBA	1	12/04/2011	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Tight Bedstraw	*Galium curvihirtum*		Vulnerable	In Victoria, occurs in disjunct locations in the south-west and east of the state where it usually found in open-forest and woodland (RBGV 2025).	VBA	3	3/04/2002	Local records are restricted to the Grampians National Park. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Austral Crane's-bill	*Geranium solanderi var. solanderi s.s.*		Endangered	An uncommon species found in grassy woodlands, often in sheltered and damp conditions. This species is distributed across the state. Flowers October to January (RBGV 2023).	VBA	1	24/11/1979	Suitable habitat present within the Plains Grassy Woodland patches (1F & 1G) mapped along Dunkeld-Cavendish Rd, Cavendish. Whilst there is a lack of recent nearby records, the locality has been poorly surveyed historically. **Potential to occur.**	Swept path - Dunkeld-Cavendish Road, Cavendish
Pale-flower Crane's-bill	*Geranium sp. 3*		Endangered	Grows in open grassy portions of dry woodland and forest habitat. Currently only found around Stawell, Yan Yean, Eltham and Bonegilla. Possibly also known from Goroke and Hamilton, though this is not confirmed. Flowers September to January (RBGV 2023).	VBA	3	25/09/2019	Suitable habitat within EVC 55. The nearby records have not been confirmed due to the taxonomic uncertainty of the species. However, assuming they are genuine records of the species, there is **potential to occur within the study area.**	All.
Clover Glycine	*Glycine latrobeana*	Vulnerable	Vulnerable	Primarily favours grassland and grassy woodland, though also known from dry forest and rarely heathland. This species mostly grows on clays and sometimes more loamy soils. Distribution is widespread but sporadic across the state. Flowers during spring at lower elevations, and during summer at higher elevations (Carter & Sutter 2010).	PMST & VBA	11	17/12/1998	Suitable habitat in EVCs 132_61 and 55. Potential to occur. Not recorded during targeted surveys, and therefore now considered **unlikely to occur.**	All.
Hairy Raspwort	*Gonocarpus mezianus*		Vulnerable	In Victoria, this species is restricted to the Grampians National Park where it occurs in dry rocky soils.	VBA	10	17/10/2022	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Grampians Goodenia	*Goodenia lineata*		Vulnerable	Found on sandy soils in heathland from the Grampians, Mt Clay and lower Glenelg River areas (Vicflora 2023).	VBA	1	1/11/1902	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in any of the swept path areas. **Unlikely to occur**.	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Western Golden-tip	*Goodia medicaginea*		Endangered	Grows in drier sclerophyll forest. Scattered across the state, from Portland and Mount Arapilles in the south-west, to Long Forest, Eaglehawk, Killawarra Forest and the Suggan Buggan area. Flowers August to September (RBGV 2023).	VBA	2	18/11/2009	Study area is within the known species distribution. However, there is a lack of suitable habitat and it is a conspicuous species that was not recorded during the detailed flora surveys. **Unlikely to occur.**	Swept path - Henty Highway, Hamilton.
Flame Grevillea	*Grevillea dimorpha*		Endangered	Endemic to Victoria where it is restricted to the Grampians (Gariwerd) National Park (DEECA 2023; RBGV 2023). It occurs in moister areas of dry sclerophyll forest, or heath on sandy soils on sandstone (RBGV 2023). The taxon is located primarily within the Mount William and Serra Ranges, extending from the Halls Gap area to near Dunkeld (DEECA 2023)	VBA	42	17/10/2022	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in any of the swept path areas. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Creeping Rush	*Juncus revolutus*		Endangered	Found growing in damp, saline habitat. Primarily concentrated along the coast, though the species is also known from saline lakes on the volcanic plain. Flowers October to January (EBGV 2023).	VBA	1	25/03/1974	Species is predominantly coastal. While some drainage lines within the study area may be slightly saline, the study area does not support any highly saline lakes or associated suitable habitat. **Unlikely to occur.**	Project study area.
Adamson's Blown-grass	*Lachnagrostis adamsonii*	Endangered	Endangered	Occurs in drainage lines, slow-moving creeks and damp depressions. Known to favour sheltered sites, with moderate to high salinity. Companion species include Streaked Arrowgrass Triglochin striata, Plains Saltmarsh-grass Puccinellia stricta var. perlaxa, Australian Salt-grass Distichlis distichophylla, Common Blown-grass Lachnagrostis filiformis and Beaded Glasswort Sarcocornia quinqueflora. Distributed from Clifton Springs (near Geelong) to the Coleraine area, in southwest Victoria. Flowers November to February (Murphy 2010).	PMST & VBA	4	9/06/2001	Suitable habitat along drainage lines. Potential to occur in EVC 125. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Salt Blown-grass	*Lachnagrostis robusta*		Endangered	Found in saline depressions and on the edges of saline lakes. Primarily distributed in the Volcanic Plain, with outlying populations near Tooradin, Seaspray and the Grampians. Flowers during spring (RBGV 2023).	VBA	1	16/01/1997	The study area does not support any highly saline lakes or associated suitable habitat. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Cavendish.
Purple Blown-grass	*Lachnagrostis semibarbata var. filifolia*		Endangered	Grow in partially saline depressions in grassland and sometimes woodland habitat. Occur in the south of the state, where distribution is scattered from around Sale to the South Australian border. Flowers October to February (RBGV 2023).	VBA	2	30/06/2009	Suitable habitat along drainage lines. Potential to occur in EVCs 125, 641 and 821. Recorded during targeted surveys in habitat zone XBR, XBS, IH and II. **Does occur**.	All.
Purple Blown-grass	*Lachnagrostis semibarbata var. semibarbata*		Endangered	Grow in partially saline depressions in grassland and sometimes woodland habitat. Occur in the south of the state, where distribution is scattered from around Sale to the South Australian border. Flowers October to February (RBGV 2023).	VBA	1	15/12/1995	Suitable habitat along drainage lines. Potential to occur in EVCs 125, 641 and 821. Not recorded during targeted surveys. **Unlikely to occur.**	All.
Truncate Leionema	*Leionema bilobum subsp. bilobum*		Vulnerable	Grows in heathy habitat in the Grampians, often in elevated rocky sites. Primarily distributed in the north and east of the area. Flowers May to November (RBGV 2023).	VBA	1	9/06/1968	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Spiny Peppercress	*Lepidium aschersonii*	Vulnerable	Endangered	Spiny Peppercress grows on heavy clay soils in periodically wet sites, such as gilgai depressions and along the edges of shallow waterbodies. The majority of records are found in western Victoria, around Mortlake, Cressy, Colac and Ararat. An outlying occurrence has also been noted at Lake Omeo in the east of Victoria. Flowers spring to autumn (Carter 2010).	PMST	No VBA records	N/A	No suitable habitat. **Unlikely to occur.**	All.
Basalt Peppercress	*Lepidium hyssopifolium s.s.*	Endangered	Endangered	Basalt Peppercress is likely to have been originally found in native grassland and/or grassy woodland habitat. Remaining populations are now known to grow on light-heavy clay loams in highly modified settings, with prominent exotic components and some open bare ground. Many occupied sites occur on roadsides, adjacent to agricultural land and in small reserves. The species is primarily known from the volcanic plains west of Melbourne and the Victorian Midlands. Flowers summer to autumn (Tumino 2010).	PMST	No VBA records	N/A	Species rarely recorded in disjunct populations, and not recorded in surrounding locality. **Unlikely to occur.**	All.
Shiny Tea-tree	*Leptospermum turbinatum*		Endangered	Endemic to Victoria where it is confined to the Grampians, Mt Langi Ghiran, Mt Buangor and Ben Nevis where it occurs on sandstone and granitic outcrops (RBGV 2025).	VBA	10	17/10/2022	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Twisting Scale-rush	*Lepyrodia flexuosa*		Vulnerable	Endemic to Victoria, where it is confined to the Grampians and surrounds. Occurs in moist peaty soils and along the margins of small creeks (RBGV 2025).	VBA	2	10/04/1998	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
White Sunray	*Leucochrysum albicans subsp. Tricolor*	Endangered	Endangered	The White Sunray favours basaltic clay soils and sometimes sandy-clay soils of sedimentary origin. In Victoria it is found in grassland communities, with some bare ground for successful germination. Common companion graminoids include Themeda triandra, Dichelachne crinita, Austrostipa spp. and Rytidosperma spp., while companion herbs include Eryngium ovinum, Calocephalus citreus, Acaena echinata and Leptorhynchos squamatus. White Sunray is found in the state's south-west, between Colac, Inverleigh, Ballarat, Ararat and Hamilton. Flowers November to December (Sinclair 2011).	PMST & VBA	4	20/10/2021	Suitable habitat in EVCs 132_61 and 55. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Thyme Beard-heath	*Leucopogon thymifolius*		Vulnerable	Endemic to Victoria where it is confined to the Grampians and nearby Pomonal where it occurs in open-forest and heathy woodland usually in elevated sites (e.g., Mt William, Serra, Victoria and Mt Difficult Ranges) (RBGV 2025).	VBA	4	22/09/2017	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Common Beard-heath	*Leucopogon virgatus var. brevifolius*		Endangered	Rather uncommon on heathland and healthy woodland on deep sands from the Douglas-Edenhope area in the south west to northern fringe of Little desert (Powell et al. 1996).	VBA	1	9/04/2011	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Small-flower Mat-rush	*Lomandra micrantha subsp. tuberculata*		Vulnerable	Grows on sandy soils in heathy habitat. Distribution is primarily concentrated around the Grampians, with outlying populations also found near Seymour and Portland. Flowers May to October (RBGV 2023).	VBA	1	3/02/2012	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Orange Bell-climber	*Marianthus bignoniaceus*		Endangered	In Victoria, locally common in damp open forest and dense scrub along streams or in elevated sites amongst rock in Grampians and Black Range (VicFlora 2022).	VBA	8	6/03/2006	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Giant Honey-myrtle	*Melaleuca armillaris subsp. armillaris*		Endangered	A near-coastal species that grows in sandy heath, scrub (associated with saltmarsh and/or riparian habitat) and rocky habitat in coastal and foothill areas. Naturally occurs eastwards from Marlo, though the species is widely cultivated outside its natural distribution. Flowers during summer (RBGV 2023).	VBA	6	11/01/2016	Study area is outside of the natural species distribution. Commonly cultivated as street tree and an ornamental shrub. Local records likely refer to planted specimens. **Unlikely to occur.**	Swept path - Cavendish, Dunkeld, Hamilton and Penshurst.
Plains Yam-daisy	*Microseris scapigera s.s.*		Critically Endangered	An increasingly rare species found in moist depressions on basaltic plains. Primarily distributed west of Melbourne. Flowers spring to summer (RBGV 2023).	VBA	1	30/06/2009	Suitable habitat in EVCs 132_61 and 55. Study area on edge of current distribution in Victoria, but formerly widespread, and the locality has been poorly surveyed historically. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Narrow-leaf Phebalium	*Phebalium stenophyllum*		Endangered	In Victoria occurs primarily in the far west, but has also been recorded from Mt Zero and Mt Abrupt in the Grampians and from near Blackwood. Occurs in eucalypt woodland on shallow, rocky soils, or in heath or mallee on sand (RBGV 2025).	VBA	1	01/01/1770	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Slender Rice-flower	*Pimelea linifolia subsp. linoides*		Endangered	In Victoria, only known from the Grampians and Wilsons Promontory, growing in rocky sites within heathy woodlands and dry forests on soils derived from sandstone (DELWP 2021; VicFlora 2025).	VBA	4	17/10/2022	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	Critically Endangered	Critically Endangered	Found growing in grassland, open shrubland and occasionally woodland on soils derived from basalt, usually comprising black or grey clays. Populations in the north of Victoria occur on red clay complexes, while southern populations occur on heavy grey-black clay loams. Occurs primarily on flat land but can occur on slight rises or in slightly wettish depressions. Flowers April to August (Carter, O & Walsh, N 2006; RBGV 2023).	PMST & VBA	23	15/05/2020	Suitable habitat in EVC 132_61. Recorded incidentally during vegetation surveys. **Recorded in habitat zone 1N. Does occur.**	All.
Salt-lake Tussock-grass	*Poa sallacustris*	Vulnerable	Critically Endangered	Margins of brackish to salt lakes (Walsh 1994).	PMST	No VBA records	N/A	No suitable habitat. **Unlikely to occur.**	All.
Gorae Leek-orchid	*Prasophyllum diversiflorum*	Endangered	Critically Endangered	Wet grasslands or inundated swamps among tussocks (Jones 2006).	PMST	No VBA records	N/A	While some suitable wet tussock grassland occurs, the study area is outside of the known distribution of the species. **Unlikely to occur.**	Swept paths along the Portland transport route.
Western Gaping Leek-orchid	*Prasophyllum sp. aff. correctum (Mortlake)*		Critically Endangered	Known from grassland west of Mortlake in the Mortlake Common Flora Reserve as well as immediately south of Mortlake on agricultural land (VicFlora 2025).	VBA	5	29/11/2020	Suitable habitat in EVC 132_61, and study area close to only known populations. **Potential to occur.**	All.
Clumping Leek-orchid	*Prasophyllum sp. aff. occidentale E*		Critically Endangered	Known from remnant native grassland near Wingeel, Derrinallum and Vite Vite in western Victoria (VicFlora 2025).	VBA	1	6/11/2013	Suitable habitat in EVC 132_61, and study area close to only known populations. **Potential to occur.**	All.
Dense Leek-orchid	*Prasophyllum spicatum*	Vulnerable	Critically Endangered	Distributed across southern Victoria primarily along the coast from the SA border to Wonthaggi. Primarily occurs in low, windswept coastal and near-coastal heathland, sandhills and heathy woodland where soils are generally sand and clay loams which are usually damp but well drained, although some sites can experience seasonal waterlogging. Additionally, it is found in grasslands. Flowers October to December (DEECA 2023; RBGV 2023; Duncan 2010).	PMST	No VBA records	N/A	The study area does not support coastal heathland, sandhills or heathy woodland, and it is outside species distribution. **Unlikely to occur.**	All.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Fragrant Leek-orchid	*Prasophyllum suaveolens*	Endangered	Critically Endangered	Endemic to the southwest of Victoria, specifically on the basalt plains where it occurs in grassland and open grassy woodland on red-brown water-retentive clay loams often with embedded basalt boulders. It occurs primarily in grassland dominated by Kangaroo Grass (Themeda triandra) along with tussock-forming perennial grasses, wildflowers and herbs. Much of the present habitat exists within rail and road reserves and areas that qualify as NTGVVP and/or W(B)PG listed communities. Flowers October to November (RBGV 2023; TSSC 2016).	PMST & VBA	23	31/10/2019	Suitable habitat in EVC 132_61, particularly in roadside remnants dominated by Kangaroo Grass. **Potential to occur.**	All.
Basalt Leek-orchid	*Prasophyllum viretrum*		Critically Endangered	Moist to wet grassland on dark basaltic loam (Jones & Rouse 2006).	VBA	6	29/11/2020	No suitable habitat. **Unlikely to occur.**	All.
Green-striped Greenhood	*Pterostylis chlorogramma*	Vulnerable	Endangered	Found growing on sandy-loam soils in Box-Stringbark forest, often supporting a canopy of Eucalyptus obliqua, Eucalyptus radiata, Eucalyptus cephalocarpa and/or Eucalyptus cypellocarpa. The understory typically comprises a dominant Pteridium esculentum component, and may also include Hakea ulicina, Dillwynia glaberrima, Pultenaea scabra, Banksia spinulosa, Epacris impressa, Acacia mucronata, Leptospermum laevigatum, Monotoca scoparia, and Bursaria spinosa. The species has a scattered distribution from Yarram to Edenhope. Flowers July to September (Duncan, Pritchard & Coates 2009).	PMST	No VBA records	N/A	The study area does not support sandy-loam soils or commonly associated species. No nearby records. **Unlikely to occur.**	All.
Leafy Greenhood	*Pterostylis cucullata*	Vulnerable		Tea-tree scrubs on tall sandy and calcareous dunes, in moist, open or even deep shaded locations (Jones 1994).	PMST	No VBA records	N/A	No suitable habitat. **Unlikely to occur.**	All.
Crowded Greenhood	*Pterostylis diminuta*		Endangered	Endemic to Victoria where it occurs between Ballarat and the Grampians in woodland and open forest with a tussocky or sparse shrubby understorey, on well-drained gravelly or stony soil (RBGV 2025).	VBA	4	10/09/2010	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Inland Red-tip Greenhood	*Pterostylis rubescens*		Endangered	Grows on ridges and slopes supporting well-drained soils, primarily in dry open forest and woodland habitat. Widespread across northern and western Victoria (RBGV 2025).	VBA	2	24/04/2003	No suitable habitat. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Hairy Tails	*Ptilotus erubescens*		Critically Endangered	Grows in grassland, grassy woodland and heathy habitat. Favours heavy soils (north and west of Melbourne) and sandy soils (far western Victoria). Mostly distributed in the west of the state, though an isolated occurrence exists in the far east at Wingan Inlet. Flowers October to February (RBGV 2023).	VBA	24	14/12/2004	Suitable habitat in EVCs 132_61 and 55. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Bentham's Bush-pea	*Pultenaea benthamii*		Vulnerable	Found in moist forests, typically on mountain slopes, predominantly within the Grampians. It also has isolated populations in eastern areas, such as near Mount Kaye and the Howe Range (VicFlora 2025).	VBA	3	29/09/1991	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Rosy Bush-pea	*Pultenaea subalpina*		Endangered	This species is found only in Victoria, specifically within the Mt William Range and the northern Serra Range of the Grampians region. Its habitat is largely limited to the rocky upper slopes of Mt William, as well as the heathlands of the Major Mitchell Plateau and Mt Rosea (VicFlora 2025). It thrives in subalpine heath environments, where snow or ice may occasionally be present, and typically grows in shallow, skeletal soils (Reiter et al. 2004)	VBA	1	01/01/1770	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Lacey River Buttercup	*Ranunculus amplus*		Critically Endangered	Found on the margins of swamps, sometimes semi-submerged. Scattered across southern Victoria, though most prevalent around the Grampians and Portland areas. Flowers October to November (RBGV 2023).	VBA	1	23/02/1969	No suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Brackish Plains Buttercup	*Ranunculus diminutus*		Endangered	Occurs on seasonally wet clays around waterbodies. Known from Lakes Omeo Corangamite, Goldsmith and Kennedy. Flowers September to February (RBGV 2023).	VBA	2	10/10/2006	Suitable habitat occurs along Mustons Creek and Drysdale Creek, and in EVCs 125, 641 and 654. **Potential to occur**.	Project study area.
Button Wrinklewort	*Rutidosis leptorhynchoides*	Endangered	Endangered	Grows on fertile clays and clay loams in grassland and grassy woodland habitat, and sometimes low rises (<100m about sea level) with stony soils. The species typically requires adequate inter-tussock spaces, resulting from disturbance. Distribution ranges from Melbourne's western suburbs to Bannockburn, Rokewood, Wickliffe and between Beaufort and Ararat. Flowers October to February (NSW Office of Environment and Heritage, 2012).	PMST & VBA	1	13/11/2019	Native grassland within the study area with high biomass and generally lacking open space required by this species. Study area on edge of known distribution. **Unlikely to occur.**	All.
Smooth Fireweed	*Senecio glabrescens*		Critically Endangered	In Victoria, this species has been collected from the Grampians and Skipton from the margins of watercourses and lakes (RBGV 2025).	VBA	1	9/02/2003	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Annual Fireweed	*Senecio glomeratus subsp. longifructus*		Vulnerable	Widespread across Victoria (excluding the northwest of the state) where it grows on fertile and disturbed substrates in a variety of communities associated with seasonally wet areas such as open wetlands, swamps and riparian communities adjacent to streams. This taxon is tolerant of brackish or sub-saline conditions as it can occur in upper saltmarsh communities. Flowers late-spring to autumn (DEECA 2023; RBGV 2023)	VBA	1	1/02/2021	No suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept paths - The three intersections in Hamilton.
Large-headed Fireweed	*Senecio macrocarpus*	Vulnerable	Critically Endangered	Occurs most commonly west of Melbourne in remnant Themeda grasslands on clay or clay-loam soils derived from Basalt but can also occur in sedgelands, grassy woodlands and open woodlands across the Victorian Volcanic Plain. Flowers August to October (DEECA 2023; RBGV 2023).	PMST	No VBA records	N/A	Study area outside of known distribution. **Unlikely to occur.**	All.
Swamp Fireweed	*Senecio psilocarpus*	Vulnerable		Herb-rich winter-wet swamps on volcanic clays or peaty soils (Walsh 1999). Known from approximately 10 sites between Wallan, about 45 km north of Melbourne, and Honans Scrub in south-eastern South Australia (TSSC 2008).	PMST	No VBA records	N/A	No suitable habitat. **Unlikely to occur.**	All.
Grampians Globe-pea	*Sphaerolobium acanthos*	Critically Endangered	Critically Endangered	Confined to the Grampians where apparently rare, recorded only from the Halls Gap-Mt William area and the Victoria Valley. Found in sclerophyll forest, woodland and heathland, usually near streams (Jeanes 1996).	PMST	No VBA records	N/A	Species highly localised in the north of the Grampians, with no other records outside the national park. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Grampians Triggerplant	*Stylidium soboliferum*		Endangered	Endemic to Victoria where it is confined to the Grampians, occurring in seasonally damp sandy ground (track and stream margins etc.), broken rocky slopes, and mossy ledges of sandstone cliffs (RBGV 2025).	VBA	13	4/04/2012	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Slender Darling-pea	*Swainsona murrayana*	Vulnerable	Endangered	The Slender Darling-pea often grows in heavy soils, especially depressions, and is also found on grey and red to brown clay and clay-loam soils in Atriplex vesicaria (Bladder Saltbush) herbland, Eucalyptus largiflorens (Black Box) woodland and grassland communities and is frequently associated with Maireana species. In Victoria, the species is found in seasonally inundated flats around lakes (DCCEEW 2023).	PMST	No VBA records	N/A	Study area outside of known distribution. **Unlikely to occur.**	All.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Azure Sun-orchid	*Thelymitra azurea*		Endangered	In Victoria, occurs in the far west of the state in mallee scrublands, heathy woodlands and heathland on deep sand, sandy loam or peaty soils around swamp margins (RBGV 2025).	VBA	1	1/10/1933	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Blotched Sun-orchid	*Thelymitra benthamiana*		Endangered	Found mostly in heathland, heathy woodlands and open forests on well-drained sand and clay loams (Weber & Entwisle 1994).	VBA	1	4/09/1973	Local records are restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Metallic Sun-orchid	*Thelymitra epipactoides*	Endangered	Endangered	Primarily found in coastal areas, growing on dry sand loams or loamy sands in heathland, grassland and woodland habitat. The species is also found further inland in comparable habitat (Backhouse & Jeanes 1995). Distribution ranges as far west as the SA border, north to the Nhill-Dimboola area and as far east as the Bairnsdale area. Flowers September to November, during sunny periods (RBGV 2023).	PMST	No VBA records	N/A	Suitable (but sub-optimal) habitat in EVCs 132_61 and 55. No records within 10 km. **Unlikely to occur.**	All.
Basalt Sun-orchid	*Thelymitra gregaria*		Critically Endangered	Grows on red-brown basaltic loams in grassland habitat. Primarily distributed in the west of the state. Flowers September to November, during sunny periods (RBGV 2023).	VBA	14	31/10/2019	Suitable habitat in EVC 132_61. Not recorded during targeted surveys. **Potential to occur in unsurveyed areas.**	All.
Spiral Sun-orchid	*Thelymitra matthewsii*	Vulnerable	Endangered	A rare species known from coastal to slightly elevated areas (to 400m), where it occurs on well-drained soils of sandy flats and open forest. The species often colonises disturbed sites, but may be out-competed as the site regenerates. Distributed around the Grampians, Anglesea, near Woodside and the Mallacoota area. Flowers August to October, during sunny periods (RBGV 2023).	PMST & VBA	3	29/08/1998	No suitable habitat. **Unlikely to occur.**	All.
Slender Plum-orchid	*Thelymitra orientalis*	Critically Endangered	Critically Endangered	Occurs in heath and heathy woodland, usually in damp/seepage areas along watercourses and around swamp margins, on either in peaty white sands or heavy black often peaty soils (DEECA 2023; RBGV 2023).	PMST	No VBA records	N/A	The study area does not support heath or heathy woodland and is outside the known distribution of the species. **Unlikely to occur.**	All.
Prickly Arrowgrass	*Triglochin mucronata*		Endangered	Found in the herbfields of salt flats and coastal saltmarsh habitat. Distributed along the coast and inland western Victoria. Flowers September to November (RBGV 2023).	VBA	1	01/11/1853	The study area lacks suitable saline habitat and there is a lack of recent nearby records. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.
Mallee Annual-bluebell	*Wahlenbergia tumidifructa*		Endangered	In Victoria, occurs in the west and north of the state in sandy flats and shallow depressions of the Big Desert and Hattah-Kulkyne area, and on black soils of the floodplain of the Murray River between Barmah and Strathmerton (RBGV 2025).	VBA	3	16/11/1976	The study area lacks suitable habitat and there is a lack of recent nearby records. **Unlikely to occur.**	Swept path - Henty Highway, Hamilton.
Violet Westringia	*Westringia glabra*		Endangered	Grows on skeletal soils, often on steep rocky slopes and often associated with river gorges or sheltered forest (Costermans 2017, p. 268). Disjunct distribution occurring in far East Gippsland, Lerderderg Gorge and the Grampians. Flowers all year (RGBV 2023).	VBA	1	5/04/2011	The local record is restricted to the Grampians National Park and no suitable habitat was recorded in the study area. **Unlikely to occur.**	Swept path - Dunkeld-Cavendish Road, Dunkeld.

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Common Name	Scientific name	EPBC	FFG	Habitat	Source	Number of VBA records	Date of last record	Likelihood of occurrence	Project component
Swamp Everlasting	*Xerochrysum palustre*	Vulnerable	Critically Endangered	Often growing on heavy black clay soils in wetlands including sedge-swamps, shallow freshwater marshes and seasonally wet areas within native grasslands and heaths. Commonly associated genera include Amphibromus, Baumea, Carex, Chorizandra, Craspedia, Eleocharis, Isolepis, Lachnagrostis, Lepidosperma, Myriophyllum, Phragmites australis, Themea triandra and Villarsia. May occur in the threatened ecological communities SHWTLP, NTGVVP and Gippsland Red Gum Grassy Woodland and Associated Native Grassland (DAWE 2021). Distributed in lowland swamps in Victoria from near the South Australian border to near Bairnsdale. Also an isolated occurrence near Cobberas. Flowers November to March (RBGV 2023).	PMST & VBA	143	22/02/2023	Suitable (but sub-optimal) habitat along watercourses. **Unlikely to occur**.	All.

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Appendix 6: Native Vegetation Removal (NVR) reports (a. Geelong route, b. Portland route (LGAs split across two NVRs), c. Combined routes).

Native Vegetation Removal Report

NVRR ID: 354_20251201_H5E

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

Report details

Date created: 01/12/2025

Local Government Area: MOYNE SHIRE

Shapefile name:
18088_28_29_NVR_Patch_Geelong_SweptPath_PublicRoad_DevelopmentPlan_251201.shp
18088_28_29_NVR_Tree_Geelong_SweptPath_PublicRoad_DevelopmentPlan_251201.shp

Site assessor name:
Cody Hajnal
DEECA

Registered Aboriginal Party: Eastern Maar

Coordinates: 142.63997, -38.10449

Address:
HEXHAM-BALLANGEICH ROAD ELLERSLIE 3265
HAMILTON HIGHWAY HEXHAM 3273
289 IMMIGRANTS LANE ELLERSLIE 3265
1101 WOOLSTHORPE-HEXHAM ROAD HEXHAM 3273
1133 WOOLSTHORPE-HEXHAM ROAD HEXHAM 3273
IMMIGRANTS LANE ELLERSLIE 3265
289 FOUR MILE ROAD CARAMUT 3274
4014 WARRNAMBOOL-CARAMUT ROAD MINJAH 3276
300 WOOLSTHORPE-HEXHAM ROAD WOOLSTHORPE 3276
320 FOUR MILE ROAD CARAMUT 3274
(9 additional addresses not listed)

Regulator Notes

Removal polygons are located:

- Within a DEECA Mapped Wetland area
- On Crown Land

Summary of native vegetation to be removed

Assessment pathway	**Detailed Assessment Pathway**		
Location category	Location 3 Within this area, the removal of less than 0.5 hectares of native vegetation could have a significant impact on the habitat of one or more rare or threatened species. In such cases, a Species Offset will be required.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 8.238*	**8.238**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*7.895*
		Extent of proposed removal - Scattered Trees (ha)	*0.343*
No. Large Trees proposed to be removed	**8**	*No. Large Patch Trees*	*4*
		No. Large Scattered Trees	*4*
No. Small Scattered Trees	2		

Offset requirements if approval is granted

Any approval granted will include a condition to obtain an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**2.8860 General Habitat Units**
Vicinity	Glenelg Hopkins CMA or MOYNE SHIRE LGA
Minimum strategic biodiversity value score [2]	0.3494
Large Trees*	8
***The total number of Large Trees that the offset must protect**	**8** Large Trees to be protected in either the General, Species or combination across all habitat units protected

NB: values within tables in this document may not add to the totals shown above due to rounding
Appendix 1 includes information about the native vegetation to be removed
Appendix 2 includes information about the rare or threatened species with mapped habitat at the site
Appendix 3 includes the following figures

- Location map
- Strategic Biodiversity Value map
- Condition map
- Endangered EVCs map
- Aerial photograph showing mapped native vegetation
- Property in context
- Habitat Importance maps

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General Offset is required.
3. The Species Offset amount(s) required is the sum of all Species Habitat Units in Appendix 1.

Next steps

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

If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority. The responsible authority will refer your application to DEECA for assessment, as required. **This report is not a referral assessment by DEECA.**

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

Refer to the Guidelines for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway.
- A description of the native vegetation to be removed (partly met).
- Maps showing the native vegetation and property (partly met).
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with Section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs.
- Details of past native vegetation removal.
- An avoid and minimise statement.
- A copy of any Property Vegetation Plan as applicable.
- A defendable space statement as applicable.
- A statement about the Native Vegetation Precinct Plan (NVPP) as applicable.
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees.
- An offset statement that explains that an offset has been identified and how it will be secured.

Appendix 1: Description of native vegetation to be removed

The Species-General Offset Test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the Species Offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact meets or exceeds the Species Offset threshold, a Species Offset is required. This test is completed for all species with mapped habitat at the site. Multiple Species Offsets will be required if the Species Offset threshold is exceeded for multiple species.

Where a zone requires Species Offset(s), the Species Habitat Units for each species in that zone are calculated by the following equation in accordance with the Guidelines: ***Species Habitat Units = extent without overlap x condition score x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)***

The Species Offset amount(s) required is the sum of all Species Habitat Units per zone.

Where a zone does not require a Species Offset, the General Habitat Units in that zone are calculated by the following equation in accordance with the Guidelines: ***General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)***

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-BW	Patch	-	VVP_0068	Endangered	no	0.180	-	0.004	0.004	0.320	-	0.001	General
0-BX	Patch	-	VVP_0068	Endangered	no	0.180	-	0.017	0.017	0.320	-	0.003	General
0-BY	Patch	-	VVP_0068	Endangered	no	0.210	-	0.026	0.026	0.300	-	0.005	General
0-CN	Patch	-	VVP_0055_61	Endangered	no	0.240	2	0.089	0.089	0.390	-	0.022	General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-CNa	Patch	-	VVP_0055_61	Endangered	no	0.240	2	0.086	0.086	0.390	-	0.022	General
0-CO	Patch	-	VVP_0125	Endangered	no	0.390	-	0.010	0.010	0.460	-	0.004	General
0-DF	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.025	0.025	0.825	-	0.004	General
0-DFa	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.012	0.012	0.424	-	0.002	General
0-DH	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.053	0.053	0.830	-	0.021	General
0-DV	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.030	0.030	0.630	-	0.010	General
0-DVa	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.083	0.083	0.410	-	0.024	General
0-DVb	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.015	0.015	0.410	-	0.004	General
0-DVc	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.000	0.000	0.410	-	0.000	General
0-DW	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.002	0.002	0.670	-	0.001	General
0-DWa	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.003	0.003	0.670	-	0.001	General
0-DWb	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.004	0.004	0.681	-	0.001	General
0-DWc	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.009	0.009	0.800	-	0.004	General
0-DWd	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001	0.800	-	0.000	General
0-DWe	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000	0.800	-	0.000	General
0-DX	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000	0.800	-	0.000	General

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Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-DXa	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001	0.800	-	0.000	General
0-DXb	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001	0.800	-	0.000	General
0-DXc	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000	0.800	-	0.000	General
0-DZ	Patch	-	VVP_0068	Endangered	no	0.140	-	0.005	0.005	0.800	-	0.001	General
0-DZa	Patch	-	VVP_0068	Endangered	no	0.140	-	0.000	0.000	0.800	-	0.000	General
0-EA	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.005	0.005	0.800	-	0.002	General
0-EAa	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.048	0.048	0.507	-	0.017	General
0-EAb	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.004	0.004	0.390	-	0.001	General
0-EY	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.002	0.002	0.400	-	0.000	General
0-EZ	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.037	0.037	0.340	-	0.005	General
0-FI	Patch	-	VVP_0125	Endangered	no	0.240	-	0.003	0.003	0.290	-	0.001	General
0-HA	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.079	0.079	0.340	-	0.009	General
0-HB	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.037	0.037	0.320	-	0.004	General
0-HD	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.000	0.000	0.290	-	0.000	General
0-XAH	Patch	-	VVP_0125	Endangered	no	0.380	-	1.087	1.087	0.417	-	0.439	General
0-XAHa	Patch	-	VVP_0125	Endangered	no	0.380	-	2.721	2.721	0.418	-	1.100	General

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0-XAJ	Patch	-	VVP_0125	Endangered	no	0.350	-	0.008	0.008	0.340	-	0.003	General
0-XAT	Patch	-	VVP_0653	Endangered	no	0.440	-	0.023	0.023	0.450	-	0.011	General
0-XAX	Patch	-	VVP_0653	Endangered	no	0.500	-	0.006	0.006	0.440	-	0.004	General
0-XAY	Patch	-	VVP_0653	Endangered	no	0.500	-	0.008	0.008	0.440	-	0.004	General
0-XBA	Patch	-	VVP_0125	Endangered	no	0.380	-	0.016	0.016	0.310	-	0.006	General
0-XBAa	Patch	-	VVP_0125	Endangered	no	0.380	-	0.011	0.011	0.313	-	0.004	General
0-XBE	Patch	-	VVP_0125	Endangered	no	0.380	-	0.004	0.004	0.310	-	0.001	General
0-XBEa	Patch	-	VVP_0125	Endangered	no	0.380	-	0.031	0.031	0.310	-	0.012	General
0-XBEb	Patch	-	VVP_0125	Endangered	no	0.380	-	0.002	0.002	0.390	-	0.001	General
0-XBF	Patch	-	VVP_0125	Endangered	no	0.200	-	0.004	0.004	0.340	-	0.001	General
0-XBG	Patch	-	VVP_0125	Endangered	no	0.150	-	0.141	0.141	0.345	-	0.021	General
0-XBH	Patch	-	VVP_0125	Endangered	no	0.180	-	0.011	0.011	0.350	-	0.002	General
0-XDE	Patch	-	VVP_0647	Endangered	no	0.400	-	0.016	0.016	0.440	-	0.007	General
0-XDK	Patch	-	VVP_0125	Endangered	no	0.320	-	0.004	0.004	0.440	-	0.002	General
0-XDL	Patch	-	VVP_0125	Endangered	no	0.430	-	0.234	0.234	0.440	-	0.109	General
1-AD	Patch	-	VVP_0125	Endangered	no	0.390	-	0.040	0.040	0.460	-	0.017	General

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1-AG	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.028	0.028	0.411	-	0.004	General
1-AK	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.008	0.008	0.360	-	0.001	General
1-AM	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.001	0.001	0.360	-	0.000	General
1-AN	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.004	0.004	0.360	-	0.001	General
1-AO	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.011	0.011	0.360	-	0.001	General
1-AP	Patch	-	VVP_0055_61	Endangered	no	0.040	-	0.000	0.000	0.280	-	0.000	General
1-AQ	Patch	-	VVP_0055_61	Endangered	no	0.040	-	0.000	0.000	0.280	-	0.000	General
1-W	Patch	-	VVP_0132_61	Endangered	no	0.130	-	0.025	0.025	0.790	-	0.004	General
2-C	Patch	-	VVP_0055_61	Endangered	no	0.100	-	0.003	0.003	0.370	-	0.000	General
28224-Wetland	Patch	-	VVP_0125	Endangered	no	0.200	-	0.142	0.142	0.350	-	0.029	General
28224-WetlandA	Patch	-	VVP_0125	Endangered	no	0.200	-	0.161	0.161	0.336	-	0.032	General
28227-Wetland	Patch	-	VVP_0125	Endangered	no	0.200	-	0.139	0.139	0.300	-	0.027	General
3-AA	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.009	0.009	0.350	-	0.002	General
3-AF	Patch	-	VVP_0125	Endangered	no	0.230	-	0.044	0.044	0.300	-	0.010	General

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3-AH	Patch	-	VVP_0125	Endangered	no	0.300	-	0.669	0.669	0.508	-	0.227	General
3-AHa	Patch	-	VVP_0125	Endangered	no	0.300	-	0.245	0.245	0.539	-	0.085	General
3-AHb	Patch	-	VVP_0125	Endangered	no	0.300	-	0.176	0.176	0.490	-	0.059	General
3-AHc	Patch	-	VVP_0125	Endangered	no	0.300	-	0.079	0.079	0.490	-	0.027	General
3-AI	Patch	-	VVP_0125	Endangered	no	0.230	-	0.027	0.027	0.290	-	0.006	General
3-AJ	Patch	-	VVP_0125	Endangered	no	0.230	-	0.069	0.069	0.280	-	0.015	General
3-AK	Patch	-	VVP_0132_61	Endangered	no	0.230	-	0.104	0.104	0.281	-	0.023	General
3-BN	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.015	0.015	0.436	-	0.002	General
3-BO	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.002	0.002	0.390	-	0.001	General
3-BOa	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.157	0.157	0.645	-	0.103	General
3-BOb	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.940	-	0.000	General
3-BOc	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.940	-	0.000	General
3-BOd	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001	0.940	-	0.000	General
3-BOe	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001	0.940	-	0.001	General
3-BOf	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.940	-	0.000	General
3-BOg	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.003	0.003	0.571	-	0.002	General

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3-BOh	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BOi	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.195	0.195	0.520	-	0.118	General
3-BP	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.470	-	0.000	General
3-BT	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.006	0.006	0.460	-	0.001	General
3-BTa	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002	0.460	-	0.000	General
3-BTb	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002	0.460	-	0.000	General
3-BTc	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.003	0.003	0.460	-	0.000	General
3-BTd	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.000	0.000	0.460	-	0.000	General
3-BU	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002	0.940	-	0.000	General
3-BUa	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.000	0.000	0.940	-	0.000	General
3-BV	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.001	0.001	0.920	-	0.000	General
3-BVa	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000	0.460	-	0.000	General
3-BW	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000	0.920	-	0.000	General
3-BY	Patch	-	VVP_0055_61	Endangered	no	0.190	-	0.000	0.000	0.270	-	0.000	General
3-BZ	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.470	-	0.000	General
3-BZa	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.007	0.007	0.463	-	0.004	General

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Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
3-BZb	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BZc	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BZd	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BZe	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.004	0.004	0.460	-	0.002	General
3-BZf	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001	0.460	-	0.001	General
3-BZg	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001	0.460	-	0.000	General
3-BZh	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.009	0.009	0.460	-	0.005	General
3-BZi	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BZj	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-BZk	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000	0.460	-	0.000	General
3-CA	Patch	-	VVP_0132_61	Endangered	no	0.130	-	0.001	0.001	0.460	-	0.000	General
3-CB	Patch	-	VVP_0132_61	Endangered	no	0.130	-	0.000	0.000	0.470	-	0.000	General
3-D	Patch	-	VVP_0055_61	Endangered	no	0.170	-	0.006	0.006	0.410	-	0.001	General
3-DC	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.034	0.034	0.421	-	0.005	General
3-DD	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.001	0.001	0.520	-	0.000	General
3-DE	Patch	-	VVP_0132_61	Endangered	no	0.150	-	0.003	0.003	0.310	-	0.000	General

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Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
3-DF	Patch	-	VVP_0055_61	Endangered	no	0.190	-	0.006	0.006	0.280	-	0.001	General
3-G	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.005	0.005	0.340	-	0.001	General
3-I	Patch	-	VVP_0055_61	Endangered	no	0.200	-	0.002	0.002	0.420	-	0.000	General
3-Ia	Patch	-	VVP_0055_61	Endangered	no	0.200	-	0.076	0.076	0.420	-	0.016	General
3-L	Patch	-	VVP_0055_61	Endangered	no	0.110	-	0.006	0.006	0.350	-	0.001	General
3-M	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.011	0.011	0.590	-	0.002	General
3-R	Patch	-	VVP_0132_61	Endangered	no	0.110	-	0.047	0.047	0.790	-	0.007	General
4-Aa	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.016	0.016	0.315	-	0.002	General
5-D	Patch	-	VVP_0132_61	Endangered	no	0.260	-	0.000	0.000	0.430	-	0.000	General
5-E	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.000	0.000	0.410	-	0.000	General
5-F	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.002	0.002	0.340	-	0.000	General
5-Fa	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.061	0.061	0.340	-	0.020	General
5-Fb	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.005	0.005	0.310	-	0.002	General
5-Fc	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.010	0.010	0.310	-	0.003	General
5-G	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.030	0.030	0.520	-	0.004	General
5-H	Patch	-	VVP_0055_61	Endangered	no	0.180	-	0.016	0.016	0.401	-	0.003	General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-Ha	Patch	-	VVP_0055_61	Endangered	no	0.180	-	0.013	0.013	0.520	-	0.003	General
5-I	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.004	0.004	0.420	-	0.001	General
5-Ia	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.006	0.006	0.420	-	0.001	General
5-Ib	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.002	0.002	0.420	-	0.000	General
5-Ic	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.010	0.010	0.420	-	0.002	General
5-Id	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000	0.371	-	0.000	General
5-Ie	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.001	0.001	0.370	-	0.000	General
5-If	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000	0.370	-	0.000	General
5-Ig	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000	0.370	-	0.000	General
5-Ih	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.003	0.003	0.370	-	0.001	General
5-J	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.004	0.004	0.430	-	0.001	General
5-Ja	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001	0.430	-	0.000	General
5-Jb	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001	0.430	-	0.000	General
5-Jc	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000	0.450	-	0.000	General
5-Jd	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000	0.450	-	0.000	General
5-Je	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.008	0.008	0.410	-	0.002	General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-Jf	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000	0.410	-	0.000	General
5-Jg	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.018	0.018	0.410	-	0.004	General
5-Jh	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000	0.420	-	0.000	General
5-Ji	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001	0.420	-	0.000	General
5-Jj	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000	0.420	-	0.000	General
5-K	Patch	-	VVP_0132_61	Endangered	no	0.280	-	0.029	0.029	0.838	-	0.011	General
5-Ka	Patch	-	VVP_0132_61	Endangered	no	0.280	-	0.010	0.010	0.748	-	0.004	General
5-L	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.000	0.000	0.850	-	0.000	General
5-La	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.004	0.004	0.850	-	0.002	General
5-Lb	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.003	0.003	0.460	-	0.002	General
5-Lc	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.008	0.008	0.454	-	0.004	General
5-Ld	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.000	0.000	0.450	-	0.000	General
5-O	Patch	-	VVP_0055_61	Endangered	no	0.080	-	0.010	0.010	0.460	-	0.001	General
5-P	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.000	0.000	0.470	-	0.000	General
5-U	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000	0.850	-	0.000	General
5-Ua	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000	0.850	-	0.000	General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-Ub	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.006	0.006	0.850	-	0.000	General
5-Uc	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.002	0.002	0.460	-	0.000	General
5-Ud	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000	0.460	-	0.000	General
25-ST	Scattered Tree	41	VVP_0055_61	Endangered	no	0.200	-	0.031	0.031	0.310	-	0.006	General
29-ST	Scattered Tree	23	VVP_0055_61	Endangered	no	0.200	-	0.031	0.030	0.440	-	0.007	General
52-ST	Scattered Tree	103	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070	0.400	-	0.015	General
53-ST	Scattered Tree	82	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070	0.400	-	0.015	General
54-ST	Scattered Tree	143	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070	0.430	-	0.015	General
61-ST	Scattered Tree	148	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070	0.450	-	0.015	General

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

This table identifies all rare or threatened species with mapped habitat at the site and the proportional impact associated with the proposed native vegetation removal.

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Curly Sedge	Carex tasmanica	500650	Vulnerable	Dispersed	Habitat importance map	0.0005
Wind-blown Tussock-grass	Poa physoclina	507791	Endangered	Dispersed	Top ranking map	0.0004
Fragrant Leek-orchid	Prasophyllum suaveolens	504567	Endangered	Dispersed	Top ranking map	0.0003
Yarra Pygmy Perch	Nannoperca obscura	4882	Vulnerable	Dispersed	Habitat importance map	0.0002
Salt Blown-grass	Lachnagrostis robusta	504223	Rare	Dispersed	Habitat importance map	0.0002
Curly Sedge	Carex tasmanica	500650	Vulnerable	Dispersed	Top ranking map	0.0001
Snowy Mint-bush	Prostanthera nivea var. nivea	502746	Rare	Dispersed	Habitat importance map	0.0001
Button Wrinklewort	Rutidosis leptorhynchoides	502982	Endangered	Dispersed	Habitat importance map	0.0001
Large-headed Fireweed	Senecio macrocarpus	503116	Endangered	Dispersed	Habitat importance map	0.0001
Plump Swamp Wallaby-grass	Amphibromus pithogastrus	503624	Endangered	Dispersed	Habitat importance map	0.0001
Wavy Swamp Wallaby-grass	Amphibromus sinuatus	503625	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	Lachnagrostis punicea subsp. punicea	504206	Rare	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	Lachnagrostis punicea subsp. filifolia	504222	Rare	Dispersed	Habitat importance map	0.0001
Brackish Plains Buttercup	Ranunculus diminutus	504314	Rare	Dispersed	Habitat importance map	0.0001
Fragrant Leek-orchid	Prasophyllum suaveolens	504567	Endangered	Dispersed	Habitat importance map	0.0001

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
White Sunray	Leucochrysum albicans subsp. tricolor	504581	Endangered	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	Coronidium gunnianum	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Plains Yam-daisy	Microseris scapigera s.s.	504657	Vulnerable	Dispersed	Habitat importance map	0.0001
Clumping Golden Moths	Diuris gregaria	504887	Endangered	Dispersed	Habitat importance map	0.0001
Matted Flax-lily	Dianella amoena	505084	Endangered	Dispersed	Habitat importance map	0.0001
Swamp Flax-lily	Dianella callicarpa	505086	Rare	Dispersed	Habitat importance map	0.0001
Pale-flower Crane's-bill	Geranium sp. 3	505344	Rare	Dispersed	Habitat importance map	0.0001
Wind-blown Tussock-grass	Poa physoclina	507791	Endangered	Dispersed	Habitat importance map	0.0001
Lewin's Rail	Lewinia pectoralis pectoralis	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Gull-billed Tern	Gelochelidon nilotica macrotarsa	10111	Endangered	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	Rostratula australis	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Brolga	Grus rubicunda	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Little Egret	Egretta garzetta nigripes	10185	Endangered	Dispersed	Habitat importance map	0.0000
Intermediate Egret	Ardea intermedia	10186	Endangered	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	Ardea modesta	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Australian Little Bittern	Ixobrychus dubius	10195	Endangered	Dispersed	Habitat importance map	0.0000
Australasian Bittern	Botaurus poiciloptilus	10197	Endangered	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	Anas rhynchotis	10212	Vulnerable	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Freckled Duck	Stictonetta naevosa	10214	Endangered	Dispersed	Habitat importance map	0.0000
Hardhead	Aythya australis	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	Oxyura australis	10216	Endangered	Dispersed	Habitat importance map	0.0000
Musk Duck	Biziura lobata	10217	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Goshawk	Accipiter novaehollandiae novaehollandiae	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Black Falcon	Falco subniger	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Elegant Parrot	Neophema elegans	10307	Vulnerable	Dispersed	Habitat importance map	0.0000
Striped Legless Lizard	Delma impar	12159	Endangered	Dispersed	Habitat importance map	0.0000
Glossy Grass Skink	Pseudemoia rawlinsoni	12683	Vulnerable	Dispersed	Habitat importance map	0.0000
Grassland Earless Dragon	Tympanocryptis pinguicolla	12922	Critically endangered	Dispersed	Habitat importance map	0.0000
Tussock Skink	Pseudemoia pagenstecheri	12993	Vulnerable	Dispersed	Habitat importance map	0.0000
Growling Grass Frog	Litoria raniformis	13207	Endangered	Dispersed	Habitat importance map	0.0000
Golden Sun Moth	Synemon plana	15021	Critically endangered	Dispersed	Habitat importance map	0.0000
Large White Spider-orchid	Caladenia venusta	500533	Rare	Dispersed	Habitat importance map	0.0000
Leafy Twig-sedge	Cladium procerum	500786	Rare	Dispersed	Habitat importance map	0.0000
Small Milkwort	Comesperma polygaloides	500798	Vulnerable	Dispersed	Habitat importance map	0.0000
Golden Cowslips	Diuris behrii	501061	Vulnerable	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Purple Diuris	Diuris punctata	501084	Vulnerable	Dispersed	Habitat importance map	0.0000
Common Pipewort	Eriocaulon scariosum	501218	Rare	Dispersed	Habitat importance map	0.0000
Bog Gum	Eucalyptus kitsoniana	501290	Rare	Dispersed	Habitat importance map	0.0000
Yarra Gum	Eucalyptus yarraensis	501326	Rare	Dispersed	Habitat importance map	0.0000
Clover Glycine	Glycine latrobeana	501456	Vulnerable	Dispersed	Habitat importance map	0.0000
Creeping Rush	Juncus revolutus	501839	Rare	Dispersed	Habitat importance map	0.0000
Salt Lawrencia	Lawrencia spicata	501888	Rare	Dispersed	Habitat importance map	0.0000
Button Immortelle	Leptorhynchos waitzia	501949	Vulnerable	Dispersed	Habitat importance map	0.0000
Salt Paperbark	Melaleuca halmaturorum	502149	Vulnerable	Dispersed	Habitat importance map	0.0000
Forked Rice-flower	Pimelea hewardiana	502522	Rare	Dispersed	Habitat importance map	0.0000
Showy Lobelia	Lobelia beaugleholei	502733	Rare	Dispersed	Habitat importance map	0.0000
Small Scurf-pea	Cullen parvum	502773	Endangered	Dispersed	Habitat importance map	0.0000
Tough Scurf-pea	Cullen tenax	502776	Endangered	Dispersed	Habitat importance map	0.0000
Hairy Tails	Ptilotus erubescens	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Branching Groundsel	Senecio cunninghamii var. cunninghamii	503104	Rare	Dispersed	Habitat importance map	0.0000
Blotched Sun-orchid	Thelymitra benthamiana	503369	Vulnerable	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	Gratiola pumilo	503753	Rare	Dispersed	Habitat importance map	0.0000
Swamp Everlasting	Xerochrysum palustre	503763	Vulnerable	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Fine-hairy Spear-grass	Austrostipa puberula	503988	Rare	Dispersed	Habitat importance map	0.0000
Basalt Sun-orchid	Thelymitra gregaria	504019	Endangered	Dispersed	Habitat importance map	0.0000
Flat Bluebell	Wahlenbergia planiflora subsp. planiflora	504064	Vulnerable	Dispersed	Habitat importance map	0.0000
Melbourne Yellow-gum	Eucalyptus leucoxylon subsp. connata	504484	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Billy-buttons	Craspedia canens	504643	Endangered	Dispersed	Habitat importance map	0.0000
Small-flower Mat-rush	Lomandra micrantha subsp. tuberculata	504711	Rare	Dispersed	Habitat importance map	0.0000
Spiny Rice-flower	Pimelea spinescens subsp. spinescens	504823	Endangered	Dispersed	Habitat importance map	0.0000
Southern Swainson-pea	Swainsona behriana	504944	Rare	Dispersed	Habitat importance map	0.0000
Western Peppermint	Eucalyptus falciformis	505358	Rare	Dispersed	Habitat importance map	0.0000
Arching Flax-lily	Dianella sp. aff. longifolia (Benambra)	505560	Vulnerable	Dispersed	Habitat importance map	0.0000
Southern Bent-wing Bat	Miniopterus schreibersii bassanii	61343	Critically endangered	Dispersed	Habitat importance map	0.0000

Habitat Group

- Highly localised habitat means there is 2,000 hectares or less mapped habitat for the species.
- Dispersed habitat means there is more than 2,000 hectares of mapped habitat for the species.

Habitat Impacted

The Species General Offset test, as described in Section 5.3.1 of the Guidelines, is used to determine if proposed native vegetation removal will result in a proportionally significant impact on the habitat value of rare or threatened species. The test is applied where the native vegetation proposed for removal:

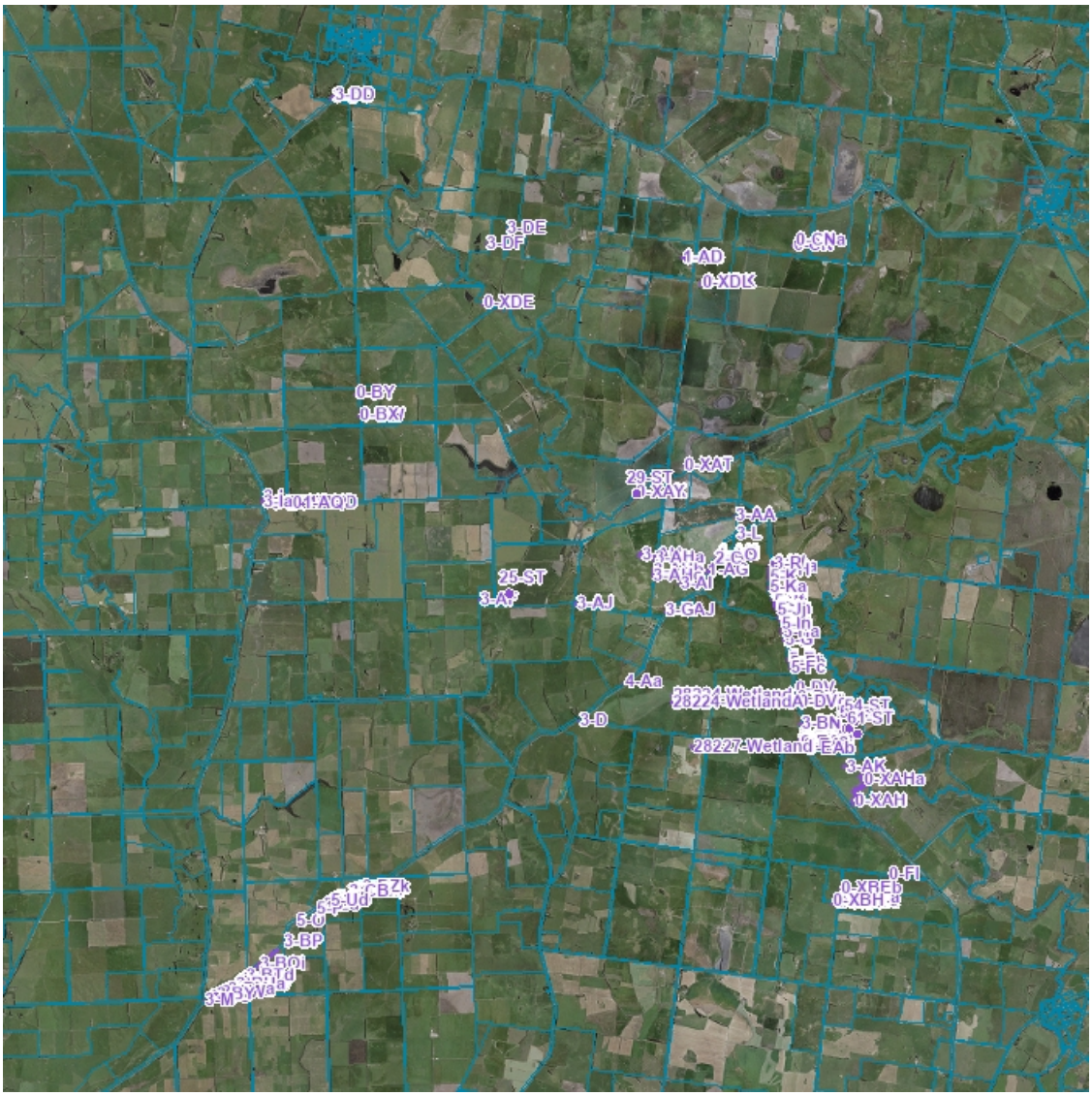
- Intersects the Habitat Importance Map for a rare or threatened species; or
- Intersects the 'top ranking' modelled habitat for a rare or threatened species with dispersed habitat, as identified in its Top Ranking Habitat Importance Map.

Top Ranking Maps consist of the 2,000 hectares of habitat with the highest Habitat Importance Scores for each dispersed species.

The 'Habitat impacted' column identifies whether the Habitat Importance Map or its Top Ranking Map was used to determine the proportional impact for a species with dispersed habitat.

Appendix 3: Images of mapped native vegetation

1. Property in context



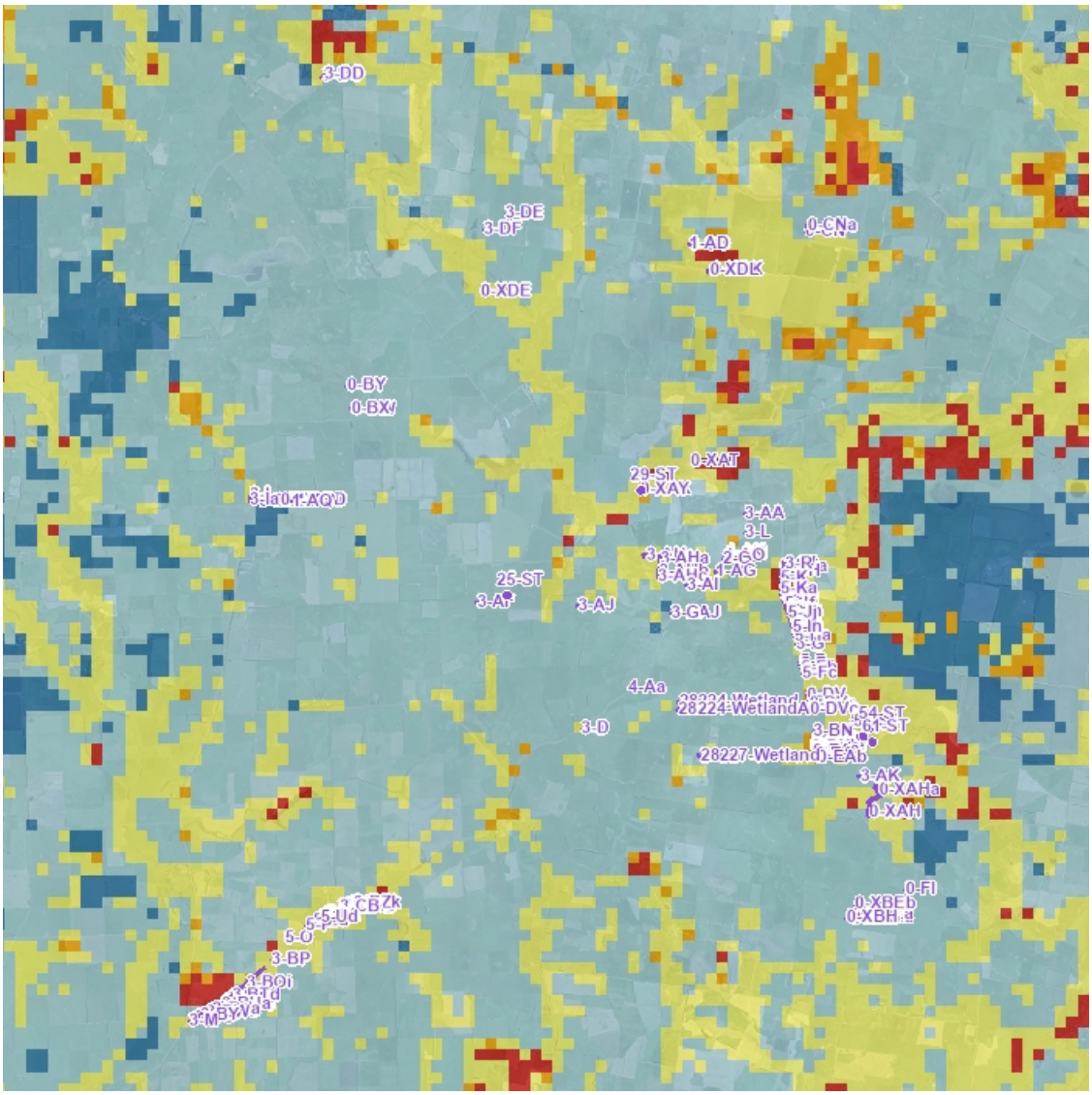
2. Aerial photograph showing mapped native vegetation



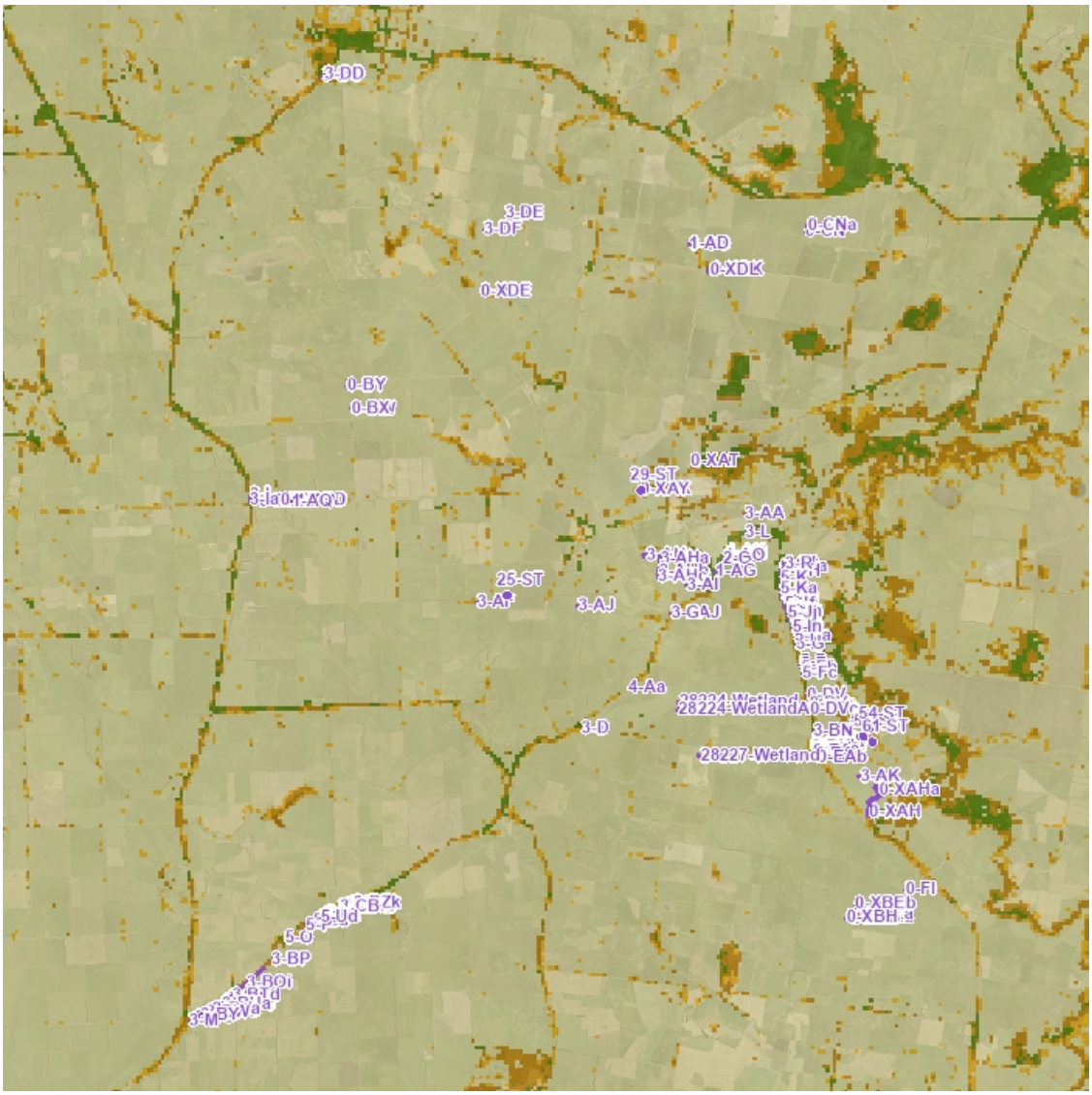
3. Location Risk Map



4. Strategic Biodiversity Value Score Map



5. Modelled Condition Score Map



6. Modelled Endangered EVCs



7. Habitat Importance maps

Not Applicable

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Native Vegetation Removal Report

NVRR ID: 354_20251217_LA6

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

Report details

Date created: 17/12/2025

Local Government Area:
SOUTHERN GRAMPIANS SHIRE
MOYNE SHIRE

Shapefile name:
ToRunNVR_Patch_251215_V2_ChangedPastRemoval.shp
ToRunNVR_Tree_251215_V2_ChangedPastRemoval.shp

Site assessor name:
Cody Hajnal
DEECA

Registered Aboriginal Party:
Gunditj Mirring
Eastern Maar

Coordinates: 142.63997, -38.10449

Address:
HEXHAM-BALLANGEICH ROAD ELLERSLIE 3265
HAMILTON HIGHWAY HEXHAM 3273
289 IMMIGRANTS LANE ELLERSLIE 3265
1101 WOOLSTHORPE-HEXHAM ROAD HEXHAM 3273
1133 WOOLSTHORPE-HEXHAM ROAD HEXHAM 3273
IMMIGRANTS LANE ELLERSLIE 3265
289 FOUR MILE ROAD CARAMUT 3274
4014 WARRNAMBOOL-CARAMUT ROAD MINJAH 3276
300 WOOLSTHORPE-HEXHAM ROAD WOOLSTHORPE 3276
320 FOUR MILE ROAD CARAMUT 3274
(11 additional addresses not listed)

Regulator Notes

Removal polygons are located:

- Within a DEECA Mapped Wetland area
- On Crown Land

Summary of native vegetation to be removed

Assessment pathway	**Detailed Assessment Pathway**		
Location category	Location 2 The native vegetation extent map indicates that this area is typically characterised as supporting native vegetation. Additionally, it is modelled as encompassing an endangered Ecological Vegetation Class, sensitive wetland or sensitive coastal area. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0.181*	**8.423**	*Extent of past removal (ha)*	*8.242*
		Extent of proposed removal - Patches (ha)	*0.181*
		Extent of proposed removal - Scattered Trees (ha)	*0.000*
No. Large Trees proposed to be removed	**5**	*No. Large Patch Trees*	*5*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	0		

Offset requirements if approval is granted

Any approval granted will include a condition to obtain an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**0.1000 General Habitat Units**
Vicinity	Glenelg Hopkins CMA or SOUTHERN GRAMPIANS SHIRE LGA, MOYNE SHIRE LGA
Minimum strategic biodiversity value score [2]	0.4170
Large Trees*	5
***The total number of Large Trees that the offset must protect**	**5** Large Trees to be protected in either the General, Species or combination across all habitat units protected

NB: values within tables in this document may not add to the totals shown above due to rounding
Appendix 1 includes information about the native vegetation to be removed
Appendix 2 includes information about the rare or threatened species with mapped habitat at the site
Appendix 3 includes the following figures

- Location map
- Strategic Biodiversity Value map
- Condition map
- Endangered EVCs map
- Aerial photograph showing mapped native vegetation
- Property in context
- Habitat Importance maps

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General Offset is required.
3. The Species Offset amount(s) required is the sum of all Species Habitat Units in Appendix 1.

Next steps

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

If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority. The responsible authority will refer your application to DEECA for assessment, as required. **This report is not a referral assessment by DEECA.**

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

Refer to the Guidelines for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway.
- A description of the native vegetation to be removed (partly met).
- Maps showing the native vegetation and property (partly met).
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with Section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs.
- Details of past native vegetation removal.
- An avoid and minimise statement.
- A copy of any Property Vegetation Plan as applicable.
- A defendable space statement as applicable.
- A statement about the Native Vegetation Precinct Plan (NVPP) as applicable.
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees.
- An offset statement that explains that an offset has been identified and how it will be secured.

Appendix 1: Description of native vegetation to be removed

The Species-General Offset Test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the Species Offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact meets or exceeds the Species Offset threshold, a Species Offset is required. This test is completed for all species with mapped habitat at the site. Multiple Species Offsets will be required if the Species Offset threshold is exceeded for multiple species.

Where a zone requires Species Offset(s), the Species Habitat Units for each species in that zone are calculated by the following equation in accordance with the Guidelines: ***Species Habitat Units = extent without overlap x condition score x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)***

The Species Offset amount(s) required is the sum of all Species Habitat Units per zone.

Where a zone does not require a Species Offset, the General Habitat Units in that zone are calculated by the following equation in accordance with the Guidelines: ***General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)***

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-BW	Patch	-	VVP_0068	Endangered	no	0.180	-	0.004	0.004		-		General
0-BX	Patch	-	VVP_0068	Endangered	no	0.180	-	0.017	0.017		-		General
0-BY	Patch	-	VVP_0068	Endangered	no	0.210	-	0.026	0.026		-		General
0-CN	Patch	-	VVP_0055_61	Endangered	no	0.240	2	0.089	0.089		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-CNa	Patch	-	VVP_0055_61	Endangered	no	0.240	2	0.086	0.086		-		General
0-CO	Patch	-	VVP_0125	Endangered	no	0.390	-	0.010	0.010		-		General
0-DF	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.025	0.025		-		General
0-DH	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.053	0.053		-		General
0-DV	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.030	0.030		-		General
0-DVa	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.083	0.083		-		General
0-DVb	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.015	0.015		-		General
0-DVc	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.000	0.000		-		General
0-DW	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.002	0.002		-		General
0-DWa	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.003	0.003		-		General
0-DWb	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.004	0.004		-		General
0-DWc	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.009	0.009		-		General
0-DWd	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001		-		General
0-DWe	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000		-		General
0-DX	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000		-		General
0-DXa	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-DXb	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.001	0.001		-		General
0-DXc	Patch	-	VVP_0055_61	Endangered	no	0.290	-	0.000	0.000		-		General
0-DZ	Patch	-	VVP_0068	Endangered	no	0.140	-	0.005	0.005		-		General
0-DZa	Patch	-	VVP_0068	Endangered	no	0.140	-	0.000	0.000		-		General
0-EA	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.005	0.005		-		General
0-EAa	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.048	0.048		-		General
0-EAb	Patch	-	VVP_0132_61	Endangered	no	0.310	-	0.004	0.004		-		General
0-EY	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.002	0.002		-		General
0-EZ	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.037	0.037		-		General
0-FI	Patch	-	VVP_0125	Endangered	no	0.240	-	0.003	0.003		-		General
0-HA	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.079	0.079		-		General
0-HB	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.037	0.037		-		General
0-HD	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.000	0.000		-		General
0-XAH	Patch	-	VVP_0125	Endangered	no	0.380	-	1.087	1.087		-		General
0-XAHa	Patch	-	VVP_0125	Endangered	no	0.380	-	2.721	2.721		-		General
0-XAT	Patch	-	VVP_0653	Endangered	no	0.440	-	0.023	0.023		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
0-XAX	Patch	-	VVP_0653	Endangered	no	0.500	-	0.006	0.006		-		General
0-XAY	Patch	-	VVP_0653	Endangered	no	0.500	-	0.008	0.008		-		General
0-XBA	Patch	-	VVP_0125	Endangered	no	0.380	-	0.016	0.016		-		General
0-XBAa	Patch	-	VVP_0125	Endangered	no	0.380	-	0.011	0.011		-		General
0-XBE	Patch	-	VVP_0125	Endangered	no	0.380	-	0.004	0.004		-		General
0-XBEa	Patch	-	VVP_0125	Endangered	no	0.380	-	0.031	0.031		-		General
0-XBEb	Patch	-	VVP_0125	Endangered	no	0.380	-	0.002	0.002		-		General
0-XBF	Patch	-	VVP_0125	Endangered	no	0.200	-	0.004	0.004		-		General
0-XBG	Patch	-	VVP_0125	Endangered	no	0.150	-	0.141	0.141		-		General
0-XBH	Patch	-	VVP_0125	Endangered	no	0.180	-	0.011	0.011		-		General
0-XDE	Patch	-	VVP_0647	Endangered	no	0.400	-	0.016	0.016		-		General
0-XDK	Patch	-	VVP_0125	Endangered	no	0.320	-	0.004	0.004		-		General
0-XDL	Patch	-	VVP_0125	Endangered	no	0.430	-	0.234	0.234		-		General
1-AA	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.005	0.005		-		General
1-AD	Patch	-	VVP_0125	Endangered	no	0.390	-	0.040	0.040		-		General
1-AG	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.028	0.028		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
1-AK	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.008	0.008		-		General
1-AM	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.001	0.001		-		General
1-AN	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.004	0.004		-		General
1-AO	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.011	0.011		-		General
1-AP	Patch	-	VVP_0055_61	Endangered	no	0.040	-	0.000	0.000		-		General
1-AQ	Patch	-	VVP_0055_61	Endangered	no	0.040	-	0.000	0.000		-		General
1-F	Patch	-	VVP_0055_61	Endangered	no	0.560	1	0.015	0.015	0.520	-	0.009	General
1-G	Patch	-	VVP_0055_61	Endangered	no	0.540	3	0.123	0.123	0.520	-	0.076	General
1-I	Patch	-	VVP_0055_61	Endangered	no	0.330	1	0.036	0.036	0.466	-	0.013	General
1-L	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.007	0.007	0.830	-	0.002	General
1-M	Patch	-	VVP_0055_61	Endangered	no	0.080	-	0.007	0.007		-		General
1-Ma	Patch	-	VVP_0055_61	Endangered	no	0.080	-	0.005	0.005		-		General
1-Mb	Patch	-	VVP_0055_61	Endangered	no	0.080	-	0.031	0.031		-		General
1-U	Patch	-	VVP_0055_61	Endangered	no	0.100	-	0.001	0.001		-		General
2-C	Patch	-	VVP_0055_61	Endangered	no	0.100	-	0.003	0.003		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
28224-Wetland	Patch	-	VVP_0125	Endangered	no	0.200	-	0.142	0.142		-		General
28224-WetlandA	Patch	-	VVP_0125	Endangered	no	0.200	-	0.161	0.161		-		General
28227-Wetland	Patch	-	VVP_0125	Endangered	no	0.200	-	0.139	0.139		-		General
3-AA	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.009	0.009		-		General
3-AF	Patch	-	VVP_0125	Endangered	no	0.230	-	0.044	0.044		-		General
3-AH	Patch	-	VVP_0125	Endangered	no	0.300	-	0.669	0.669		-		General
3-AHa	Patch	-	VVP_0125	Endangered	no	0.300	-	0.245	0.245		-		General
3-AHb	Patch	-	VVP_0125	Endangered	no	0.300	-	0.176	0.176		-		General
3-AHc	Patch	-	VVP_0125	Endangered	no	0.300	-	0.079	0.079		-		General
3-AI	Patch	-	VVP_0125	Endangered	no	0.230	-	0.027	0.027		-		General
3-AJ	Patch	-	VVP_0125	Endangered	no	0.230	-	0.069	0.069		-		General
3-AK	Patch	-	VVP_0132_61	Endangered	no	0.230	-	0.104	0.104		-		General
3-BN	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.015	0.015		-		General
3-BO	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.002	0.002		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
3-BOa	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.157	0.157		-		General
3-BOb	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BOc	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BOd	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001		-		General
3-BOe	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001		-		General
3-BOf	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BOg	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.003	0.003		-		General
3-BOh	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BOi	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.195	0.195		-		General
3-BP	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BT	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.006	0.006		-		General
3-BTa	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002		-		General
3-BTb	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002		-		General
3-BTc	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.003	0.003		-		General
3-BTd	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.000	0.000		-		General
3-BU	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.002	0.002		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
3-BUa	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.000	0.000		-		General
3-BV	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.001	0.001		-		General
3-BVa	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000		-		General
3-BW	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000		-		General
3-BY	Patch	-	VVP_0055_61	Endangered	no	0.190	-	0.000	0.000		-		General
3-BZ	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BZa	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.007	0.007		-		General
3-BZb	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BZc	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BZd	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BZe	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.004	0.004		-		General
3-BZf	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001		-		General
3-BZg	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.001	0.001		-		General
3-BZh	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.009	0.009		-		General
3-BZi	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-BZj	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
3-BZk	Patch	-	VVP_0132_61	Endangered	no	0.530	-	0.000	0.000		-		General
3-CA	Patch	-	VVP_0132_61	Endangered	no	0.130	-	0.001	0.001		-		General
3-CB	Patch	-	VVP_0132_61	Endangered	no	0.130	-	0.000	0.000		-		General
3-D	Patch	-	VVP_0055_61	Endangered	no	0.170	-	0.019	0.019		-		General
3-DCa	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.000	0.000		-		General
3-DCb	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.034	0.034		-		General
3-DD	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.001	0.001		-		General
3-DE	Patch	-	VVP_0132_61	Endangered	no	0.150	-	0.003	0.003		-		General
3-DF	Patch	-	VVP_0055_61	Endangered	no	0.190	-	0.006	0.006		-		General
3-G	Patch	-	VVP_0055_61	Endangered	no	0.280	-	0.023	0.023		-		General
3-I	Patch	-	VVP_0055_61	Endangered	no	0.200	-	0.002	0.002		-		General
3-Ia	Patch	-	VVP_0055_61	Endangered	no	0.200	-	0.076	0.076		-		General
3-J	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.011	0.011		-		General
3-M	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.011	0.011		-		General
4-A	Patch	-	VVP_0132_61	Endangered	no	0.160	-	0.021	0.021		-		General
4-G	Patch	-	VVP_0132_61	Endangered	no	0.280	-	0.004	0.004		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-D	Patch	-	VVP_0132_61	Endangered	no	0.260	-	0.000	0.000		-		General
5-E	Patch	-	VVP_0055_61	Endangered	no	0.150	-	0.000	0.000		-		General
5-F	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.002	0.002		-		General
5-Fa	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.061	0.061		-		General
5-Fb	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.005	0.005		-		General
5-Fc	Patch	-	VVP_0132_61	Endangered	no	0.320	-	0.010	0.010		-		General
5-G	Patch	-	VVP_0055_61	Endangered	no	0.120	-	0.030	0.030		-		General
5-H	Patch	-	VVP_0055_61	Endangered	no	0.180	-	0.016	0.016		-		General
5-Ha	Patch	-	VVP_0055_61	Endangered	no	0.180	-	0.013	0.013		-		General
5-I	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.004	0.004		-		General
5-Ia	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.006	0.006		-		General
5-Ib	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.002	0.002		-		General
5-Ic	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.010	0.010		-		General
5-Id	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000		-		General
5-Ie	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.001	0.001		-		General
5-If	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-Ig	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.000	0.000		-		General
5-Ih	Patch	-	VVP_0055_61	Endangered	no	0.160	-	0.003	0.003		-		General
5-J	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.004	0.004		-		General
5-Ja	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001		-		General
5-Jb	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001		-		General
5-Jc	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000		-		General
5-Jd	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000		-		General
5-Je	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.008	0.008		-		General
5-Jf	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000		-		General
5-Jg	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.018	0.018		-		General
5-Jh	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000		-		General
5-Ji	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.001	0.001		-		General
5-Jj	Patch	-	VVP_0055_61	Endangered	no	0.210	-	0.000	0.000		-		General
5-K	Patch	-	VVP_0132_61	Endangered	no	0.280	-	0.029	0.029		-		General
5-Ka	Patch	-	VVP_0132_61	Endangered	no	0.280	-	0.010	0.010		-		General
5-L	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.000	0.000		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
5-La	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.004	0.004		-		General
5-Lb	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.003	0.003		-		General
5-Lc	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.008	0.008		-		General
5-Ld	Patch	-	VVP_0132_61	Endangered	no	0.500	-	0.000	0.000		-		General
5-O	Patch	-	VVP_0055_61	Endangered	no	0.080	-	0.010	0.010		-		General
5-P	Patch	-	VVP_0055_61	Endangered	no	0.130	-	0.000	0.000		-		General
5-U	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000		-		General
5-Ua	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000		-		General
5-Ub	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.006	0.006		-		General
5-Uc	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.002	0.002		-		General
5-Ud	Patch	-	VVP_0132_61	Endangered	no	0.040	-	0.000	0.000		-		General
25-ST	Scattered Tree	41	VVP_0055_61	Endangered	no	0.200	-	0.031	0.031		-		General
29-ST	Scattered Tree	23	VVP_0055_61	Endangered	no	0.200	-	0.031	0.030		-		General
52-ST	Scattered Tree	103	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070		-		General

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	**Type**	**DBH (cm)**	**EVC code**	**Bioregional conservation status**	**Partial Removal**	**Condition score**	**Large Tree(s)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**HI Score**	**Habitat Units**	**Offset Type**
53-ST	Scattered Tree	82	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070		-		General
54-ST	Scattered Tree	143	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070		-		General
61-ST	Scattered Tree	148	VVP_0055_61	Endangered	no	0.200	1	0.070	0.070		-		General

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

This table identifies all rare or threatened species with mapped habitat at the site and the proportional impact associated with the proposed native vegetation removal.

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Curly Sedge	Carex tasmanica	500650	Vulnerable	Dispersed	Habitat importance map	0.0005
Yarra Pygmy Perch	Nannoperca obscura	4882	Vulnerable	Dispersed	Habitat importance map	0.0002
Salt Blown-grass	Lachnagrostis robusta	504223	Rare	Dispersed	Habitat importance map	0.0002
Clumping Golden Moths	Diuris gregaria	504887	Endangered	Dispersed	Habitat importance map	0.0002
Candy Spider-orchid	Caladenia versicolor	500522	Endangered	Dispersed	Habitat importance map	0.0001
Curly Sedge	Carex tasmanica	500650	Vulnerable	Dispersed	Top ranking map	0.0001
Purple Diuris	Diuris punctata	501084	Vulnerable	Dispersed	Habitat importance map	0.0001
Snowy Mint-bush	Prostanthera nivea var. nivea	502746	Rare	Dispersed	Habitat importance map	0.0001
Button Wrinklewort	Rutidosis leptorhynchoides	502982	Endangered	Dispersed	Habitat importance map	0.0001
Large-headed Fireweed	Senecio macrocarpus	503116	Endangered	Dispersed	Habitat importance map	0.0001
Plump Swamp Wallaby-grass	Amphibromus pithogastrus	503624	Endangered	Dispersed	Habitat importance map	0.0001
Wavy Swamp Wallaby-grass	Amphibromus sinuatus	503625	Vulnerable	Dispersed	Habitat importance map	0.0001
Flat Bluebell	Wahlenbergia planiflora subsp. planiflora	504064	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	Lachnagrostis punicea subsp. punicea	504206	Rare	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	Lachnagrostis punicea subsp. filifolia	504222	Rare	Dispersed	Habitat importance map	0.0001

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Brackish Plains Buttercup	Ranunculus diminutus	504314	Rare	Dispersed	Habitat importance map	0.0001
Fragrant Leek-orchid	Prasophyllum suaveolens	504567	Endangered	Dispersed	Top ranking map	0.0001
Fragrant Leek-orchid	Prasophyllum suaveolens	504567	Endangered	Dispersed	Habitat importance map	0.0001
White Sunray	Leucochrysum albicans subsp. tricolor	504581	Endangered	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	Coronidium gunnianum	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Plains Yam-daisy	Microseris scapigera s.s.	504657	Vulnerable	Dispersed	Habitat importance map	0.0001
Matted Flax-lily	Dianella amoena	505084	Endangered	Dispersed	Habitat importance map	0.0001
Swamp Flax-lily	Dianella callicarpa	505086	Rare	Dispersed	Habitat importance map	0.0001
Pale-flower Crane's-bill	Geranium sp. 3	505344	Rare	Dispersed	Habitat importance map	0.0001
Wind-blown Tussock-grass	Poa physoclina	507791	Endangered	Dispersed	Top ranking map	0.0001
Wind-blown Tussock-grass	Poa physoclina	507791	Endangered	Dispersed	Habitat importance map	0.0001
Lewin's Rail	Lewinia pectoralis pectoralis	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Gull-billed Tern	Gelochelidon nilotica macrotarsa	10111	Endangered	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	Rostratula australis	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Brolga	Grus rubicunda	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Little Egret	Egretta garzetta nigripes	10185	Endangered	Dispersed	Habitat importance map	0.0000
Intermediate Egret	Ardea intermedia	10186	Endangered	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	Ardea modesta	10187	Vulnerable	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Australian Little Bittern	Ixobrychus dubius	10195	Endangered	Dispersed	Habitat importance map	0.0000
Australasian Bittern	Botaurus poiciloptilus	10197	Endangered	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	Anas rhynchotis	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Freckled Duck	Stictonetta naevosa	10214	Endangered	Dispersed	Habitat importance map	0.0000
Hardhead	Aythya australis	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	Oxyura australis	10216	Endangered	Dispersed	Habitat importance map	0.0000
Musk Duck	Biziura lobata	10217	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Goshawk	Accipiter novaehollandiae novaehollandiae	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Black Falcon	Falco subniger	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Elegant Parrot	Neophema elegans	10307	Vulnerable	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	Calamanthus pyrrhopygius	10498	vulnerable	Dispersed	Habitat importance map	0.0000
Striped Legless Lizard	Delma impar	12159	Endangered	Dispersed	Habitat importance map	0.0000
Glossy Grass Skink	Pseudemoia rawlinsoni	12683	Vulnerable	Dispersed	Habitat importance map	0.0000
Grassland Earless Dragon	Tympanocryptis pinguicolla	12922	Critically endangered	Dispersed	Habitat importance map	0.0000
Tussock Skink	Pseudemoia pagenstecheri	12993	Vulnerable	Dispersed	Habitat importance map	0.0000
Growling Grass Frog	Litoria raniformis	13207	Endangered	Dispersed	Habitat importance map	0.0000
Golden Sun Moth	Synemon plana	15021	Critically endangered	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Rock Wattle	Acacia rupicola	500082	Rare	Dispersed	Habitat importance map	0.0000
Large White Spider-orchid	Caladenia venusta	500533	Rare	Dispersed	Habitat importance map	0.0000
Buloke	Allocasuarina luehmannii	500678	Endangered	Dispersed	Habitat importance map	0.0000
Leafy Twig-sedge	Cladium procerum	500786	Rare	Dispersed	Habitat importance map	0.0000
Small Milkwort	Comesperma polygaloides	500798	Vulnerable	Dispersed	Habitat importance map	0.0000
Golden Cowslips	Diuris behrii	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Southern Pipewort	Eriocaulon australasicum	501217	Endangered	Dispersed	Habitat importance map	0.0000
Common Pipewort	Eriocaulon scariosum	501218	Rare	Dispersed	Habitat importance map	0.0000
Small-leaf Wax-flower	Philotheca difformis subsp. difformis	501223	Endangered	Dispersed	Habitat importance map	0.0000
Bog Gum	Eucalyptus kitsoniana	501290	Rare	Dispersed	Habitat importance map	0.0000
Yarra Gum	Eucalyptus yarraensis	501326	Rare	Dispersed	Habitat importance map	0.0000
Clover Glycine	Glycine latrobeana	501456	Vulnerable	Dispersed	Habitat importance map	0.0000
Creeping Rush	Juncus revolutus	501839	Rare	Dispersed	Habitat importance map	0.0000
Salt Lawrencia	Lawrencia spicata	501888	Rare	Dispersed	Habitat importance map	0.0000
Button Immortelle	Leptorhynchos waitzia	501949	Vulnerable	Dispersed	Habitat importance map	0.0000
Branching Scale-rush	Sporadanthus tasmanicus	501969	Rare	Dispersed	Habitat importance map	0.0000
Salt Paperbark	Melaleuca halmaturorum	502149	Vulnerable	Dispersed	Habitat importance map	0.0000
Forked Rice-flower	Pimelea hewardiana	502522	Rare	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Green Leek-orchid	Prasophyllum lindleyanum	502702	Vulnerable	Dispersed	Habitat importance map	0.0000
Showy Lobelia	Lobelia beaugleholei	502733	Rare	Dispersed	Habitat importance map	0.0000
Slender Mint-bush	Prostanthera saxicola var. bracteolata	502750	Rare	Dispersed	Habitat importance map	0.0000
Small Scurf-pea	Cullen parvum	502773	Endangered	Dispersed	Habitat importance map	0.0000
Tough Scurf-pea	Cullen tenax	502776	Endangered	Dispersed	Habitat importance map	0.0000
Hairy Tails	Ptilotus erubescens	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Quinetia	Quinetia urvillei	502885	Rare	Dispersed	Habitat importance map	0.0000
Tiny Bog-sedge	Schoenus nanus	503050	Rare	Dispersed	Habitat importance map	0.0000
Branching Groundsel	Senecio cunninghamii var. cunninghamii	503104	Rare	Dispersed	Habitat importance map	0.0000
Metallic Sun-orchid	Thelymitra epipactoides	503367	Endangered	Dispersed	Habitat importance map	0.0000
Blotched Sun-orchid	Thelymitra benthamiana	503369	Vulnerable	Dispersed	Habitat importance map	0.0000
Fringed Sun-orchid	Thelymitra luteocilium	503375	Rare	Dispersed	Habitat importance map	0.0000
Grampians Thryptomene	Thryptomene calycina	503395	Rare	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	Gratiola pumilo	503753	Rare	Dispersed	Habitat importance map	0.0000
Swamp Everlasting	Xerochrysum palustre	503763	Vulnerable	Dispersed	Habitat importance map	0.0000
Fine-hairy Spear-grass	Austrostipa puberula	503988	Rare	Dispersed	Habitat importance map	0.0000
Basalt Sun-orchid	Thelymitra gregaria	504019	Endangered	Dispersed	Habitat importance map	0.0000
Dwarf Boronia	Boronia nana var. pubescens	504278	Rare	Dispersed	Habitat importance map	0.0000

Species common name	Species scientific name	Taxon ID	Conservation status	Group	Habitat impacted	Proportional impact (%)
Common Beard-heath	Leucopogon virgatus var. brevifolius	504392	Rare	Dispersed	Habitat importance map	0.0000
Melbourne Yellow-gum	Eucalyptus leucoxylon subsp. connata	504484	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Billy-buttons	Craspedia canens	504643	Endangered	Dispersed	Habitat importance map	0.0000
Small-flower Mat-rush	Lomandra micrantha subsp. tuberculata	504711	Rare	Dispersed	Habitat importance map	0.0000
Spiny Rice-flower	Pimelea spinescens subsp. spinescens	504823	Endangered	Dispersed	Habitat importance map	0.0000
Southern Swainson-pea	Swainsona behriana	504944	Rare	Dispersed	Habitat importance map	0.0000
Tufted Grass-tree	Xanthorrhoea caespitosa	505088	Rare	Dispersed	Habitat importance map	0.0000
Casterton Wattle	Acacia exudans	505137	Vulnerable	Dispersed	Habitat importance map	0.0000
Wimmera Scentbark	Eucalyptus sabulosa	505174	Rare	Dispersed	Habitat importance map	0.0000
Western Peppermint	Eucalyptus falciformis	505358	Rare	Dispersed	Habitat importance map	0.0000
Arching Flax-lily	Dianella sp. aff. longifolia (Benambra)	505560	Vulnerable	Dispersed	Habitat importance map	0.0000
Southern Bent-wing Bat	Miniopterus schreibersii bassanii	61343	Critically endangered	Dispersed	Habitat importance map	0.0000

Habitat Group

- Highly localised habitat means there is 2,000 hectares or less mapped habitat for the species.
- Dispersed habitat means there is more than 2,000 hectares of mapped habitat for the species.

Habitat Impacted

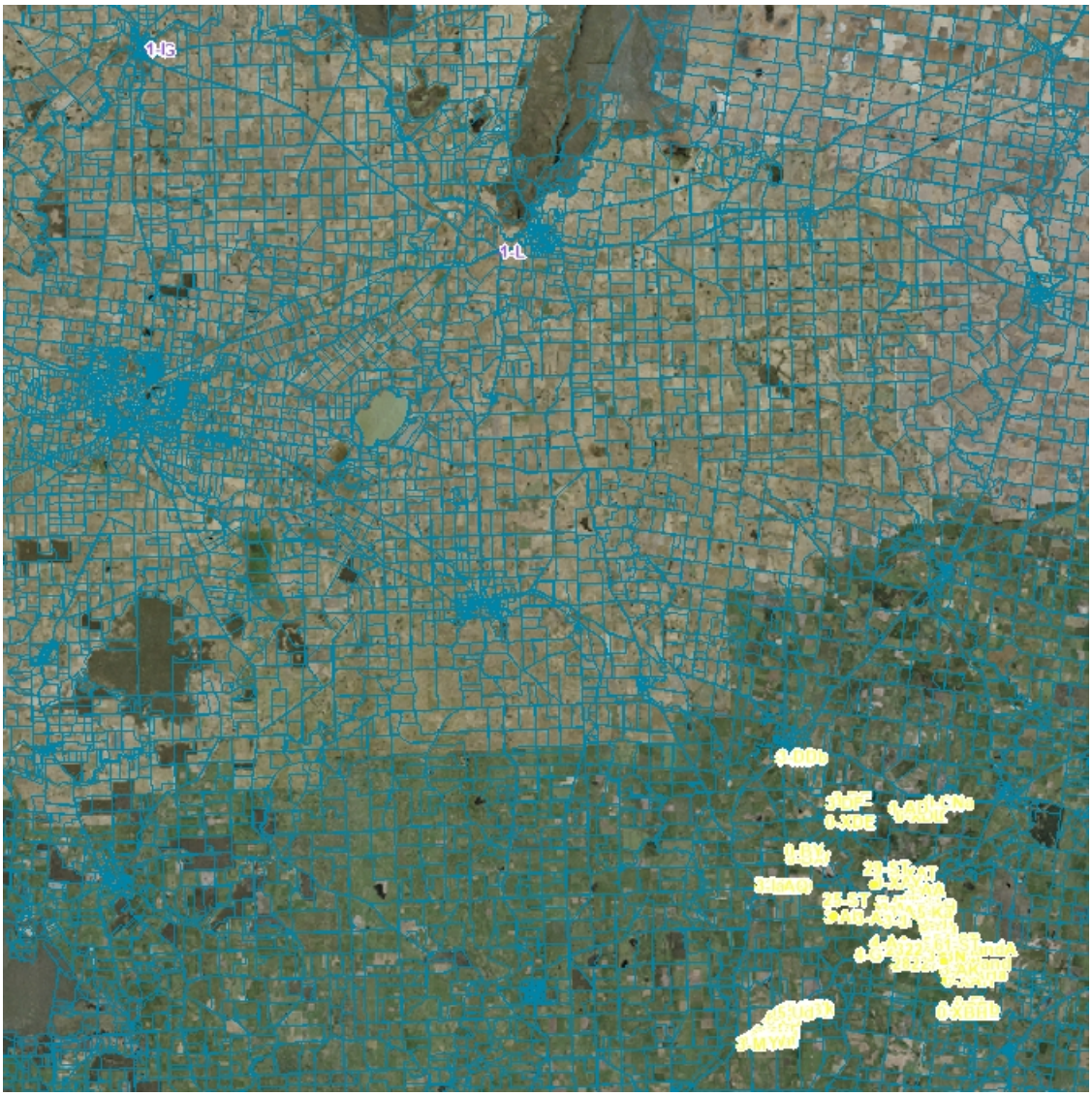
The Species General Offset test, as described in Section 5.3.1 of the Guidelines, is used to determine if proposed native vegetation removal will result in a proportionally significant impact on the habitat value of rare or threatened species. The test is applied where the native vegetation proposed for removal:

- Intersects the Habitat Importance Map for a rare or threatened species; or
- Intersects the 'top ranking' modelled habitat for a rare or threatened species with dispersed habitat, as identified in its Top Ranking Habitat Importance Map.

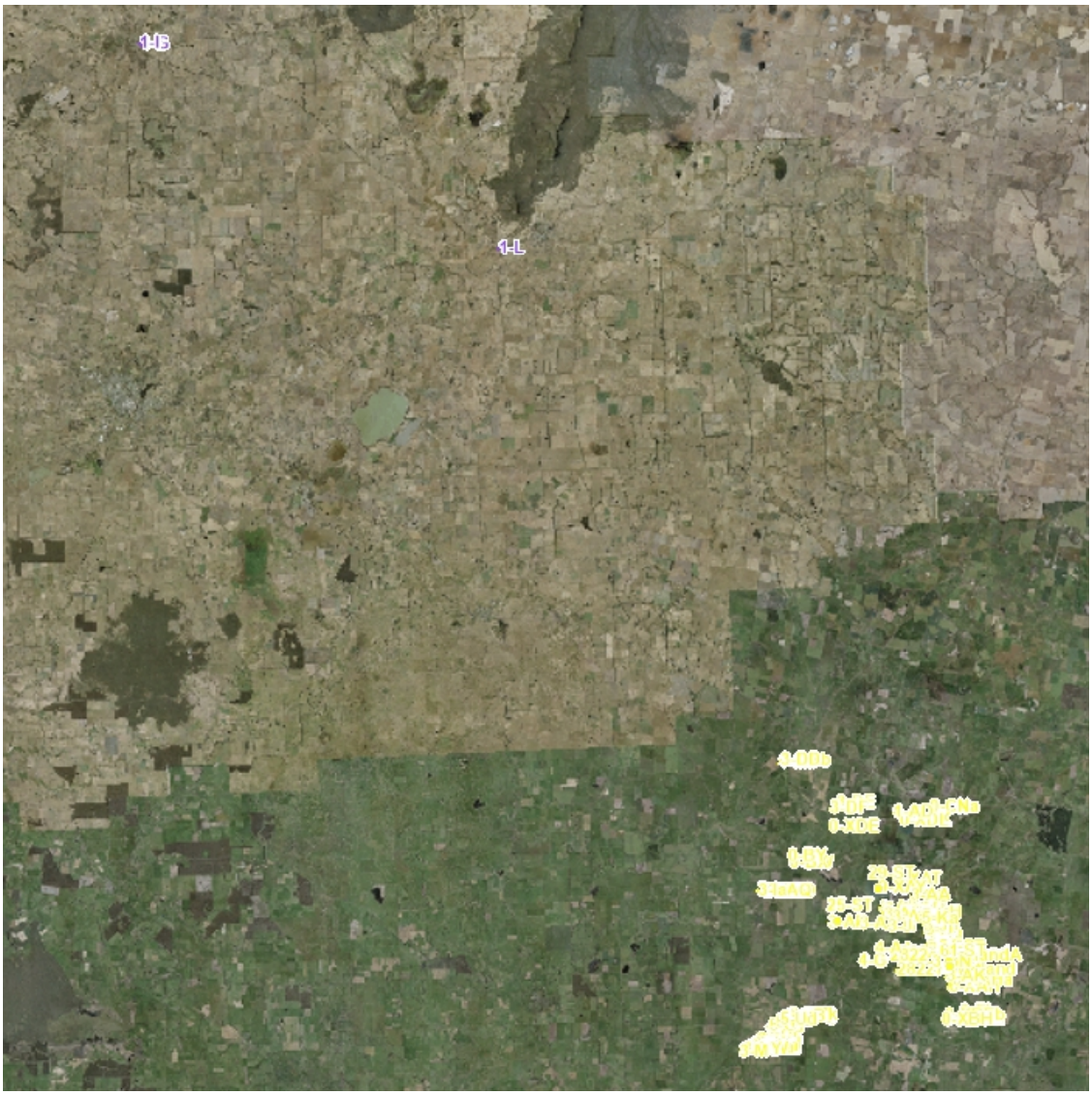
Top Ranking Maps consist of the 2,000 hectares of habitat with the highest Habitat Importance Scores for each dispersed species.
The 'Habitat impacted' column identifies whether the Habitat Importance Map or its Top Ranking Map was used to determine the proportional impact for a species with dispersed habitat.

Appendix 3: Images of mapped native vegetation

1. Property in context



2. Aerial photograph showing mapped native vegetation

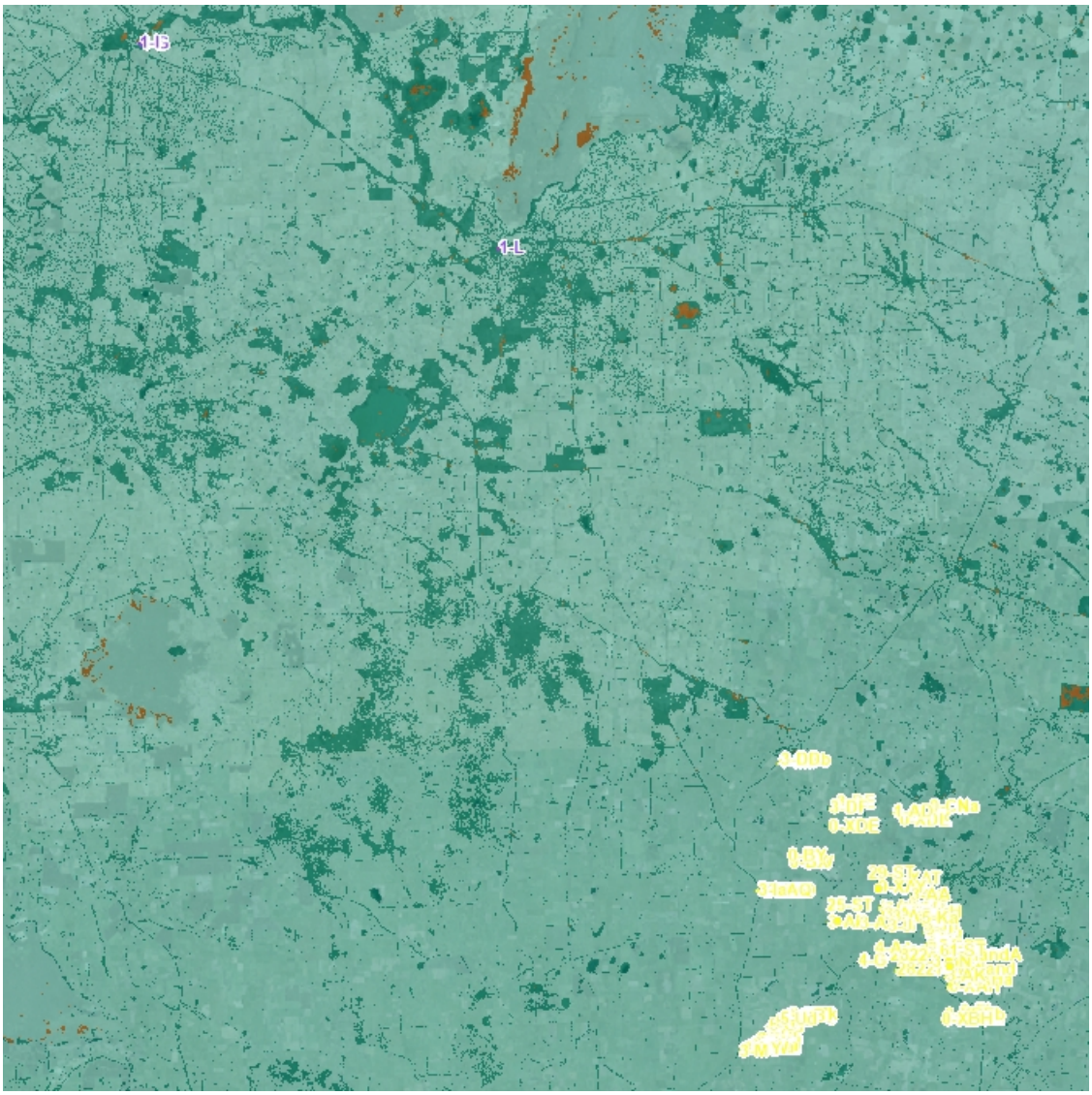


Proposed Removal
Past Removal
Partial Removal

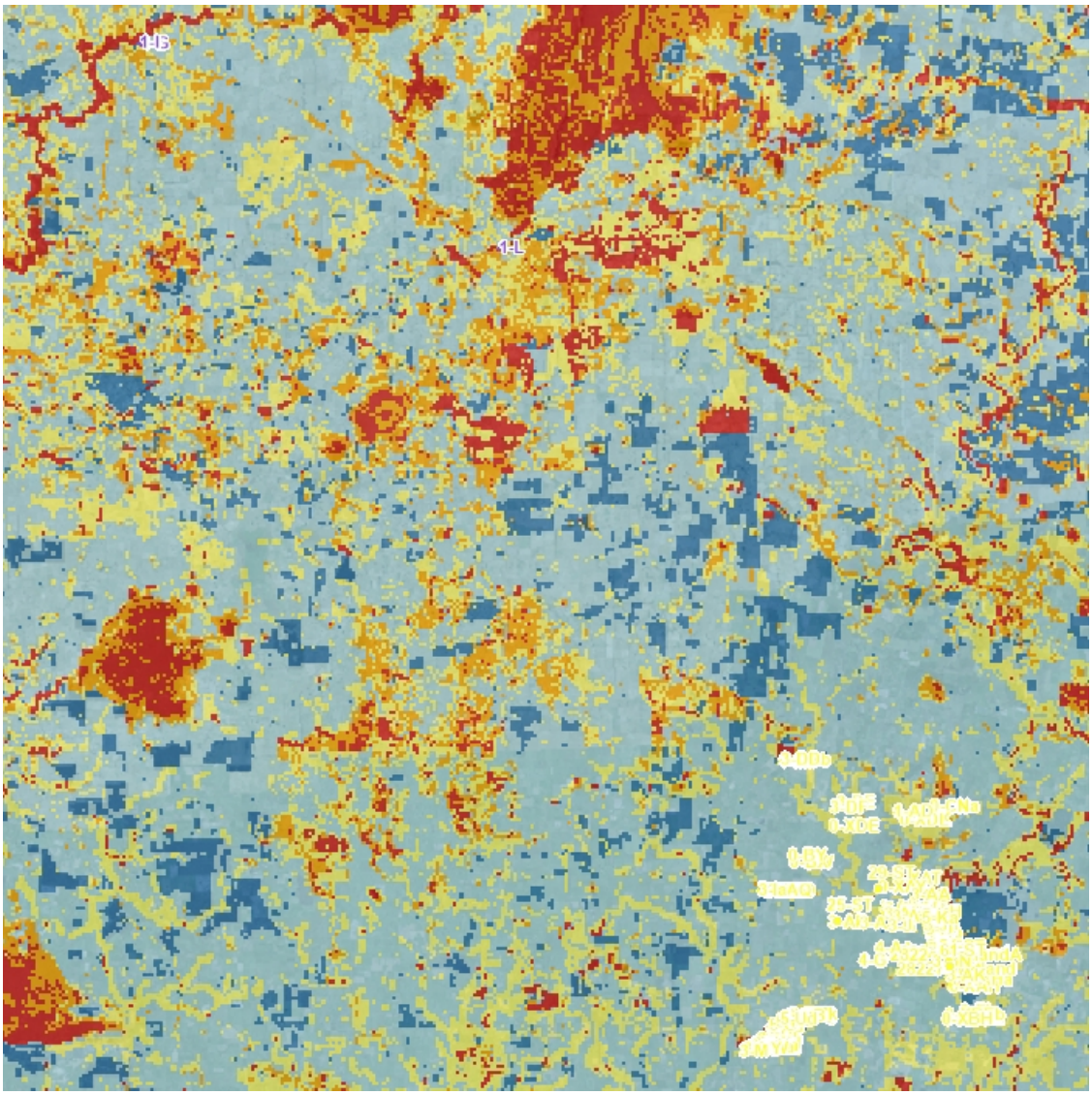
N

9000 m

3. Location Risk Map



4. Strategic Biodiversity Value Score Map



Proposed Removal
Past Removal
Partial Removal

0.81 - 1.00
0.61 - 0.80
0.41 - 0.60
0.21 - 0.40
0.00 - 0.20

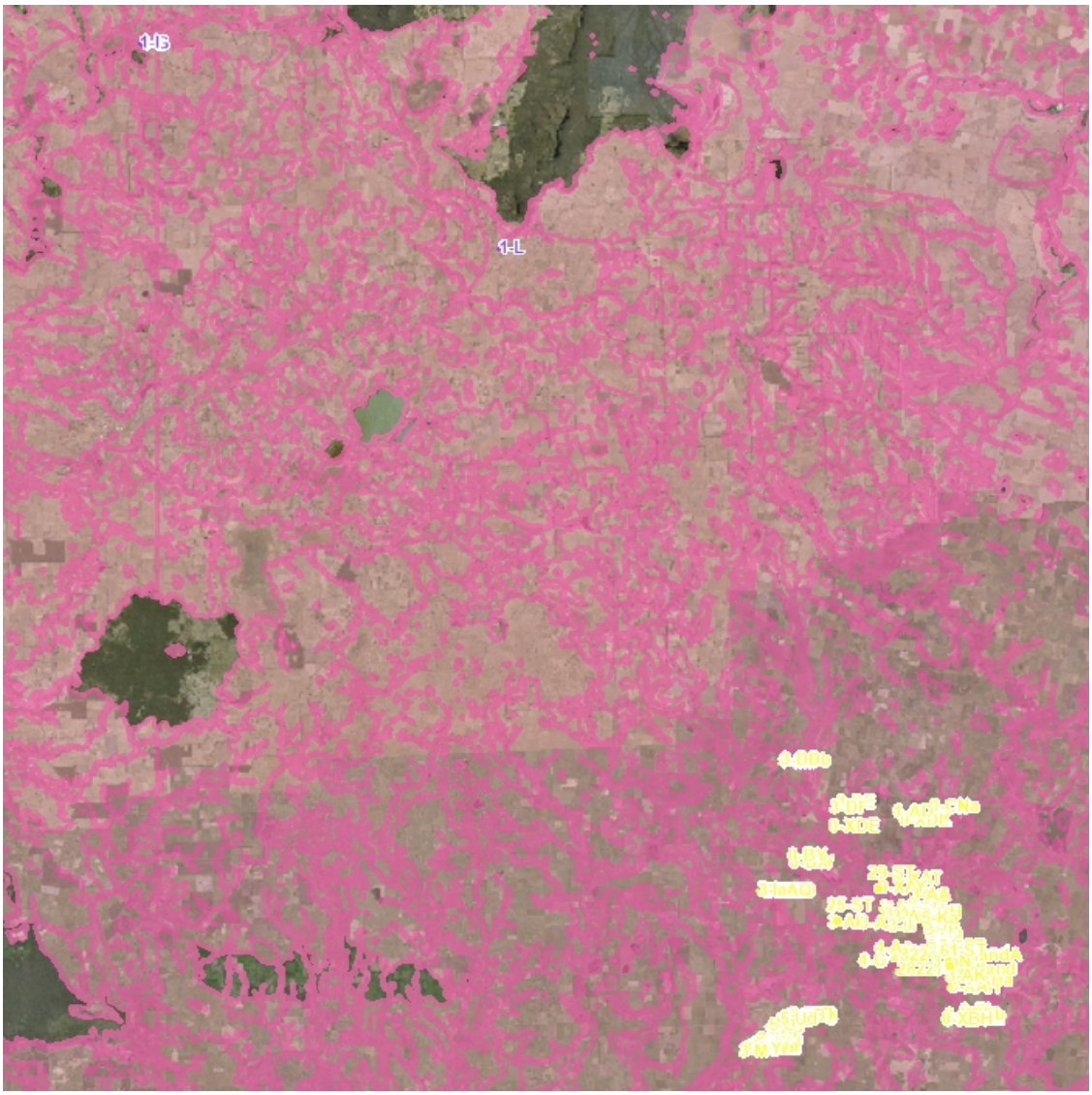
N

9000 m

5. Modelled Condition Score Map



6. Modelled Endangered EVCs



7. Habitat Importance maps

Not Applicable

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Native vegetation removal report

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

Date of issue: **17/12/2025**
Time of issue: **4:20 pm**

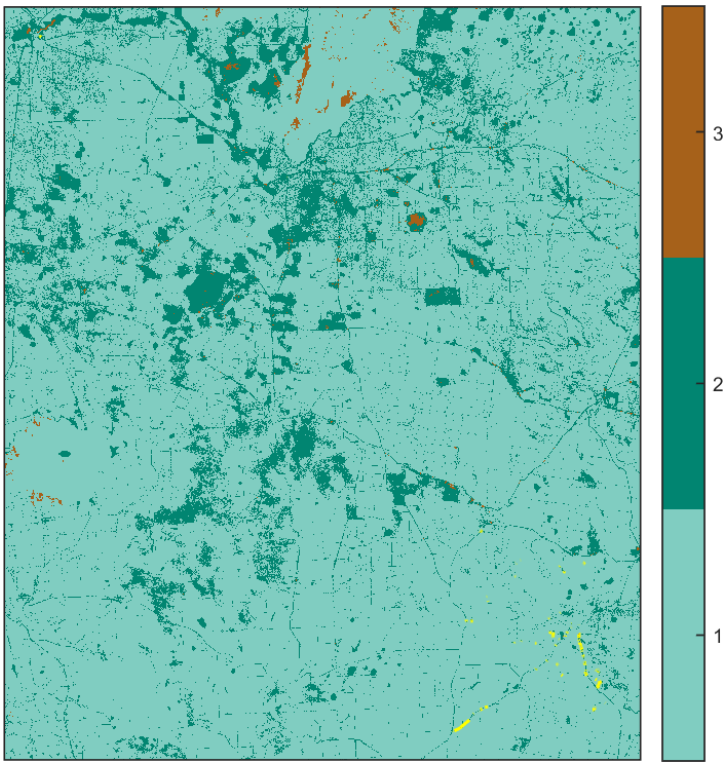
Report ID: NAA_2025_010

Project ID	18088_28_29_Ensym_Portland_Geelong_SweptPath_PublicRoad_DevelopmentPlan_251217

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	8.533 ha
Extent of past removal	0.000 ha
Extent of proposed removal	8.533 ha
No. Large trees proposed to be removed	13
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

1. Location map



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Total offset requirements if a permit is granted

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

General offset amount[1]	3.011 general habitat units
Vicinity	Glenelg Hopkins Catchment Management Authority (CMA) or Moyne Shire, Southern Grampians Shire Council
Minimum strategic biodiversity value score[2]	0.351
Large trees	13 large trees

Offset requirements if a permit is granted – Southern Grampians

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

General offset amount	0.100 general habitat units
Vicinity	Glenelg Hopkins Catchment Management Authority (CMA) or Southern Grampians Shire Council
Minimum strategic biodiversity value score	0.417
Large trees	5 large trees

Offset requirements if a permit is granted – Moyne Shire

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

General offset amount	2.911 general habitat units
Vicinity	Glenelg Hopkins Catchment Management Authority (CMA) or Moyne Shire
Minimum strategic biodiversity value score	0.349
Large trees	8 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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

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

Next steps

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

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

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

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

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

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

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Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
1-1AG	Patch	vvp_0055_61	Endangered	0	no	0.150	0.028	0.028	0.411		0.004	General
1-2C	Patch	vvp_0055_61	Endangered	0	no	0.100	0.003	0.003	0.370		0.000	General
1-1AK	Patch	vvp_0055_61	Endangered	0	no	0.120	0.008	0.008	0.360		0.001	General
1-1AM	Patch	vvp_0055_61	Endangered	0	no	0.120	0.001	0.001	0.360		0.000	General
1-1AN	Patch	vvp_0055_61	Endangered	0	no	0.120	0.004	0.004	0.360		0.001	General
1-1AO	Patch	vvp_0055_61	Endangered	0	no	0.120	0.011	0.011	0.360		0.001	General
1-0HB	Patch	vvp_0055_61	Endangered	0	no	0.120	0.037	0.037	0.320		0.004	General
1-0HA	Patch	vvp_0055_61	Endangered	0	no	0.120	0.079	0.079	0.340		0.009	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-0HD	Patch	vvp_0055_61	Endangered	0	no	0.130	0.000	0.000	0.290		0.000	General
1-1AP	Patch	vvp_0055_61	Endangered	0	no	0.040	0.000	0.000	0.280		0.000	General
1-1AQ	Patch	vvp_0055_61	Endangered	0	no	0.040	0.000	0.000	0.280		0.000	General
1-0EY	Patch	vvp_0055_61	Endangered	0	no	0.130	0.002	0.002	0.400		0.000	General
1-0EZ	Patch	vvp_0055_61	Endangered	0	no	0.130	0.037	0.037	0.340		0.005	General
1-0DF	Patch	vvp_0055_61	Endangered	0	no	0.130	0.025	0.025	0.825		0.004	General
1-5D	Patch	vvp_0132_61	Endangered	0	no	0.260	0.000	0.000	0.430		0.000	General
1-5G	Patch	vvp_0055_61	Endangered	0	no	0.120	0.030	0.030	0.520		0.004	General
1-3BN	Patch	vvp_0055_61	Endangered	0	no	0.150	0.015	0.015	0.437		0.002	General
1-5E	Patch	vvp_0055_61	Endangered	0	no	0.150	0.000	0.000	0.410		0.000	General
1-0DH	Patch	vvp_0055_61	Endangered	0	no	0.290	0.053	0.053	0.830		0.021	General
1-3BP	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.470		0.000	General
1-3BW	Patch	vvp_0055_61	Endangered	0	no	0.160	0.000	0.000	0.920		0.000	General
1-3BY	Patch	vvp_0055_61	Endangered	0	no	0.190	0.000	0.000	0.270		0.000	General
1-5O	Patch	vvp_0055_61	Endangered	0	no	0.080	0.010	0.010	0.460		0.001	General
1-5P	Patch	vvp_0055_61	Endangered	0	no	0.130	0.000	0.000	0.470		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-3CA	Patch	vvp_0132_61	Endangered	0	no	0.130	0.001	0.001	0.460		0.000	General
1-3CB	Patch	vvp_0132_61	Endangered	0	no	0.130	0.000	0.000	0.470		0.000	General
1-0DXc	Patch	vvp_0055_61	Endangered	0	no	0.290	0.000	0.000	0.800		0.000	General
1-0DXb	Patch	vvp_0055_61	Endangered	0	no	0.290	0.001	0.001	0.800		0.000	General
1-0DXa	Patch	vvp_0055_61	Endangered	0	no	0.290	0.001	0.001	0.800		0.000	General
1-0DX	Patch	vvp_0055_61	Endangered	0	no	0.290	0.000	0.000	0.800		0.000	General
1-0DZa	Patch	vvp_0068	Endangered	0	no	0.140	0.000	0.000	0.800		0.000	General
1-0DZ	Patch	vvp_0068	Endangered	0	no	0.140	0.005	0.005	0.800		0.001	General
1-0EAb	Patch	vvp_0132_61	Endangered	0	no	0.310	0.004	0.004	0.390		0.001	General
1-0EAa	Patch	vvp_0132_61	Endangered	0	no	0.310	0.048	0.048	0.507		0.017	General
1-0EA	Patch	vvp_0132_61	Endangered	0	no	0.310	0.005	0.005	0.800		0.002	General
1-5Jj	Patch	vvp_0055_61	Endangered	0	no	0.210	0.000	0.000	0.420		0.000	General
1-5Ji	Patch	vvp_0055_61	Endangered	0	no	0.210	0.001	0.001	0.420		0.000	General
1-5Jh	Patch	vvp_0055_61	Endangered	0	no	0.210	0.000	0.000	0.420		0.000	General
1-5Jg	Patch	vvp_0055_61	Endangered	0	no	0.210	0.018	0.018	0.410		0.004	General
1-5Jf	Patch	vvp_0055_61	Endangered	0	no	0.210	0.000	0.000	0.410		0.000	General
1-5Je	Patch	vvp_0055_61	Endangered	0	no	0.210	0.008	0.008	0.410		0.002	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-5Jd	Patch	vvp_0055_61	Endangered	0	no	0.210	0.000	0.000	0.450		0.000	General
1-5Jc	Patch	vvp_0055_61	Endangered	0	no	0.210	0.000	0.000	0.450		0.000	General
1-5Jb	Patch	vvp_0055_61	Endangered	0	no	0.210	0.001	0.001	0.430		0.000	General
1-5Ja	Patch	vvp_0055_61	Endangered	0	no	0.210	0.001	0.001	0.430		0.000	General
1-5J	Patch	vvp_0055_61	Endangered	0	no	0.210	0.004	0.004	0.430		0.001	General
1-5Ih	Patch	vvp_0055_61	Endangered	0	no	0.160	0.003	0.003	0.370		0.001	General
1-5Ig	Patch	vvp_0055_61	Endangered	0	no	0.160	0.000	0.000	0.370		0.000	General
1-5If	Patch	vvp_0055_61	Endangered	0	no	0.160	0.000	0.000	0.370		0.000	General
1-5Ie	Patch	vvp_0055_61	Endangered	0	no	0.160	0.001	0.001	0.370		0.000	General
1-5Id	Patch	vvp_0055_61	Endangered	0	no	0.160	0.000	0.000	0.370		0.000	General
1-5Ic	Patch	vvp_0055_61	Endangered	0	no	0.160	0.010	0.010	0.420		0.002	General
1-5Ib	Patch	vvp_0055_61	Endangered	0	no	0.160	0.002	0.002	0.420		0.000	General
1-5Ia	Patch	vvp_0055_61	Endangered	0	no	0.160	0.006	0.006	0.420		0.001	General
1-5I	Patch	vvp_0055_61	Endangered	0	no	0.160	0.004	0.004	0.420		0.001	General
1-5Ha	Patch	vvp_0055_61	Endangered	0	no	0.180	0.013	0.013	0.520		0.003	General
1-5H	Patch	vvp_0055_61	Endangered	0	no	0.180	0.016	0.016	0.401		0.003	General
1-0DWe	Patch	vvp_0055_61	Endangered	0	no	0.290	0.000	0.000	0.800		0.000	General
1-0DWd	Patch	vvp_0055_61	Endangered	0	no	0.290	0.001	0.001	0.800		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-0DWc	Patch	vvp_0055_61	Endangered	0	no	0.290	0.009	0.009	0.800		0.004	General
1-0DWb	Patch	vvp_0055_61	Endangered	0	no	0.290	0.004	0.004	0.681		0.001	General
1-0DWa	Patch	vvp_0055_61	Endangered	0	no	0.290	0.003	0.003	0.670		0.001	General
1-0DW	Patch	vvp_0055_61	Endangered	0	no	0.290	0.002	0.002	0.670		0.001	General
1-0DVc	Patch	vvp_0055_61	Endangered	0	no	0.280	0.000	0.000	0.410		0.000	General
1-0DVb	Patch	vvp_0055_61	Endangered	0	no	0.280	0.015	0.015	0.410		0.004	General
1-0DVa	Patch	vvp_0055_61	Endangered	0	no	0.280	0.083	0.083	0.410		0.024	General
1-0DV	Patch	vvp_0055_61	Endangered	0	no	0.280	0.030	0.030	0.630		0.010	General
1-3BO	Patch	vvp_0132_61	Endangered	0	no	0.530	0.002	0.002	0.390		0.001	General
1-5Fc	Patch	vvp_0132_61	Endangered	0	no	0.320	0.010	0.010	0.310		0.003	General
1-5Fb	Patch	vvp_0132_61	Endangered	0	no	0.320	0.005	0.005	0.310		0.002	General
1-5Fa	Patch	vvp_0132_61	Endangered	0	no	0.320	0.061	0.061	0.340		0.020	General
1-5F	Patch	vvp_0132_61	Endangered	0	no	0.320	0.002	0.002	0.340		0.000	General
1-3BT	Patch	vvp_0132_61	Endangered	0	no	0.160	0.006	0.006	0.460		0.001	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-3BTa	Patch	vvp_0132_61	Endangered	0	no	0.160	0.002	0.002	0.460		0.000	General
1-3BTb	Patch	vvp_0132_61	Endangered	0	no	0.160	0.002	0.002	0.460		0.000	General
1-3BTc	Patch	vvp_0132_61	Endangered	0	no	0.160	0.003	0.003	0.460		0.000	General
1-3BTd	Patch	vvp_0132_61	Endangered	0	no	0.160	0.000	0.000	0.460		0.000	General
1-3BU	Patch	vvp_0132_61	Endangered	0	no	0.160	0.002	0.002	0.940		0.000	General
1-3BUa	Patch	vvp_0132_61	Endangered	0	no	0.160	0.000	0.000	0.940		0.000	General
1-3BV	Patch	vvp_0055_61	Endangered	0	no	0.160	0.001	0.001	0.920		0.000	General
1-3BVa	Patch	vvp_0055_61	Endangered	0	no	0.160	0.000	0.000	0.460		0.000	General
1-5Ld	Patch	vvp_0132_61	Endangered	0	no	0.500	0.000	0.000	0.450		0.000	General
1-5Lc	Patch	vvp_0132_61	Endangered	0	no	0.500	0.008	0.008	0.454		0.004	General
1-5Lb	Patch	vvp_0132_61	Endangered	0	no	0.500	0.003	0.003	0.460		0.002	General
1-5La	Patch	vvp_0132_61	Endangered	0	no	0.500	0.004	0.004	0.850		0.002	General
1-5L	Patch	vvp_0132_61	Endangered	0	no	0.500	0.000	0.000	0.850		0.000	General
1-3BZ	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.470		0.000	General
1-3BZa	Patch	vvp_0132_61	Endangered	0	no	0.530	0.007	0.007	0.463		0.004	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-3BZb	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BZc	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BZd	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BZe	Patch	vvp_0132_61	Endangered	0	no	0.530	0.004	0.004	0.460		0.002	General
1-3BZf	Patch	vvp_0132_61	Endangered	0	no	0.530	0.001	0.001	0.460		0.001	General
1-3BZg	Patch	vvp_0132_61	Endangered	0	no	0.530	0.001	0.001	0.460		0.000	General
1-3BZh	Patch	vvp_0132_61	Endangered	0	no	0.530	0.009	0.009	0.460		0.005	General
1-3BZi	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BZj	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BZk	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-5Ud	Patch	vvp_0132_61	Endangered	0	no	0.040	0.000	0.000	0.460		0.000	General
1-5Uc	Patch	vvp_0132_61	Endangered	0	no	0.040	0.002	0.002	0.460		0.000	General
1-5Ub	Patch	vvp_0132_61	Endangered	0	no	0.040	0.006	0.006	0.850		0.000	General
1-5Ua	Patch	vvp_0132_61	Endangered	0	no	0.040	0.000	0.000	0.850		0.000	General
1-5U	Patch	vvp_0132_61	Endangered	0	no	0.040	0.000	0.000	0.850		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-5Ka	Patch	vvp_0132_61	Endangered	0	no	0.280	0.010	0.010	0.747		0.004	General
1-5K	Patch	vvp_0132_61	Endangered	0	no	0.280	0.029	0.029	0.838		0.011	General
1-3BOa	Patch	vvp_0132_61	Endangered	0	no	0.530	0.157	0.157	0.644		0.103	General
1-3BOb	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.940		0.000	General
1-3BOc	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.940		0.000	General
1-3BOd	Patch	vvp_0132_61	Endangered	0	no	0.530	0.001	0.001	0.940		0.000	General
1-3BOe	Patch	vvp_0132_61	Endangered	0	no	0.530	0.001	0.001	0.940		0.001	General
1-3BOf	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.940		0.000	General
1-3BOg	Patch	vvp_0132_61	Endangered	0	no	0.530	0.003	0.003	0.571		0.002	General
1-3BOh	Patch	vvp_0132_61	Endangered	0	no	0.530	0.000	0.000	0.460		0.000	General
1-3BOi	Patch	vvp_0132_61	Endangered	0	no	0.530	0.195	0.195	0.520		0.118	General
2-1F	Patch	vvp_0055_61	Endangered	1	no	0.560	0.015	0.015	0.520		0.009	General
2-1G	Patch	vvp_0055_61	Endangered	3	no	0.540	0.123	0.123	0.520		0.076	General
2-1I	Patch	vvp_0055_61	Endangered	1	no	0.330	0.036	0.036	0.466		0.013	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
2-1L	Patch	vvp_0055_61	Endangered	0	no	0.210	0.007	0.007	0.830		0.002	General
1-1U	Patch	vvp_0055_61	Endangered	0	no	0.100	0.001	0.001	0.340		0.000	General
1-3AA	Patch	vvp_0055_61	Endangered	0	no	0.210	0.009	0.009	0.350		0.002	General
1-0XAT	Patch	vvp_0653	Endangered	0	no	0.440	0.023	0.023	0.450		0.011	General
1-3AF	Patch	vvp_0125	Endangered	0	no	0.230	0.044	0.044	0.300		0.010	General
1-0BY	Patch	vvp_0068	Endangered	0	no	0.210	0.026	0.026	0.300		0.005	General
1-0XAX	Patch	vvp_0653	Endangered	0	no	0.500	0.006	0.006	0.440		0.004	General
1-0XAY	Patch	vvp_0653	Endangered	0	no	0.500	0.008	0.008	0.440		0.004	General
1-3AI	Patch	vvp_0125	Endangered	0	no	0.230	0.027	0.027	0.290		0.006	General
1-3AJ	Patch	vvp_0125	Endangered	0	no	0.230	0.069	0.069	0.280		0.015	General
1-0XDL	Patch	vvp_0125	Endangered	0	no	0.430	0.234	0.234	0.440		0.109	General
1-0XDK	Patch	vvp_0125	Endangered	0	no	0.320	0.004	0.004	0.440		0.002	General
1-1AD	Patch	vvp_0125	Endangered	0	no	0.390	0.040	0.040	0.460		0.017	General
1-0CO	Patch	vvp_0125	Endangered	0	no	0.390	0.010	0.010	0.460		0.004	General
1-3AK	Patch	vvp_0132_61	Endangered	0	no	0.230	0.104	0.104	0.281		0.023	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-0XBG	Patch	vvp_0125	Endangered	0	no	0.150	0.141	0.141	0.345		0.021	General
1-0XBF	Patch	vvp_0125	Endangered	0	no	0.200	0.004	0.004	0.340		0.001	General
1-0XBH	Patch	vvp_0125	Endangered	0	no	0.180	0.011	0.011	0.350		0.002	General
1-0FI	Patch	vvp_0125	Endangered	0	no	0.240	0.003	0.003	0.290		0.001	General
1-0BW	Patch	vvp_0068	Endangered	0	no	0.180	0.004	0.004	0.320		0.001	General
1-0BX	Patch	vvp_0068	Endangered	0	no	0.180	0.017	0.017	0.320		0.003	General
1-3DE	Patch	vvp_0132_61	Endangered	0	no	0.150	0.003	0.003	0.310		0.000	General
1-3DF	Patch	vvp_0055_61	Endangered	0	no	0.190	0.006	0.006	0.280		0.001	General
1-0XDE	Patch	vvp_0647	Endangered	0	no	0.400	0.016	0.016	0.440		0.007	General
1-0CN	Patch	vvp_0055_61	Endangered	2	no	0.240	0.089	0.089	0.390		0.022	General
1-0CNa	Patch	vvp_0055_61	Endangered	2	no	0.240	0.086	0.086	0.390		0.022	General
1-3AHc	Patch	vvp_0125	Endangered	0	no	0.300	0.079	0.079	0.490		0.027	General
1-3AHb	Patch	vvp_0125	Endangered	0	no	0.300	0.176	0.176	0.490		0.059	General
1-3AHa	Patch	vvp_0125	Endangered	0	no	0.300	0.245	0.245	0.539		0.085	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-3AH	Patch	vvp_0125	Endangered	0	no	0.300	0.669	0.669	0.508		0.227	General
1-0XBA	Patch	vvp_0125	Endangered	0	no	0.380	0.016	0.016	0.310		0.006	General
1-0XBAa	Patch	vvp_0125	Endangered	0	no	0.380	0.011	0.011	0.313		0.004	General
1-0XBEb	Patch	vvp_0125	Endangered	0	no	0.380	0.002	0.002	0.390		0.001	General
1-0XBEa	Patch	vvp_0125	Endangered	0	no	0.380	0.031	0.031	0.310		0.012	General
1-0XBE	Patch	vvp_0125	Endangered	0	no	0.380	0.004	0.004	0.310		0.001	General
1-0XAHa	Patch	vvp_0125	Endangered	0	no	0.380	2.722	2.722	0.418		1.100	General
1-0XAH	Patch	vvp_0125	Endangered	0	no	0.380	1.087	1.087	0.417		0.439	General
1-28227Wetland	Patch	vvp_0125	Endangered	0	no	0.200	0.139	0.139	0.300		0.027	General
1-28224Wetland	Patch	vvp_0125	Endangered	0	no	0.200	0.142	0.142	0.350		0.029	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-28224WetlandA	Patch	vvp_0125	Endangered	0	no	0.200	0.161	0.161	0.336		0.032	General
1-3DD	Patch	vvp_0055_61	Endangered	0	no	0.150	0.001	0.001	0.520		0.000	General
1-3DCa	Patch	vvp_0055_61	Endangered	0	no	0.130	0.000	0.000	0.530		0.000	General
1-3DCb	Patch	vvp_0055_61	Endangered	0	no	0.130	0.034	0.034	0.420		0.005	General
1-1M	Patch	vvp_0055_61	Endangered	0	no	0.080	0.007	0.007	0.530		0.001	General
1-1Ma	Patch	vvp_0055_61	Endangered	0	no	0.080	0.005	0.005	0.530		0.000	General
1-1Mb	Patch	vvp_0055_61	Endangered	0	no	0.080	0.031	0.031	0.530		0.003	General
1-3J	Patch	vvp_0055_61	Endangered	0	no	0.130	0.011	0.011	0.340		0.001	General
1-3G	Patch	vvp_0055_61	Endangered	0	no	0.280	0.023	0.023	0.340		0.006	General
1-4A	Patch	vvp_0132_61	Endangered	0	no	0.160	0.021	0.021	0.341		0.003	General
1-1AA	Patch	vvp_0132_61	Endangered	0	no	0.040	0.005	0.005	0.320		0.000	General
1-3D	Patch	vvp_0055_61	Endangered	0	no	0.170	0.019	0.019	0.410		0.003	General
1-3Ia	Patch	vvp_0055_61	Endangered	0	no	0.200	0.076	0.076	0.420		0.016	General
1-3I	Patch	vvp_0055_61	Endangered	0	no	0.200	0.002	0.002	0.420		0.000	General
1-3M	Patch	vvp_0055_61	Endangered	0	no	0.150	0.011	0.011	0.590		0.002	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-0DFa	Patch	vvp_0055_61	Endangered	0	no	0.130	0.012	0.012	0.425		0.002	General
1-3R	Patch	vvp_0132_61	Endangered	0	no	0.110	0.047	0.047	0.790		0.007	General
1-4Aa	Patch	vvp_0132_61	Endangered	0	no	0.160	0.010	0.010	0.303		0.002	General
1-1W	Patch	vvp_0132_61	Endangered	0	no	0.130	0.025	0.025	0.790		0.004	General
1-3L	Patch	vvp_0055_61	Endangered	0	no	0.110	0.006	0.006	0.350		0.001	General
1-0XAJ	Patch	vvp_0125	Endangered	0	no	0.350	0.008	0.008	0.340		0.003	General
1-3Ga	Patch	vvp_0055_61	Endangered	0	no	0.280	0.002	0.002	0.340		0.001	General
1-52	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.070	0.400		0.015	General
1-53	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.070	0.400		0.015	General
1-54	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.070	0.430		0.015	General
1-61	Scattered Tree	vvp_0055_61	Endangered	1	no	0.200	0.070	0.070	0.450		0.015	General
1-29	Scattered Tree	vvp_0055_61	Endangered	0	no	0.200	0.031	0.030	0.440		0.007	General
1-4G	Patch	vvp_0132_61	Endangered	0	no	0.280	0.004	0.004	0.410		0.001	General
1-25	Scattered Tree	vvp_0055_61	Endangered	0	no	0.200	0.031	0.031	0.310		0.006	General

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

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Curly Sedge	*Carex tasmanica*	500650	Vulnerable	Dispersed	Habitat importance map	0.0006
Wind-blown Tussock-grass	*Poa physoclina*	507791	Endangered	Dispersed	Top ranking map	0.0004
Fragrant Leek-orchid	*Prasophyllum suaveolens*	504567	Endangered	Dispersed	Top ranking map	0.0003
Yarra Pygmy Perch	*Nannoperca obscura*	4882	Vulnerable	Dispersed	Habitat importance map	0.0002
Salt Blown-grass	*Lachnagrostis robusta*	504223	Rare	Dispersed	Habitat importance map	0.0002
Clumping Golden Moths	*Diuris gregaria*	504887	Endangered	Dispersed	Habitat importance map	0.0002
Fragrant Leek-orchid	*Prasophyllum suaveolens*	504567	Endangered	Dispersed	Habitat importance map	0.0002
Button Wrinklewort	*Rutidosis leptorhynchoides*	502982	Endangered	Dispersed	Habitat importance map	0.0001
Large-headed Fireweed	*Senecio macrocarpus*	503116	Endangered	Dispersed	Habitat importance map	0.0001
Plump Swamp Wallaby-grass	*Amphibromus pithogastrus*	503624	Endangered	Dispersed	Habitat importance map	0.0001
Brackish Plains Buttercup	*Ranunculus diminutus*	504314	Rare	Dispersed	Habitat importance map	0.0001
Wind-blown Tussock-grass	*Poa physoclina*	507791	Endangered	Dispersed	Habitat importance map	0.0001
Curly Sedge	*Carex tasmanica*	500650	Vulnerable	Dispersed	Top ranking map	0.0001
Wavy Swamp Wallaby-grass	*Amphibromus sinuatus*	503625	Vulnerable	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	*Lachnagrostis punicea subsp. punicea*	504206	Rare	Dispersed	Habitat importance map	0.0001
Candy Spider-orchid	*Caladenia versicolor*	500522	Endangered	Dispersed	Habitat importance map	0.0001
Plains Yam-daisy	*Microseris scapigera s.s.*	504657	Vulnerable	Dispersed	Habitat importance map	0.0001
Matted Flax-lily	*Dianella amoena*	505084	Endangered	Dispersed	Habitat importance map	0.0001

Pale-flower Crane's-bill	*Geranium sp. 3*	505344	Rare	Dispersed	Habitat importance map	0.0001
Snowy Mint-bush	*Prostanthera nivea var. nivea*	502746	Rare	Dispersed	Habitat importance map	0.0001
Purple Blown-grass	*Lachnagrostis punicea subsp. filifolia*	504222	Rare	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Flat Bluebell	*Wahlenbergia planiflora subsp. planiflora*	504064	Vulnerable	Dispersed	Habitat importance map	0.0001
White Sunray	*Leucochrysum albicans subsp. tricolor*	504581	Endangered	Dispersed	Habitat importance map	0.0001
Swamp Flax-lily	*Dianella callicarpa*	505086	Rare	Dispersed	Habitat importance map	0.0001
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0001
Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	505560	Vulnerable	Dispersed	Habitat importance map	0.0001
Large White Spider-orchid	*Caladenia venusta*	500533	Rare	Dispersed	Habitat importance map	0.0000
Swamp Everlasting	*Xerochrysum palustre*	503763	Vulnerable	Dispersed	Habitat importance map	0.0000
Small Milkwort	*Comesperma polygaloides*	500798	Vulnerable	Dispersed	Habitat importance map	0.0000
Southern Pipewort	*Eriocaulon australasicum*	501217	Endangered	Dispersed	Habitat importance map	0.0000
Leafy Twig-sedge	*Cladium procerum*	500786	Rare	Dispersed	Habitat importance map	0.0000
Southern Bent-wing Bat	*Miniopterus schreibersii bassanii*	61343	Critically endangered	Dispersed	Habitat importance map	0.0000
Striped Legless Lizard	*Delma impar*	12159	Endangered	Dispersed	Habitat importance map	0.0000
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Basalt Sun-orchid	*Thelymitra gregaria*	504019	Endangered	Dispersed	Habitat importance map	0.0000
Small Scurf-pea	*Cullen parvum*	502773	Endangered	Dispersed	Habitat importance map	0.0000
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0000
Melbourne Yellow-gum	*Eucalyptus leucoxylon subsp. connata*	504484	Vulnerable	Dispersed	Habitat importance map	0.0000

Small-leaf Wax-flower	*Philotheca difformis subsp. difformis*	501223	Endangered	Dispersed	Habitat importance map	0.0000
Bog Gum	*Eucalyptus kitsoniana*	501290	Rare	Dispersed	Habitat importance map	0.0000
Tough Scurf-pea	*Cullen tenax*	502776	Endangered	Dispersed	Habitat importance map	0.0000
Fine-hairy Spear-grass	*Austrostipa puberula*	503988	Rare	Dispersed	Habitat importance map	0.0000
Common Pipewort	*Eriocaulon scariosum*	501218	Rare	Dispersed	Habitat importance map	0.0000
Blotched Sun-orchid	*Thelymitra benthamiana*	503369	Vulnerable	Dispersed	Habitat importance map	0.0000
Rock Wattle	*Acacia rupicola*	500082	Rare	Dispersed	Habitat importance map	0.0000
Grampians Thryptomene	*Thryptomene calycina*	503395	Rare	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map ; special site	0.0000
Casterton Wattle	*Acacia exudans*	505137	Vulnerable	Dispersed	Habitat importance map	0.0000
Small-flower Mat-rush	*Lomandra micrantha subsp. tuberculata*	504711	Rare	Dispersed	Habitat importance map	0.0000
Gull-billed Tern	*Gelochelidon nilotica macrotarsa*	10111	Endangered	Dispersed	Habitat importance map	0.0000
Fringed Sun-orchid	*Thelymitra luteocilium*	503375	Rare	Dispersed	Habitat importance map	0.0000
Golden Sun Moth	*Synemon plana*	15021	Critically endangered	Dispersed	Habitat importance map	0.0000
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	503104	Rare	Dispersed	Habitat importance map	0.0000
Growling Grass Frog	*Litoria raniformis*	13207	Endangered	Dispersed	Habitat importance map	0.0000
Creeping Rush	*Juncus revolutus*	501839	Rare	Dispersed	Habitat importance map	0.0000
Metallic Sun-orchid	*Thelymitra epipactoides*	503367	Endangered	Dispersed	Habitat importance map	0.0000
Salt Paperbark	*Melaleuca halmaturorum*	502149	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Billy-buttons	*Craspedia canens*	504643	Endangered	Dispersed	Habitat importance map	0.0000
Branching Scale-rush	*Sporadanthus tasmanicus*	501969	Rare	Dispersed	Habitat importance map	0.0000
Green Leek-orchid	*Prasophyllum lindleyanum*	502702	Vulnerable	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0000

Southern Swainson-pea	*Swainsona behriana*	504944	Rare	Dispersed	Habitat importance map	0.0000
Common Beard-heath	*Leucopogon virgatus var. brevifolius*	504392	Rare	Dispersed	Habitat importance map	0.0000
Wimmera Scentbark	*Eucalyptus sabulosa*	505174	Rare	Dispersed	Habitat importance map	0.0000
Quinetia	*Quinetia urvillei*	502885	Rare	Dispersed	Habitat importance map	0.0000
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	504823	Endangered	Dispersed	Habitat importance map	0.0000
Tiny Bog-sedge	*Schoenus nanus*	503050	Rare	Dispersed	Habitat importance map	0.0000
Lewin's Rail	*Lewinia pectoralis pectoralis*	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Yarra Gum	*Eucalyptus yarraensis*	501326	Rare	Dispersed	Habitat importance map	0.0000
Slender Mint-bush	*Prostanthera saxicola var. bracteolata*	502750	Rare	Dispersed	Habitat importance map	0.0000
Tufted Grass-tree	*Xanthorrhoea caespitosa*	505088	Rare	Dispersed	Habitat importance map	0.0000
Dwarf Boronia	*Boronia nana var. pubescens*	504278	Rare	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Forked Rice-flower	*Pimelea hewardiana*	502522	Rare	Dispersed	Habitat importance map	0.0000
Australasian Bittern	*Botaurus poiciloptilus*	10197	Endangered	Dispersed	Habitat importance map	0.0000
Little Egret	*Egretta garzetta nigripes*	10185	Endangered	Dispersed	Habitat importance map	0.0000
Button Immortelle	*Leptorhynchos waitzia*	501949	Vulnerable	Dispersed	Habitat importance map	0.0000
Freckled Duck	*Stictonetta naevosa*	10214	Endangered	Dispersed	Habitat importance map	0.0000
Blue-billed Duck	*Oxyura australis*	10216	Endangered	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	*Ardea modesta*	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Intermediate Egret	*Ardea intermedia*	10186	Endangered	Dispersed	Habitat importance map	0.0000
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	10220	Vulnerable	Dispersed	Habitat importance map	0.0000
Musk Duck	*Biziura lobata*	10217	Vulnerable	Dispersed	Habitat importance map	0.0000
Western Peppermint	*Eucalyptus falciformis*	505358	Rare	Dispersed	Habitat importance map	0.0000

Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0000
Hardhead	*Aythya australis*	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	*Anas rhynchotis*	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	10498	Vulnerable	Dispersed	Habitat importance map	0.0000
Tussock Skink	*Pseudemoia pagenstecheri*	12993	Vulnerable	Dispersed	Habitat importance map	0.0000
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	12922	Critically endangered	Dispersed	Habitat importance map	0.0000
Elegant Parrot	*Neophema elegans*	10307	Vulnerable	Dispersed	Habitat importance map	0.0000
Salt Lawrencia	*Lawrencia spicata*	501888	Rare	Dispersed	Habitat importance map	0.0000
Showy Lobelia	*Lobelia beaugleholei*	502733	Rare	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	*Rostratula australis*	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Australian Little Bittern	*Ixobrychus dubius*	10195	Endangered	Dispersed	Habitat importance map	0.0000
Glossy Grass Skink	*Pseudemoia rawlinsoni*	12683	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

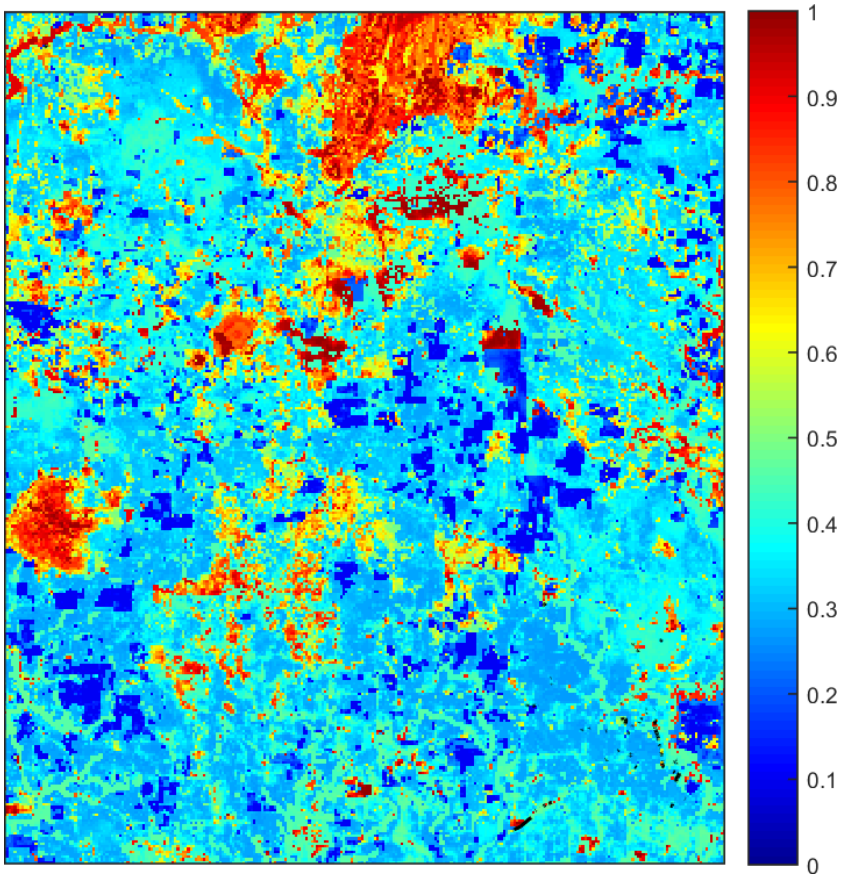
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

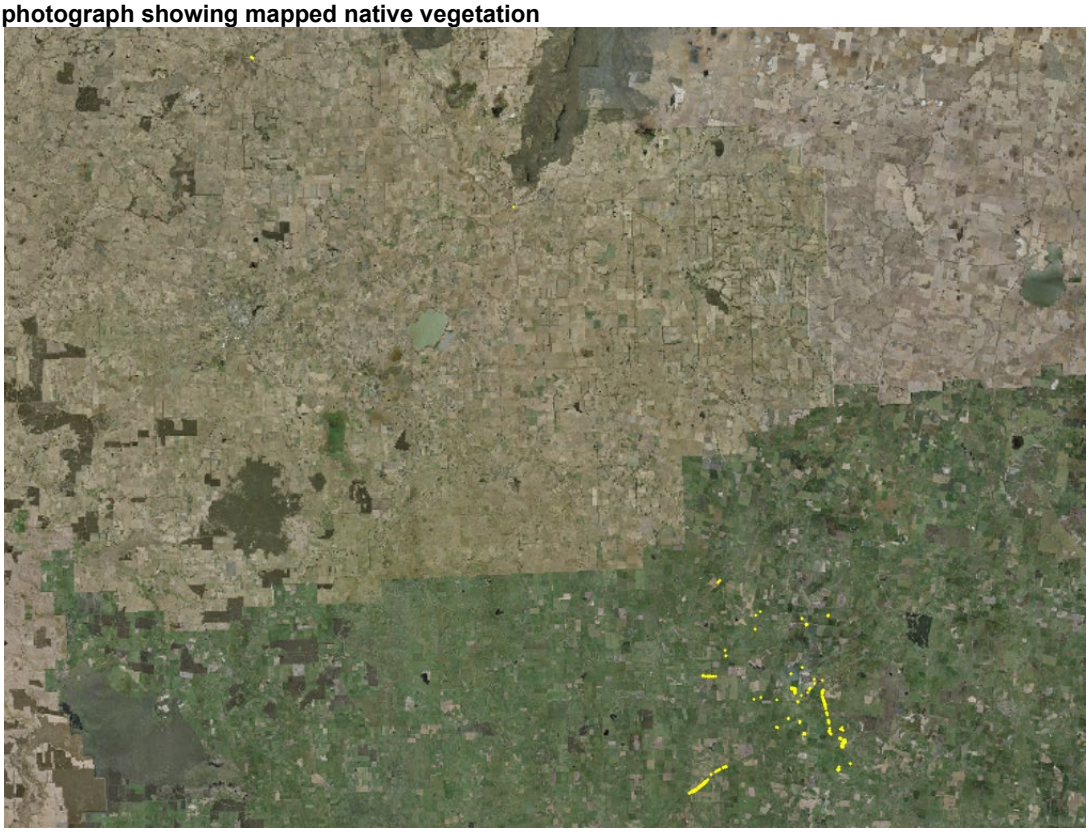
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

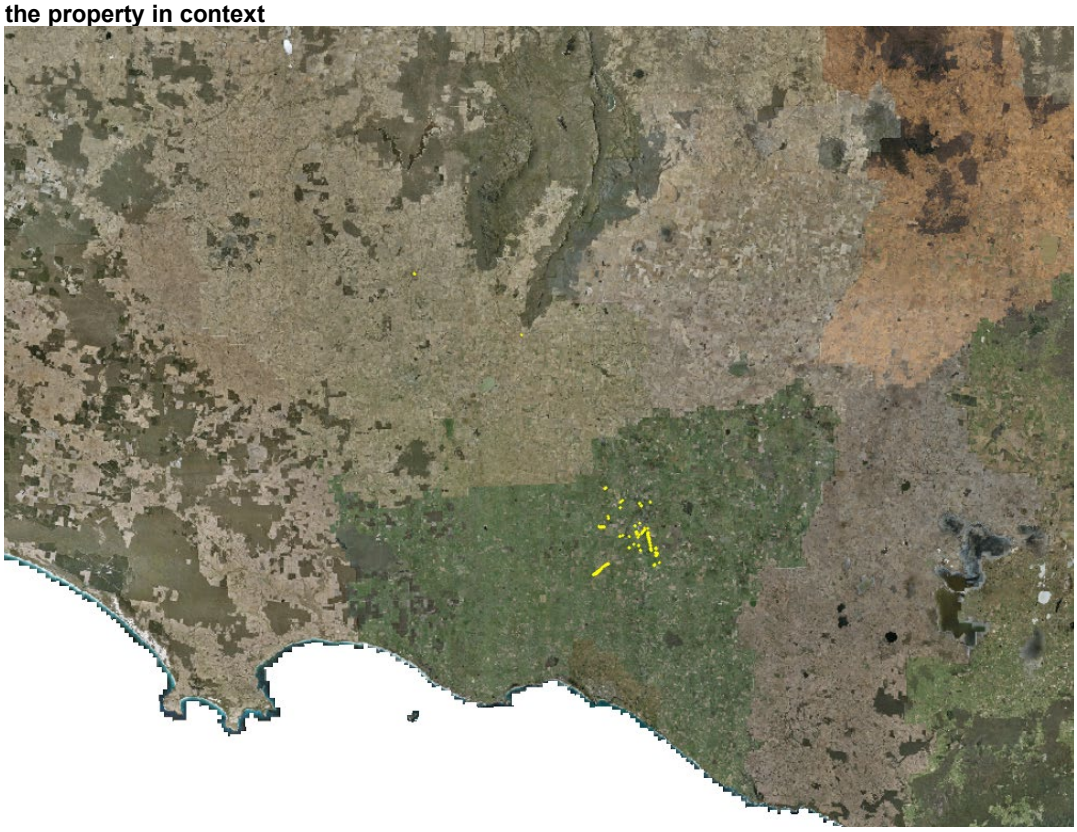
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Appendix 7: Evidence that native vegetation offsets are available

Report of available native vegetation credits

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

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

Date and time: 17/12/2025 05:09 **Report ID: 33399**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
2.918	0.349	8	CMA	Glenelg Hopkins
			or LGA	Moyne Shire
			or LGA	Southern Grampians Shire

Details of available native vegetation credits on 17 December 2025 05:09

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3727_01	12.307	24	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3763_01	3.246	266	Glenelg Hopkins	Glenelg Shire	Yes	Yes	No	VegLink
VC_CFL-3814_01	11.889	517	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	VegLink
VC_TFN-C2046_01	6.663	1441	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Ecocentric, Ethos, VegLink

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

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

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

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

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

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

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

Next steps

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

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

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
	Fully traded			
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
IDES	ID Ecological Management	(03) 9437 0555		www.idecological.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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

Disclaimer
This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that the credits shown will be available in the Native Vegetation Credit Register either now or at a later time when a purchase of native vegetation credits is planned.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes

Report of available native vegetation credits

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

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

Date and time: 17/12/2025 05:11 **Report ID: 33401**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.101	0.417	5	CMA	Glenelg Hopkins
			or LGA	Moyne Shire
			or LGA	Southern Grampians Shire

Details of available native vegetation credits on 17 December 2025 05:11

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-2467	0.236	11	Glenelg Hopkins	Glenelg Shire	No	Yes	No	Contact NVOR
BBA-3027	1.231	267	Glenelg Hopkins	Pyrenees Shire	Yes	Yes	No	VegLink
TFN-C0543	0.325	7	Glenelg Hopkins	Southern Grampians Shire	No	Yes	No	Bio Offsets
VC_CFL-3693_01	2.179	600	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3727_01	12.307	24	Glenelg Hopkins	Ararat Rural City	Yes	Yes	No	VegLink
VC_CFL-3763_01	3.246	266	Glenelg Hopkins	Glenelg Shire	Yes	Yes	No	VegLink
VC_CFL-3814_01	11.889	517	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	VegLink
VC_TFN-C2046_01	6.663	1441	Glenelg Hopkins	Southern Grampians Shire	Yes	Yes	No	Ecocentric, Ethos, VegLink

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

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

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

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

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

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

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

Next steps

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

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

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
	Fully traded			
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
IDES	ID Ecological Management	(03) 9437 0555		www.idecological.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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

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This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that the credits shown will be available in the Native Vegetation Credit Register either now or at a later time when a purchase of native vegetation credits is planned.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes

Appendix 8: Terrestrial vertebrate fauna species recorded or likely to occur on the Hexham Wind Farm site.

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Birds					
Australasian Grebe	*Tachybaptus novaehollandiae*				X
Australasian Pipit	*Anthus novaeseelandiae*				X
Australasian Shoveler	*Spatula rhynchotis*			VU	X
Australian Bustard	*Ardeotis australis*			CR	
Australian Hobby	*Falco longipennis*				X
Australian Magpie	*Cracticus tibicen*				X
Australian Pelican	*Pelecanus conspicillatus*				X
Australian Raven	*Corvus coronoides*				X
Australian Reed-Warbler	*Acrocephalus australis*				X
Australian Shelduck	*Tadorna tadornoides*				X
Australian Spotted Crake	*Porzana fluminea*				
Australian White Ibis	*Threskiornis molucca*				X
Australian Wood Duck	*Chenonetta jubata*				X
Banded Lapwing	*Vanellus tricolor*				X
Banded Stilt	*Cladorhynchus leucocephalus*				
Barn Owl	*Tyto alba*				
Black Falcon	*Falco subniger*			CR	X
Black Kite	*Milvus migrans*				X
Black Swan	*Cygnus atratus*				X
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*				X
Black-fronted Dotterel	*Elseyornis melanops*				X
Black-shouldered Kite	*Elanus axillaris*				X
Black-tailed Native-hen	*Tribonyx ventralis*				
Blue-billed Duck	*Oxyura australis*			VU	X
Blue-winged Parrot	*Neophema chrysostoma*	EN			X
Brolga	*Antigone rubicunda*			EN	X
Brown Falcon	*Falco berigora*				X

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Brown Goshawk	*Accipiter fasciatus*				X
Brown Songlark	*Cincloramphus cruralis*				X
Brown Thornbill	*Acanthiza pusilla*				X
Brown-headed Honeyeater	*Melithreptus brevirostris*				X
Buff-rumped Thornbill	*Acanthiza reguloides*				X
Chestnut Teal	*Anas castanea*				X
Collared Sparrowhawk	*Accipiter cirrhocephalus*				X
Common Blackbird	*Turdus merula*				X
Common Bronzewing	*Phaps chalcoptera*				
Common Greenshank	*Tringa nebularia*		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	EN	X
Common Starling	*Sturnus vulgaris*				X
Crested Pigeon	*Ocyphaps lophotes*				X
Crimson Rosella	*Platycercus elegans*				X
Curlew Sandpiper	*Calidris ferruginea*	CR	M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)	CR	
Double-banded Plover	*Charadrius bicinctus*		M (Bonn A2H)		X
Dusky Moorhen	*Gallinula tenebrosa*				X
Dusky Woodswallow	*Artamus cyanopterus*				
Eastern Cattle Egret	*Bubulcus coromandus*				
Eastern Rosella	*Platycercus eximius*				X
Eastern Spinebill	*Acanthorhynchus tenuirostris*				X
Eastern Yellow Robin	*Eopsaltria australis*				
Emu	*Dromaius novaehollandiae*				X
Eurasian Coot	*Fulica atra*				X
European Goldfinch	*Carduelis carduelis*				X

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
European Greenfinch	*Chloris chloris*				
European Skylark	*Alauda arvensis*				X
Fairy Martin	*Petrochelidon ariel*				X
Flame Robin	*Petroica phoenicea*				X
Forest Raven	*Corvus tasmanicus*				X
Fork-tailed Swift	*Apus pacificus*		M (CAMBA, ROKAMBA, JAMBA)		
Galah	*Eolophus roseicapilla*				X
Gang-gang Cockatoo	*Callocephalon fimbriatum*	EN			
Golden Whistler	*Pachycephala pectoralis*				X
Golden-headed Cisticola	*Cisticola exilis*				X
Great Cormorant	*Phalacrocorax carbo*				
Great Crested Grebe	*Podiceps cristatus*				X
Great Egret	*Ardea alba*			VU	X
Grey Butcherbird	*Cracticus torquatus*				X
Grey Currawong	*Strepera versicolor*				X
Grey Fantail	*Rhipidura albiscapa*				X
Grey Shrike-thrush	*Colluricincla harmonica*				X
Grey Teal	*Anas gracilis*				X
Hardhead	*Aythya australis*				X
Hoary-headed Grebe	*Poliocephalus poliocephalus*				X
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*				
Horsfield's Bushlark	*Mirafra javanica*				
House Sparrow	*Passer domesticus*				X
Jacky Winter	*Microeca fascinans*				
Latham's Snipe	*Gallinago hardwickii*		M (Bonn A2H, ROKAMBA, JAMBA)		X

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Laughing Kookaburra	*Dacelo novaeguineae*				X
Lewin's Honeyeater	*Meliphaga lewinii*				
Lewin's Rail	*Lewinia pectoralis*			VU	X
Little Black Cormorant	*Phalacrocorax sulcirostris*				X
Little Corella	*Cacatua sanguinea*				X
Little Eagle	*Hieraaetus morphnoides*			VU	X
Little Egret	*Egretta garzetta*			EN	X
Little Grassbird	*Poodytes gramineus*				X
Little Lorikeet	*Glossopsitta pusilla*				X
Little Pied Cormorant	*Microcarbo melanoleucos*				X
Little Raven	*Corvus mellori*				X
Little Stint	*Calidris minuta*				
Little Wattlebird	*Anthochaera chrysoptera*				
Long-billed Corella	*Cacatua tenuirostris*				X
Magpie Goose	*Anseranas semipalmata*			VU	
Magpie-lark	*Grallina cyanoleuca*				X
Masked Lapwing	*Vanellus miles*				X
Masked Woodswallow	*Artamus personatus*				X
Musk Duck	*Biziura lobata*			VU	X
Musk Lorikeet	*Glossopsitta concinna*				X
Nankeen Kestrel	*Falco cenchroides*				X
Nankeen Night Heron	*Nycticorax caledonicus*				
New Holland Honeyeater	*Phylidonyris novaehollandiae*				X
Noisy Miner	*Manorina melanocephala*				X
Pacific Black Duck	*Anas superciliosa*				X
Painted Honeyeater	*Grantiella picta*	VU		VU	
Peregrine Falcon	*Falco peregrinus*				
Pied Cormorant	*Phalacrocorax varius*				
Pied Stilt	*Himantopus leucocephalus*				

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Pink-eared Duck	*Malacorhynchus membranaceus*				X
Plumed Whistling-Duck	*Dendrocygna eytoni*				
Purple (Australasian) Swamphen	*Porphyrio porphyrio*				X
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*				X
Rainbow Lorikeet	*Trichoglossus haematodus*				X
Red Wattlebird	*Anthochaera carunculata*				X
Red-browed Finch	*Neochmia temporalis*				X
Red-capped Plover	*Charadrius ruficapillus*				X
Red-kneed Dotterel	*Erythrogonys cinctus*				X
Red-necked Avocet	*Recurvirostra novaehollandiae*				
Red-necked Stint	*Calidris ruficollis*		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)		X
Red-rumped Parrot	*Psephotus haematonotus*				X
Restless Flycatcher	*Myiagra inquieta*				X
Rock Dove	*Columba livia*				
Royal Spoonbill	*Platalea regia*				
Rufous Songlark	*Cincloramphus mathewsi*				X
Rufous Whistler	*Pachycephala rufiventris*				X
Sacred Kingfisher	*Todiramphus sanctus*				
Scarlet Robin	*Petroica boodang*				X
Sharp-tailed Sandpiper	*Calidris acuminata*		M (Bonn A2H, ROKAMBA, JAMBA, CAMBA)		X
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*				X
Silver Gull	*Chroicocephalus novaehollandiae*				X
Silvereye	*Zosterops lateralis*				X
Southern Boobook	*Ninox boobook*				

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Spotted Dove	*Spilopelia chinensis*				X
Spotted Harrier	*Circus assimilis*				
Spotted Pardalote	*Pardalotus punctatus punctatus*				X
Straw-necked Ibis	*Threskiornis spinicollis*				X
Striated Pardalote	*Pardalotus striatus*				X
Striated Thornbill	*Acanthiza lineata*				X
Stubble Quail	*Coturnix pectoralis*				X
Sulphur-crested Cockatoo	*Cacatua galerita*				X
Superb Fairy-wren	*Malurus cyaneus*				X
Swamp Harrier	*Circus approximans*				X
Tree Martin	*Petrochelidon nigricans*				X
Varied Sittella	*Daphoenositta chrysoptera*				
Weebill	*Smicrornis brevirostris*				X
Wedge-tailed Eagle	*Aquila audax*				X
Welcome Swallow	*Hirundo neoxena*				X
Whiskered Tern	*Chlidonias hybridus*				X
Whistling Kite	*Haliastur sphenurus*				X
White-backed Swallow	*Cheramoeca leucosternus*				
White-browed Scrubwren	*Sericornis frontalis*				X
White-browed Woodswallow	*Artamus superciliosus*				X
White-faced Heron	*Egretta novaehollandiae*				X
White-fronted Chat	*Epthianura albifrons*				X
White-naped Honeyeater	*Melithreptus lunatus*				X
White-necked Heron	*Ardea pacifica*				X
White-plumed Honeyeater	*Ptilotula penicillatus*				X
White-throated Needletail	*Hirundapus caudacutus*		M (CAMBA, ROKAMBA, JAMBA)	VU	
White-winged Chough	*Corcorax melanorhamphos*				X

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
White-winged Triller	*Lalage sueurii*				
Willie Wagtail	*Rhipidura leucophrys*				X
Yellow Thornbill	*Acanthiza nana*				X
Yellow-billed Spoonbill	*Platalea flavipes*				
Yellow-faced Honeyeater	*Caligavis chrysops*				X
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*				X
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*				X
Mammals					
Bare-nosed Wombat	*Vombatus ursinus*				
Black-tailed Wallaby	*Wallabia bicolor*				
Brown Rat	*Rattus norvegicus*				
Southern Bent-wing Bat	*Miniopterus schreibersii bassanii*	CR		CR	
Common Brush-tailed Possum	*Trichosurus vulpecula*				
Eastern Grey Kangaroo	*Macropus giganteus*				
Eastern Ring-tailed Possum	*Pseudocheirus peregrinus*				
European Brown Hare	*Lepus europeaus*				
Fat-tailed Dunnart	*Sminthopsis crassicaudata*				
Grey-headed Flying-fox	*Pteropus poliocephalus*	VU		VU	X
House Mouse	*Mus musculus*				
Koala	*Phascolarctos cinereus*				
Large Forest Bat	*Vespadelus darlingtoni*				
Lesser Long-eared Bat	*Nyctophilus geoffroyi*				
Platypus	*Omithorhynchus anatinus*			VU	X
Red Fox	*Vulpes vulpes*				
Red-necked Wallaby	*Notamacropus rufogriseus banksianus*				
Short-beaked Echidna	*Tachyglossus aculeatus*				
Southern Forest Bat	*Vespadelus regulus*				
Yellow-bellied Sheath-tail Bat	*Saccolaimus flaviventris*			VU	
Reptiles					

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*				
Eastern Brown Snake	*Pseudonaja textilis*				
Eastern Snake-necked Turtle	*Chelodina longicollis*				X
Eastern Three-lined Skink	*Acritoscincus duperreyi*				
Little Whip Snake	*Parasuta flagellum*				
Lowland Copperhead	*Austrelaps superbus*				
Southern Grass Skink	*Pseudemoia entrecasteauxii*				
Striped Legless Lizard	*Delma impar*	VU		EN	
Tussock Skink	*Pseudemoia pagenstecheri*			EN	
White's Skink	*Liopholis whitii GROUP*				
Reptiles					
Brown Toadlet	*Pseudophryne bibronii*			EN	
Common Froglet	*Crinia signifera*				
Growling Grass Frog	*Litoria raniformis*	VU		VU	X
Southern Brown Tree Frog	*Litoria ewingii*				
Southern Bullfrog (ssp. unknown)	*Limnodynastes dumerilii*				
Southern Toadlet	*Pseudophryne semimarmorata*			EN	
Spotted Marsh Frog	*Limnodynastes tasmaniensis*				
Striped Marsh Frog	*Limnodynastes peronii*				
Fish					
Australian Grayling	*Prototroctes maraena*	VU		EN	
Australian Smelt	*Retropinna semoni*				X
Brown Trout	*Salmo trutta*				
Carp Gudgeon	*Hypseleotris spp.*				X
Common Galaxias	*Galaxias maculatus*				X
Congolli	*Pseudaphritis urvillii*				
Dwarf Galaxis	*Galaxiella pusilla*	VU		EN	
Eastern Gambusia	*Gambusia holbrooki*				X
Flathead Gudgeon	*Philypnodon grandiceps*				X

Common name	Scientific name	EPBC-T	EPBC-M	FFG	Recorded
Goldfish	*Carassius auratus*				
Little Galaxias	*Galaxiella toourtkoourt*			EN	
Macquarie Perch	*Macquaria australasica*	EN		EN	
Murray Cod	*Maccullochella peelii*	VU		EN	
Obscure Galaxias	*Galaxias oliros*				
Rainbow Trout	*Oncorhynchus mykiss*				
Redfin	*Perca fluviatilis*				X
River Blackfish	*Gadopsis marmoratus*				
Southern Pygmy Perch	*Nannoperca australis*				X
Southern Shortfin Eel	*Anguilla australis*				X
Tench	*Tinca tinca*				X
Yarra Pygmy Perch	*Nannoperca obscura*	VU		VU	
Mussels, decopod crustacea					
Hairy Burrowing Crayfish	*Engaeus sericatus*			VU	
Freshwater Crab	*Hymenostomatidae spp.*				X
Yabby	*Charax destructor*				X
Freshwater Shrimp	*Paratya australiensis*				X

Notes:
EPBC-T = threatened species status under EPBC Act; **EPBC-M** = migratory status under the EPBC Act; M = listed migratory taxa; Bonn Convention (A2H) - Convention on the Conservation of Migratory Species of Wild Animals – listed as a member of a family; Bonn Convention (A2S) - Convention on the Conservation of Migratory Species of Wild Animals - species listed explicitly; CAMBA - China- Australia Migratory Birds Agreement; JAMBA - Japan-Australia Migratory Birds Agreement; ROKAMBA - Republic of Korea Australia Migratory Birds Agreement; **FFG** = threatened species status under the FFG Act: listed as threatened under the FFG Act; **EX** = presumed extinct in the wild; CE = Critically Endangered; EN = Endangered; VU = Vulnerable

Appendix 9: Number and height distribution of bird recorded during the formal count of the 2018 to 2025 BUS surveys

Notes: A = Below RSA height (<40 m); B = At RSA height (40–260 m); C (>260 m). Height category "C" is not shown when no birds were recorded above RSA height.

BUS Spring 2018

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian Magpie	26		34		19	4	25		41		26		35		21		227	4	231
Australasian Pipit			6		6								2		6		20	0	20
Australian Reed-Warbler	18																18	0	18
Australian Shelduck	2																2	0	2
Australian Wood Duck							6										6	0	6
Black Swan								2									0	2	2
Black-faced Cuckoo-shrike									1		1						2	0	2
Brolga									2								2	0	2
Brown Falcon							1		6	1			1				8	1	9
Brown Songlark	2		11		1				2				6		12	2	34	2	36
Brown Thornbill													10				10	0	10
Common Starling	6				68		20		9		36		36				175	0	175
Crested Pigeon	6		2				6		12		4						30	0	30
Crimson Rosella													3				3	0	3
Eurasian Skylark	14	1	22		20	1	12		24	2	10		20	2	26	6	148	12	160
European Goldfinch							6		6		18		14		11		55	0	55
Fairy Martin							37	20			2						39	20	59
Galah		2	2		5	4			4	2	20		8		4		43	8	51
Golden-headed Cisticola					3						1						4	0	4
Great Egret													1				1	0	1
Grey Fantail													2				2	0	2
Grey Shrike-thrush	4				2				3		4		1				14	0	14
Grey Teal							6						4				10	0	10

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
House Sparrow					54				10								64	0	64
Little Black Cormorant							4										4	0	4
Little Eagle								1									0	1	1
Little Grassbird	6																6	0	6
Little-pied Cormorant		1															0	1	1
Long-billed Corella					12			27		5	9	13	4				25	45	70
Magpie-lark			8		4				16		10		2		6		46	0	46
Masked Lapwing													4				4	0	4
Nankeen Kestrel	1	1															1	1	2
Noisy Miner			16								3				2		21	0	21
Pacific Black Duck	1						7								4		12	0	12
Raven sp.	23	5	16		25		45	2	25	2	20		23	3	21		198	12	210
Red Wattlebird	12				10		12						4		7		45	0	45
Red-rumped Parrot					6		2				2	3	9				19	3	22
Restless Flycatcher											11						11	0	11
Rufous Songlark	4						3										7	0	7
Rufous Whistler													7				7	0	7
Shining Bronze-Cuckoo													1				1	0	1
Silver Gull							2										2	0	2
Silvereye													4				4	0	4
Striated Pardalote							2				2		4				8	0	8
Sulphur-crested Cockatoo							4		6	16	2	3	6				18	19	37
Superb Fairywren	19								8				22				49	0	49
Wedge-tailed eagle											2						2	0	2
Welcome Swallow		2	2		10	2	9								2		23	4	27
Whistling Kite							1							3			1	3	4

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
White-browed Woodswallow			30				30										60	0	60
White-faced Heron	2				2		1		1				3				9	0	9
White-fronted Chat													11				11	0	11
White-necked Heron													2				2	0	2
White-plumed Honeyeater	2				12				38		12						64	0	64
Willie Wagtail	14		1		11		3		12		15		3		9		68	0	68
Yellow-faced Honeyeater													14				14	0	14
Yellow-rumped Thornbill													15				15	0	15
Yellow-tailed Black Cockatoo	2																2	0	2
Grand Total	166	12	150		271	11	244	52	227	28	210	19	281	8	131	8	1680	138	1818

BUS Summer 2019

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australasian Pipit	2		2												2		6	0	6
Australian Magpie	33		26		30		36		29		31	8	36		27		248	8	256
Australian Shelduck							43										43	0	43
Australian White Ibis																13	0	13	13
Australian Wood Duck					20		125										145	0	145
Banded Lapwing													2		14		16	0	16
Black-shouldered Kite					1		3										4	0	4
Brown Falcon							1		2			1	1		2		6	1	7
Brown Goshawk		2															0	2	2
Brown Thornbill	6								4		4		6				20	0	20
Common Starling			74		212								5		50		341	0	341
Crested Pigeon	4		4		2		7		5				8				30	0	30
Eurasian Skylark															2		2	0	2

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
European Goldfinch	5				3		33										41	0	41
Fairy Martin	19																19	0	19
Galah							2				10						12	0	12
Grey Shrike-thrush	2								5								7	0	6
Grey Teal							8										8	0	8
House Sparrow	3																3	0	3
Little Pied Cormorant					2		3										5	0	5
Long-billed Corella					15	2			4			6				4	19	12	31
Lorikeet sp.	259	20	304														563	20	583
Magpie-lark	8		8		17		4		16		2		6		2		63	0	63
Nankeen Kestrel					3					2			1				4	2	6
New Holland Honeyeater	44																44	0	44
Noisy Miner			63		16						2				24		105	0	105
Pacific Black Duck					22												22	0	22
Raven	6	4	33	2	102	32	26	6	37		8		20		39		271	44	315
Red Wattlebird	28		4		46		1		6		60				4		149	0	149
Red-rumped Parrot	34		121		16						7				72		250	0	250
Restless Flycatcher	2																2	0	2
Straw-necked Ibis																6	0	6	6
Striated Thornbill											6						6	0	6
Sulphur-crested Cockatoo					16		4	4	4		3						27	4	31
Superb Fairywren	22						26		15				16				79	0	79
Wedge-tailed Eagle									1	1							1	1	2
Welcome Swallow	18	2	6		4	2		2	11								39	6	45
Whistling Kite	1	1								1						1	1	3	4
White-faced Heron							4		2	2							6	2	8
White-necked Heron					1	1	7										8	1	9

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
White-plumed Honeyeater	38		2		34				16		4						94	0	94
Willie Wagtail	9		4		12		7		3		3		5		1		44	0	44
Yellow-rumped Thornbill							8						25				33	0	33
Grand Total	543	29	651	2	574	37	348	12	160	6	140	15	131		239	24	2786	125	2911

BUS Winter 2024

Species	B1		B2		B3			B4		B5		B6		B7		B8		All points			
	A	B	A	B	A	B	C	A	B	A	B	A	B	A	B	A	B	A	B	C	G. Total
Australian Magpie	12		20		20		4	8		26		17		53		32		188	0	4	192
Australian Pipit	1		6		2	1		4		4						1		18	1	0	19
Australian Shelduck										2		2		3	2	2		9	2	0	11
Black-shouldered Kite			1															1	0	0	1
Brolga								2										2	0	0	2
Brown Falcon					3			1						2		2		8	0	0	8
Brown Thornbill	3				2							5		5				15	0	0	15
Collared Sparrowhawk	1																	1	0	0	1
Common Starling					4			41	5	3		25						73	5	0	78
Crimson Rosella	4									2		3		6				15	0	0	15
Eastern Rosella												2						2	0	0	2
Emu												5						5	0	0	5
Eurasian Coot	10																	10	0	0	10
Eurasian Skylark	2	26	10	61	3	19		3	67	6	48	2	26	2	29		59	28	335	0	363
European Goldfinch	1				5					2		8		5				21	0	0	21
Fairy Martin			1													1		2	0	0	2

Species	B1		B2		B3			B4		B5		B6		B7		B8		All points			
	A	B	A	B	A	B	C	A	B	A	B	A	B	A	B	A	B	A	B	C	G. Total
Forest Raven	5		20		10			3		4		7		2		1		52	0	0	52
Galah	4							5		13		12		4				38	0	0	38
Golden Whistler												1						1	0	0	1
Golden-headed Cisticola										2								2	0	0	2
Grey Fantail												2						2	0	0	2
Grey Shrike-thrush	1		2		8					5		3						19	0	0	19
Little Black Cormorant												1						1	0	0	1
Little Grassbird			1															1	0	0	1
Little Raven	16		6		78	1				3	2	6		16		16		141	3	0	144
Long-billed Corella	2	2				8		21	100	3	2	8						34	112	0	146
Magpie-lark	4		3		7							7		2		3		26	0	0	26
Masked Lapwing	3												2					3	2	0	5
Nankeen Kestrel					1											1		2	0	0	2
New Holland Honeyeater	14				3													17	0	0	17
Noisy Miner	4											1				18		23	0	0	23
Pacific Black Duck					2											2		4	0	0	4
Purple Swamphen			1															1	0	0	1
Purple-crowned Lorikeet	1				4	1										3		8	1	0	9
Rainbow Lorikeet	2											2						4	0	0	4
Raven sp.	16		63		9	3		1		11		7		27	12	14	2	148	17	0	165
Red Wattlebird	44		1		4											3		52	0	0	52
Red-browed Finch			3															3	0	0	3
Red-rumped Parrot										2		10						12	0	0	12

Species	B1		B2		B3			B4		B5		B6		B7		B8		All points			
	A	B	A	B	A	B	C	A	B	A	B	A	B	A	B	A	B	A	B	C	G. Total
Silvereye														6				6	0	0	6
Straw-necked Ibis		115				85												0	200	0	200
Striated Pardalote					2							4						6	0	0	6
Striated Thornbill												2						2	0	0	2
Sulphur-crested Cockatoo								2		2		28		8				40	0	0	40
Superb Fairy-wren	17		15					2		7		11		10				62	0	0	62
Swamp Harrier	1	1							1	1								2	2	0	4
Wedge-tailed Eagle			1	1		1												1	2	0	3
Welcome Swallow	4		2		1	4						7		8				22	4	0	26
Whistling Kite													1					0	1	0	1
White-faced Heron														1				1	0	0	1
White-naped Honeyeater												1						1	0	0	1
White-plumed Honeyeater			1		4					6								11	0	0	11
White-winged Chough														7				7	0	0	7
Willie Wagtail			1							1		5		4				11	0	0	11
Yellow Thornbill												2						2	0	0	2
Yellow-faced Honeyeater								1		1						2		4	0	0	4
Yellow-rumped Thornbill					8							4						12	0	0	12
Yellow-tailed Black-cockatoo					7													7	0	0	7
Grand Total	172	144	158	62	187	123	4	94	173	106	52	200	29	171	43	101	61	1189	687	4	1880

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian Magpie	27		12	4	40		18	5	29	6	24		14	2	27		191	17	208
Australian Pipit			10		1		1		2						2		16	0	16
Australian Reed-Warbler			10														10	0	10
Black Swan	4																4	0	4
Black-faced Cuckoo-shrike											1						1	0	1
Brown Falcon			1	1			2	1	2		1		1			1	7	3	10
Brown Goshawk																	0	0	0
Brown Songlark			2				1						2		1		6	0	6
Brown Thornbill	3		1						4		2		6				16	0	16
Buff-rumped Thornbill			1														1	0	1
Cacatua sp.															1		1	0	1
Common Blackbird					1												1	0	1
Common Starling			2		2		7	12	13		17		1		2		44	12	56
Crested Pigeon					2								1				3	0	3
Duck sp.	6																6	0	6
Eastern Rosella											2						2	0	2
Eurasian Coot	14																14	0	14
Eurasian Skylark	16		20		13		27	2	11	1	3		10		20	2	120	5	125
European Goldfinch			1		1		5		4		13		6				30	0	30
Galah			1				5	4	5		12				3		26	4	30
Grey Butcherbird																	0	0	0
Grey Fantail							1										1	0	1

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Grey Shrike-thrush	4		1		2				2		7		1		2		19	0	19
Little Black Cormorant								7									0	7	7
Little Lorikeet											2						2	0	2
Little Raven	9	1	14		4		2		9		16		6		8		68	1	69
Long-billed Corella	2	5						4	2	9	6	5		2			10	25	35
Magpie-lark			2		3				2		1		6				14	0	14
Masked Lapwing	1																1	0	1
Masked Woodswallow							1										1	0	1
Nankeen Kestrel																	0	0	0
New Holland Honeyeater	6				2						1		1				10	0	10
Noisy Miner			1												12		13	0	13
Pacific Black Duck	4														2		6	0	6
Raptor sp.																	0	0	0
Raven sp.	12	7	4	7	6	12	3	9	4		12	6	5	7	7		53	48	101
Red Wattlebird	4		2		8		2		8		2		2		1		29	0	29
Red-browed Finch	1																1	0	1
Red-rumped Parrot			2								12		7				21	0	21
Silvereye									1		2		5				8	0	8
Spotted Pardalote													1				1	0	1
Straw-necked Ibis																	0	0	0
Striated Pardalote	1										2	2					3	2	5
Stubble Quail							2		3				1		1		7	0	7
Sulphur-crested Cockatoo									7	2	7		1				15	2	17

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Superb Fairy-wren	8		13		9		2		5		2		9				48	0	48
Tree Martin					2		2				2	4					6	4	10
Wedge-tailed Eagle																	0	0	0
Welcome Swallow	7				2						1		3				13	0	13
Whistling Kite					1			1									1	1	2
White-faced Heron						1			1								1	1	2
White-necked Heron									0								0	0	0
White-plumed Honeyeater																	0	0	0
Willie Wagtail	1		2		1				2		3		7				16	0	16
Yellow-faced Honeyeater											3						3	0	3
Yellow-rumped Thornbill											2						2	0	2
Yellow-tailed Black-cockatoo	20				2												22	0	22
Grand Total	150	13	102	12	102	13	81	45	116	18	158	17	96	11	89	3	894	132	1026

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Australian Magpie	16		29		45	0	45	253
Australian Pipit	18		4		22	0	22	38
Australian Reed-Warbler					0	0	0	4
Black Swan					0	0	0	1
Black-faced Cuckoo-shrike					0	0	0	12
Brown Falcon	2				2	0	2	2
Brown Goshawk				2	0	2	2	8

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Brown Songlark	1		1		2	0	2	19
Brown Thornbill	2		1		3	0	3	1
Buff-rumped Thornbill					0	0	0	1
Cacatua sp.					0	0	0	1
Common Blackbird					0	0	0	115
Common Starling	35		24		59	0	59	3
Crested Pigeon					0	0	0	6
Duck sp.					0	0	0	4
Eastern Rosella	2				2	0	2	14
Eurasian Coot					0	0	0	165
Eurasian Skylark	16	6	15	3	31	9	40	45
European Goldfinch	15				15	0	15	31
Galah			1		1	0	1	2
Grey Butcherbird	2				2	0	2	1
Grey Fantail					0	0	0	21
Grey Shrike-thrush			2		2	0	2	7
Little Black Cormorant					0	0	0	2
Little Lorikeet					0	0	0	107
Little Raven	23	6	6	3	29	9	38	159
Long-billed Corella	39	85			39	85	124	18
Magpie-lark	2		2		4	0	4	1
Masked Lapwing					0	0	0	1
Masked Woodswallow					0	0	0	1
Nankeen Kestrel	1				1	0	1	10

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
New Holland Honeyeater					0	0	0	13
Noisy Miner					0	0	0	7
Pacific Black Duck	1				1	0	1	1
Raptor sp.		1			0	1	1	182
Raven sp.	53	5	23		76	5	81	34
Red Wattlebird	1		4		5	0	5	1
Red-browed Finch					0	0	0	21
Red-rumped Parrot					0	0	0	10
Silvereye					0	0	0	8
Spotted Pardalote					0	0	0	1
Straw-necked Ibis				3	0	3	3	3
Striated Pardalote					0	0	0	5
Stubble Quail			1		1	0	1	8
Sulphur-crested Cockatoo	4	1			4	1	5	22
Superb Fairy-wren	6		15		21	0	21	69
Tree Martin	44	32			44	32	76	86
Wedge-tailed Eagle		1			0	1	1	1
Welcome Swallow	5	1			5	1	6	19
Whistling Kite			1		1	0	1	3
White-faced Heron					0	0	0	2
White-necked Heron					0	0	0	0
White-plumed Honeyeater			3		3	0	3	3
Willie Wagtail					0	0	0	16
Yellow-faced Honeyeater					0	0	0	3

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Yellow-rumped Thornbill					0	0	0	2
Yellow-tailed Black-cockatoo					0	0	0	22
Grand Total	288	138	132	11	420	149	569	**1595**

BUS Summer 2025

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian Hobby				1													0	1	1
Australian Magpie	12		18		27		24		48		28		19	6	24		200	6	206
Australian Pelican								1									0	1	1
Australian Pipit			3										3				6	0	6
Australian Shelduck	5							11								2	5	13	18
Australian Wood Duck	15																15	0	15
Black Swan	1																1	0	1
Black-shouldered Kite	1		1														2	0	2
Brown Falcon	1		1	4			1	1	3	1	2		3		7		18	6	24
Brown Songlark															2		2	0	2
Brown Thornbill	4										2		6				12	0	12
Brown-headed Honeyeater					1												1	0	1
Chestnut Teal	1																1	0	1
Common Blackbird							1										1	0	1
Common Starling	10						25		6		16						57	0	57
Crested Pigeon	2				1		2				1		2				8	0	8

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Crimson Rosella																	0	0	0
Eastern Rosella																	0	0	0
Eastern Spinebill																	0	0	0
Emu							2										2	0	2
Eurasian Coot	38																38	0	38
European Goldfinch			27		2		2						20				51	0	51
Forest Raven			1		4				1		6		3		1		16	0	16
Galah	1				2		8		2		2	4					15	4	19
Golden-headed Cisticola			2														2	0	2
Grey Butcherbird											3						3	0	3
Grey Currawong			3		1												4	0	4
Grey Fantail					1		3				2						6	0	6
Grey Shrike-thrush	5		1		2		1		2		2				1		14	0	14
Little Raven	6	20	27	1	22	2	47	74	172	4	35	1	15	81	60	6	384	189	573
Long-billed Corella									2		1		2				5	0	5
Magpie-lark	4		5		8		11		3		1		4		6		42	0	42
Martin sp.		9									1						1	9	10
Masked Lapwing	4																4	0	4
Musk Lorikeet	2	8	24	14	9			18							4		39	40	79
Nankeen Kestrel			1		2								1	2			4	2	6
New Holland Honeyeater	12				3		1		2				2				20	0	20
Noisy Miner			1		1						1		1		11		15	0	15
Purple-crowned Lorikeet	8	7			1												9	7	16

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Raven sp.			8		2		8							4			18	4	22
Red Wattlebird	2		2		8		2		3		12		6				35	0	35
Red-rumped Parrot	38		1	4					5		21						65	4	69
Rufous Whistler																	0	0	0
Silvereye					1												1	0	1
Spotted Pardalote													1				1	0	1
Straw-necked Ibis								5									0	5	5
Striated Pardalote	4				1		2				1						8	0	8
Sulphur-crested Cockatoo							2		1		3	3					6	3	9
Superb Fairy-wren	20		23		1		16		10		16		21				107	0	107
Thornbill sp.											6						6	0	6
Wedge-tailed Eagle		3		3			1	6				8		3			1	23	24
Weebill									2								2	0	2
Welcome Swallow			2														2	0	2
Whistling Kite		1			1		10	10									11	11	22
White-faced Heron	1				4												5	0	5
White-fronted Chat			3														3	0	3
White-necked Heron																1	0	1	1
White-plumed Honeyeater			1						1								2	0	2
Willie Wagtail			2		1		6		3		3		7				22	0	22
Yellow-rumped Thornbill	2		4		16								11				33	0	33
Grand Total	199	48	161	27	122	2	175	126	266	5	165	16	127	96	116	9	1331	329	1660

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Australian Hobby					0	0	0	1
Australian Magpie	18		25		43	0	43	249
Australian Pelican					0	0	0	1
Australian Pipit					0	0	0	6
Australian Shelduck					0	0	0	18
Australian Wood Duck					0	0	0	15
Black Swan					0	0	0	1
Black-shouldered Kite					0	0	0	2
Brown Falcon	1		1		2	0	2	26
Brown Songlark					0	0	0	2
Brown Thornbill	5				5	0	5	17
Brown-headed Honeyeater					0	0	0	1
Chestnut Teal					0	0	0	1
Common Blackbird					0	0	0	1
Common Starling	216				216	0	216	273
Crested Pigeon	7		1		8	0	8	16
Crimson Rosella	2				2	0	2	2
Eastern Rosella	8		3		11	0	11	11
Eastern Spinebill			1		1	0	1	1
Emu					0	0	0	2
Eurasian Coot					0	0	0	38
European Goldfinch					0	0	0	51
Forest Raven	4				4	0	4	20

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Galah	2				2	0	2	21
Golden-headed Cisticola					0	0	0	2
Grey Butcherbird	5				5	0	5	8
Grey Currawong					0	0	0	4
Grey Fantail			1		1	0	1	7
Grey Shrike-thrush			1		1	0	1	15
Little Raven	8	7	17		25	7	32	605
Long-billed Corella	83				83	0	83	88
Magpie-lark	3		3		6	0	6	48
Martin sp.					0	0	0	10
Masked Lapwing					0	0	0	4
Musk Lorikeet			20		20	0	20	99
Nankeen Kestrel	1				1	0	1	7
New Holland Honeyeater			18		18	0	18	38
Noisy Miner	3		11		14	0	14	29
Purple-crowned Lorikeet			25		25	0	25	41
Raven sp.	1				1	0	1	23
Red Wattlebird	2		14		16	0	16	51
Red-rumped Parrot					0	0	0	69
Rufous Whistler			2		2	0	2	2
Silvereye					0	0	0	1
Spotted Pardalote					0	0	0	1
Straw-necked Ibis					0	0	0	5

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Striated Pardalote			2		2	0	2	10
Sulphur-crested Cockatoo	76				76	0	76	85
Superb Fairy-wren	1		24		25	0	25	132
Thornbill sp.					0	0	0	6
Wedge-tailed Eagle	2	7		2	2	9	11	35
Weebill					0	0	0	2
Welcome Swallow					0	0	0	2
Whistling Kite		1			0	1	1	23
White-faced Heron					0	0	0	5
White-fronted Chat					0	0	0	3
White-necked Heron					0	0	0	1
White-plumed Honeyeater			9		9	0	9	11
Willie Wagtail			4		4	0	4	26
Yellow-rumped Thornbill	6		20		26	0	26	59
Grand Total	454	15	202	2	656	17	673	**2333**

BUS Autumn 2025

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian Magpie	31		43		45		56		38		31		49		40		333	0	333
Australian Pelican	2																2	0	2
Australian Pipit																	0	0	0
Australian Shelduck	60						35			2							95	2	97

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian White Ibis	1																1	0	1
Australian Wood Duck	8																8	0	8
Black Swan	9																9	0	9
Black-faced Cuckoo-shrike											1						1	0	1
Black-fronted Dotterel	7																7	0	7
Black-shouldered Kite			2		1												3	0	3
Brown Falcon	2				3		3	1			1						9	1	10
Brown Thornbill	3				7				4		4		5				23	0	23
Common Starling	2				1		403		2		21				50		479	0	479
Crested Pigeon	9																9	0	9
Crimson Rosella	7										42						49	0	49
Dusky Moorhen	1																1	0	1
Eastern Rosella																	0	0	0
Eurasian Coot	22																22	0	22
Eurasian Skylark	6		14		1		10		10			2	3		4		48	2	50
European Goldfinch			12										68				80	0	80
Forest Raven	2				1						2		1				6	0	6
Galah							4		2		7		7				20	0	20
Golden Whistler																	0	0	0
Golden-headed Cisticola			3						3								6	0	6
Great Crested Grebe	4																4	0	4
Great Egret	1																1	0	1
Grey Butcherbird																	0	0	0

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Grey Fantail			2		1				2								5	0	5
Grey Shrike-thrush	2				6		2		1		6						17	0	17
Grey Teal	47																47	0	47
Hoary-headed Grebe	11																11	0	11
Little Black Cormorant	4																4	0	4
Little Eagle																	0	0	0
Little Pied Cormorant	3																3	0	3
Little Raven	23		12		91		33		118	9	60		22		25		384	9	393
Long-billed Corella	2												2				4	0	4
Magpie-lark	6		1		7		5		4				5		9		37	0	37
Masked Lapwing	6																6	0	6
Musk Duck	20																20	0	20
Musk Lorikeet	8				6										30	2	44	2	46
Nankeen Kestrel					1		1	1			4						6	1	7
New Holland Honeyeater	48				2												50	0	50
Noisy Miner	7								1						11		19	0	19
Pacific Black Duck	32																32	0	32
Pink-eared Duck	13																13	0	13
Purple-crowned Lorikeet	14	16			1			7			2				5		22	23	45
Rainbow Lorikeet	5																5	0	5
Raven sp.					2		4		3				3				12	0	12
Red Wattlebird	30		4		9		1		3		4		5				56	0	56
Red-kneed Dotterel	1																1	0	1

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Red-rumped Parrot	19				4				4		6		6				39	0	39
Spotted Dove					1												1	0	1
Straw-necked Ibis	25																25	0	25
Sulphur-crested Cockatoo							8				14						22	0	22
Superb Fairy-wren	32		6				1		5		1		12				57	0	57
Wedge-tailed Eagle		1			2			2				2		4			2	9	11
Weebill					3								3				6	0	6
Welcome Swallow	16				6						9		7		4		42	0	42
Whistling Kite	1						2								1		4	0	4
White-faced Heron					3												3	0	3
White-plumed Honeyeater	5		2														7	0	7
Willie Wagtail	5				4	1	1		1		5		9				25	1	26
Yellow-faced Honeyeater	2		6		2				34		52		5				101	0	101
Yellow-rumped Thornbill					20				1		22		10				53	0	53
Yellow-tailed Black-cockatoo					1												1	0	1
Grand Total	564	17	107		231	1	569	11	236	11	294	4	222	4	179	2	2402	50	2452

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Australian Magpie	35		36		71	0	71	404
Australian Pelican					0	0	0	2
Australian Pipit			8		8	0	8	8
Australian Shelduck					0	0	0	97

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Australian White Ibis					0	0	0	1
Australian Wood Duck					0	0	0	8
Black Swan					0	0	0	9
Black-faced Cuckoo-shrike					0	0	0	1
Black-fronted Dotterel					0	0	0	7
Black-shouldered Kite					0	0	0	3
Brown Falcon					0	0	0	10
Brown Thornbill			8		8	0	8	31
Common Starling	12				12	0	12	491
Crested Pigeon	5				5	0	5	14
Crimson Rosella	4		9		13	0	13	62
Dusky Moorhen					0	0	0	1
Eastern Rosella	4				4	0	4	4
Eurasian Coot					0	0	0	22
Eurasian Skylark	5		7		12	0	12	62
European Goldfinch					0	0	0	80
Forest Raven			1		1	0	1	7
Galah			3		3	0	3	23
Golden Whistler			1		1	0	1	1
Golden-headed Cisticola					0	0	0	6
Great Crested Grebe					0	0	0	4
Great Egret					0	0	0	1
Grey Butcherbird	3				3	0	3	3

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Grey Fantail			1		1	0	1	6
Grey Shrike-thrush			3		3	0	3	20
Grey Teal					0	0	0	47
Hoary-headed Grebe					0	0	0	11
Little Black Cormorant					0	0	0	4
Little Eagle		1			0	1	1	1
Little Pied Cormorant					0	0	0	3
Little Raven	8	1	16		24	1	25	418
Long-billed Corella	284				284	0	284	288
Magpie-lark	6		1		7	0	7	44
Masked Lapwing					0	0	0	6
Musk Duck					0	0	0	20
Musk Lorikeet	5		8		13	0	13	59
Nankeen Kestrel					0	0	0	7
New Holland Honeyeater			1		1	0	1	51
Noisy Miner	1		2		3	0	3	22
Pacific Black Duck					0	0	0	32
Pink-eared Duck					0	0	0	13
Purple-crowned Lorikeet	2		1		3	0	3	48
Rainbow Lorikeet			2		2	0	2	7
Raven sp.					0	0	0	12
Red Wattlebird	20		5		25	0	25	81
Red-kneed Dotterel					0	0	0	1

Species	R1		R2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Red-rumped Parrot	7		8		15	0	15	54
Spotted Dove					0	0	0	1
Straw-necked Ibis					0	0	0	25
Sulphur-crested Cockatoo	102				102	0	102	124
Superb Fairy-wren	2		31		33	0	33	90
Wedge-tailed Eagle	2	5			2	5	7	18
Weebill					0	0	0	6
Welcome Swallow			3		3	0	3	45
Whistling Kite					0	0	0	4
White-faced Heron					0	0	0	3
White-plumed Honeyeater			4		4	0	4	11
Willie Wagtail			8		8	0	8	34
Yellow-faced Honeyeater			6		6	0	6	107
Yellow-rumped Thornbill			5		5	0	5	58
Yellow-tailed Black-cockatoo					0	0	0	1
Grand Total	507	7	178	0	685	7	692	**3144**

BUS Winter 2025

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australasian Grebe	1																1	0	1
Australian Hobby	1																1	0	1
Australian Magpie	69		57		49		32	13	75		64		38	6	56	4	440	23	463

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Australian Pipit			5				3		1						4		13	0	13
Australian Shelduck	14				2		2	1			3					2	21	3	24
Australian Wood Duck							2				8						10	0	10
Black Kite								1								1	0	2	2
Black Swan		2			2			6									2	8	10
Black-faced Cuckoo-shrike																	0	0	0
Blue-winged Parrot								2								1	0	3	3
Brown Falcon	2			2				2			4				2		8	4	12
Brown Thornbill	6		2		1				1				4				14	0	14
Chestnut Teal	15																15	0	15
Common Blackbird							2										2	0	2
Common Starling			3				50		146		112	45	10		1		322	45	367
Crested Pigeon	3						4										7	0	7
Crimson Rosella	4		16				3				7						30	0	30
Eastern Rosella											2						2	0	2
Emu							3										3	0	3
Eurasian Coot	580																580	0	580
Eurasian Skylark	12	2	45	6	15	4	21	14	20		15		10		22	12	160	38	198
European Goldfinch					4								13		1		18	0	18
Flame Robin			3														3	0	3
Forest Raven	5		7		7		2		12		9		9		13		64	0	64
Galah	3		6				18	2	8		10		30	12			75	14	89
Grey Butcherbird					1				1								2	0	2
Grey Fantail									1								1	0	1
Grey Shrike-thrush	6				2		4		5		4						21	0	21
Grey Teal							6										6	0	6

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
Lewin's Rail			1														1	0	1
Little Raven	14		25		14		7		47		18	17	30		11		166	17	183
Long-billed Corella	4						5	6	5		120		1	10	7		142	16	158
Magpie-lark	8		5		6		6		7	1	6		7		12		57	1	58
Masked Lapwing	6		2				2				3				1		14	0	14
Musk Lorikeet					1												1	0	1
Nankeen Kestrel	1		1		1		1				1		1				6	0	6
New Holland Honeyeater	26		1		6		3		5								41	0	41
Noisy Miner	4		7				2				1				22		36	0	36
Pacific Black Duck	94		3					4	2						2		101	4	105
Purple-crowned Lorikeet	5							1									5	1	6
Raven sp.	28		19		12		11	5	112		29		8	5	13	2	232	12	244
Red Wattlebird	17		14		9		6		12		1				1		60	0	60
Red-browed Finch			4		4												8	0	8
Red-rumped Parrot					2		2		17		34		13				68	0	68
Scarlet Robin			1														1	0	1
Silvereye					5												5	0	5
Striated Pardalote	1				3		2		4		2						12	0	12
Sulphur-crested Cockatoo							4	2	1		54			1			59	3	62
Superb Fairy-wren	43		16		2		6		6		10		14				97	0	97
Tree Martin			2														2	0	2
Wedge-tailed Eagle	1		2	3		3		4					1	5		1	4	16	20
Welcome Swallow	15		17				1		3		1		1		4		42	0	42
Whistling Kite				1	1	1				1	1				1	1	3	4	7
White-browed Scrubwren							3						2				5	0	5
White-faced Heron									1		3	4					4	4	8

Species	B1		B2		B3		B4		B5		B6		B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	G. Total
White-fronted Chat			1														1	0	1
White-necked Heron									2								2	0	2
White-plumed Honeyeater	2		2		1		2		14								21	0	21
White-winged Chough	4								1								5	0	5
Willie Wagtail	1		1		2		4		1		3		7				19	0	19
Yellow-faced Honeyeater	2		5		1		5		1								14	0	14
Yellow-rumped Thornbill			2		6		3						6				17	0	17
Yellow-tailed Black-Cockatoo	2																2	0	2
Grand Total	999	4	275	12	159	8	227	63	511	2	525	66	205	39	173	24	3074	218	3292

Species	B1		B2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Australasian Grebe					0	0	0	1
Australian Hobby					0	0	0	1
Australian Magpie	44		56		100	0	100	563
Australian Pipit	13		3		16	0	16	29
Australian Shelduck	10				10	0	10	34
Australian Wood Duck					0	0	0	10
Black Kite					0	0	0	2
Black Swan					0	0	0	10
Black-faced Cuckoo-shrike	1				1	0	1	1
Blue-winged Parrot					0	0	0	3
Brown Falcon		1			0	1	1	13
Brown Thornbill			2		2	0	2	16
Chestnut Teal					0	0	0	15

Species	B1		B2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Common Blackbird					0	0	0	2
Common Starling	8		4		12	0	12	379
Crested Pigeon	2				2	0	2	9
Crimson Rosella	4				4	0	4	34
Eastern Rosella	13				13	0	13	15
Emu					0	0	0	3
Eurasian Coot					0	0	0	580
Eurasian Skylark	21		16	19	37	19	56	254
European Goldfinch					0	0	0	18
Flame Robin					0	0	0	3
Forest Raven	4		1		5	0	5	69
Galah	8		8		16	0	16	105
Grey Butcherbird	3				3	0	3	5
Grey Fantail					0	0	0	1
Grey Shrike-thrush	1		1		2	0	2	23
Grey Teal					0	0	0	6
Lewin's Rail					0	0	0	1
Little Raven	23		22		45	0	45	228
Long-billed Corella	288		4	35	292	35	327	485
Magpie-lark	8		3		11	0	11	69
Masked Lapwing	1				1	0	1	15
Musk Lorikeet					0	0	0	1
Nankeen Kestrel	1				1	0	1	7
New Holland Honeyeater			3		3	0	3	44
Noisy Miner	12		5	5	17	5	22	58
Pacific Black Duck	3				3	0	3	108

Species	B1		B2		All points			G. total (impact & reference)
	A	B	A	B	A	B	G. Total	
Purple-crowned Lorikeet					0	0	0	6
Raven sp.	10	8	21		31	8	39	283
Red Wattlebird	2		15		17	0	17	77
Red-browed Finch					0	0	0	8
Red-rumped Parrot	8		2		10	0	10	78
Scarlet Robin					0	0	0	1
Silvereye					0	0	0	5
Striated Pardalote					0	0	0	12
Sulphur-crested Cockatoo	69	11			69	11	80	142
Superb Fairy-wren			19		19	0	19	116
Tree Martin					0	0	0	2
Wedge-tailed Eagle		2	3	3	3	5	8	28
Welcome Swallow					0	0	0	42
Whistling Kite			1		1	0	1	8
White-browed Scrubwren					0	0	0	5
White-faced Heron	2		1		3	0	3	11
White-fronted Chat			9		9	0	9	10
White-necked Heron	3				3	0	3	5
White-plumed Honeyeater	1				1	0	1	22
White-winged Chough					0	0	0	5
Willie Wagtail					0	0	0	19
Yellow-faced Honeyeater					0	0	0	14
Yellow-rumped Thornbill			2		2	0	2	19
Yellow-tailed Black-Cockatoo					0	0	0	2
Grand Total	563	22	201	62	764	84	848	**4140**

Species	B1		B2		B3		B4		B5		B6	B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	A	B	A	B	A	B	G. Total
Australian Hobby														1		1	0	1
Australian Magpie	10	6	47	31	20		26		26		18	30	3	36		213	40	253
Australian Pipit	3		11		7		11				9			13		54	0	54
Australian Shelduck	20	1			3		2		2							27	1	28
Australian Wood Duck		2														0	2	2
Banded Lapwing					2											2	0	2
Black Swan	4															4	0	4
Blue-winged Parrot			35													35	0	35
Brown Falcon		1		2			3		1					2		6	3	9
Brown Goshawk																0	0	0
Brown Thornbill	4		1						7		4	1				17	0	17
Common Starling			15		1		1		1	14	20			308		346	14	360
Crested Pigeon	1		1		1							3				6	0	6
Crimson Rosella	4		2								9					15	0	15
Eastern Rosella											2			2		4	0	4
Emu							2									2	0	2
Eurasian Coot	24															24	0	24
Eurasian Skylark	2		48	4	3		13		9		1	7		49		132	4	136
European Goldfinch	6		5		3		7				3	9				33	0	33
Fairy Martin	16															16	0	16
Galah	2		26	15	4		10				4	1				47	15	62
Golden Whistler												1				1	0	1
Great Crested Grebe	3															3	0	3
Grey Butcherbird					3											3	0	3
Grey Fantail							9		1		2	5				17	0	17

Species	B1		B2		B3		B4		B5		B6	B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	A	B	A	B	A	B	G. Total
Grey Shrike-thrush					1				2		6	1				10	0	10
Grey Teal	6															6	0	6
Hoary-headed Grebe	14															14	0	14
Little Corella									3					7		10	0	10
Little Raven	9		176		8		15		1			12		319		540	0	540
Long-billed Corella								7	5		10				4	15	11	26
Magpie-Lark			1		6				5			3		10		25	0	25
Masked Lapwing																0	0	0
Musk Lorikeet														4		4	0	4
New Holland Honeyeater	20						3					1				24	0	24
Noisy Miner														26		26	0	26
Pacific Black Duck					1						2			1		4	0	4
Purple-crowned Lorikeet		2												2		2	2	4
Raven sp.	22		57		10	2	9	3	12		9	17	3	59		195	8	203
Red Wattlebird	8		3		2		4		1			3		1		22	0	22
Red-rumped Parrot	5								5		7					17	0	17
Reed-Warbler			4													4	0	4
Silvereye									2							2	0	2
Straw-necked Ibis						40										0	40	40
Sulphur-crested Cockatoo					8	4	20			2	5					33	6	39
Superb Fairy-wren	23		8						12			12				55	0	55
Thornbill sp.											1					1	0	1
Tree Martin	4										5					9	0	9
Wedge-tailed Eagle							1			2					2	1	4	5
Welcome Swallow	21		9		4				3		6	5		4		52	0	52
Whistling Kite											6					6	0	6

Species	B1		B2		B3		B4		B5		B6	B7		B8		All points		
	A	B	A	B	A	B	A	B	A	B	A	A	B	A	B	A	B	G. Total
White-faced Heron		1							2		1	1				4	1	5
White-plumed Honeyeater																0	0	0
White-winged Chough									3							3	0	3
Willie Wagtail	1		2		5		1				1	8				18	0	18
Yellow-faced Honeyeater			1		1						1	2				5	0	5
Yellow-rumped Thornbill	2		1		1				3		3	1				11	0	11
Yellow-tailed Black Cockatoo												2				2	0	2
Yellow-tailed Black-cockatoo								1								0	1	1
Grand Total	234	13	453	52	94	46	137	11	106	18	135	125	6	844	6	2128	152	2280

Species	R1			R2		All points				G. Total (impact & reference)
	A	B	C	A	B	A	B	C	G. Total	
Australian Hobby						0	0	0	0	1
Australian Magpie	31			39		70	0	0	70	323
Australian Pipit	6					6	0	0	6	60
Australian Shelduck	3	2				3	2	0	5	33
Australian Wood Duck						0	0	0	0	2
Banded Lapwing						0	0	0	0	2
Black Swan						0	0	0	0	4
Blue-winged Parrot						0	0	0	0	35
Brown Falcon						0	0	0	0	9
Brown Goshawk				2		2	0	0	2	2
Brown Thornbill				5		5	0	0	5	22
Common Starling	26		3			26	0	3	29	389

Species	R1			R2		All points				G. Total (impact & reference)
	A	B	C	A	B	A	B	C	G. Total	
Crested Pigeon	1					1	0	0	1	7
Crimson Rosella	2					2	0	0	2	17
Eastern Rosella	12			2		14	0	0	14	18
Emu						0	0	0	0	2
Eurasian Coot						0	0	0	0	24
Eurasian Skylark	11	3		26		37	3	0	40	176
European Goldfinch						0	0	0	0	33
Fairy Martin						0	0	0	0	16
Galah				17		17	0	0	17	79
Golden Whistler						0	0	0	0	1
Great Crested Grebe						0	0	0	0	3
Grey Butcherbird				1		1	0	0	1	4
Grey Fantail						0	0	0	0	17
Grey Shrike-thrush				2		2	0	0	2	12
Grey Teal						0	0	0	0	6
Hoary-headed Grebe						0	0	0	0	14
Little Corella	9			52		61	0	0	61	71
Little Raven	9			16		25	0	0	25	565
Long-billed Corella	14	7				14	7	0	21	47
Magpie-Lark	2			3		5	0	0	5	30
Masked Lapwing				2		2	0	0	2	2
Musk Lorikeet	2					2	0	0	2	6
New Holland Honeyeater				9		9	0	0	9	33
Noisy Miner						0	0	0	0	26
Pacific Black Duck				3		3	0	0	3	7
Purple-crowned Lorikeet						0	0	0	0	4

Species	R1			R2		All points				G. Total (impact & reference)
	A	B	C	A	B	A	B	C	G. Total	
Raven sp.	24	2		11		35	2	0	37	240
Red Wattlebird	3					3	0	0	3	25
Red-rumped Parrot	24	2				24	2	0	26	43
Reed-Warbler						0	0	0	0	4
Silvereye						0	0	0	0	2
Straw-necked Ibis					9	0	9	0	9	49
Sulphur-crested Cockatoo	34					34	0	0	34	73
Superb Fairy-wren				15		15	0	0	15	70
Thornbill sp.						0	0	0	0	1
Tree Martin						0	0	0	0	9
Wedge-tailed Eagle						0	0	0	0	5
Welcome Swallow	2					2	0	0	2	54
Whistling Kite						0	0	0	0	6
White-faced Heron						0	0	0	0	5
White-plumed Honeyeater				2		2	0	0	2	2
White-winged Chough						0	0	0	0	3
Willie Wagtail				4		4	0	0	4	22
Yellow-faced Honeyeater						0	0	0	0	5
Yellow-rumped Thornbill				1		1	0	0	1	12
Yellow-tailed Black Cockatoo						0	0	0	0	2
Yellow-tailed Black-cockatoo						0	0	0	0	1
Grand Total	215	16	3	212	9	427	25		455	**2735**

Appendix 10: Wetland habitat quality assessment for surveys of listed fauna at Hexham Wind Farm

Wetland number	Habitat quality			Description
	Migratory birds	Latham's Snipe	GGF	
DEECA Wetland 30275 (Wetland 15) Entry of Mustons Creek into WF-NW	Medium	Medium	Medium	Deep valley creek with water, currently standing or very slow flow. Creek bed covered with dense growth of reed, sedge, rush (mainly *Caryx* spp.) and introduced grasses, mainly *Phalaris* spp. The creek also expands forming open water pools with water ribbons, submerged, and emergent vegetations
DEECA Wetland 30816 (Wetland 16) part of Mustons Creek and a very large dam	Medium	High	Medium-High	Creek as above, heavily over grown by reed (*Phragmites austalis*), rush, sedge and other aquatic vegetation including water ribbon, emergent and sub-merged. Edges covered by trees such as eucalypts, wattle, tee trees, native pines and large shrubs.
DEECA Wetland 30312 (Dam on 16)	Medium-High	High	Medium-High	Open dam > 1 ha. Fenced with edges a combination of open muddy areas and low introduced grasses with small patches of aquatic vegetation within the body of the dam. Edges not tramped by cattle. A large selection of waterbirds with possible 3 Freckled Ducks.
Wetland 111 (Wetland 17)	Medium-High	High (recorded)	High	Open expansions of the Mustons Creek forming large water pools- water standing but was freely flowing last month, flow seems to depend on rainfall. Water pools with dense growth of reed, rush, sage, and introduced grasses on the edges and dense growth of water ribbon and emergent and submerged vegetation. Fauna seen: 1- A pair of Latham's Snipe; 2. Growling Grass Frog; aural record during the day; 3. Many water birds including ducks, ibises, teals, swan, coot and others; 4. few hardheads.
DEECA Wetland 29405 (Wetland 3) Permanent large unnamed lake				Large lake at the central west section of WF. Lake is fenced with deep water and the edges densely covered with various types of aquatic vegetation and trees; parts of the edges were bare mud. A large selection of waterbirds and resident shorebirds was found utilizing the lake.

Wetland number	Habitat quality			Description
	Migratory birds	Latham's Snipe	GGF	
DEECA Wetland 29405 (Wetland 3a) North end of lake	Medium-High	Medium-High	Medium	North end of large permanent Lake with dense vegetation cover at this section including very dense growth of reed, sedges concealing the open water species as in the body of the lake, part of this section is cut off from lake by a fence and trampled by cattle as it has open muddy shores and surrounded by grazing paddock. Few Red-kneed Dotterel were seen on the muddy shores. A small group of Sharp-tailed Sandpiper were seen during last month survey. The remaining north end and connecting creek at this north end is currently dry.
DEECA Wetland 29405 (Wetland 3b) Central section of lake	Medium-High	High	Medium-High	Deep permanent water- edges well covered by dense vegetation (reed, rush, sedges, introduced grass) with few sections of bare mud and low grasses. Edges are not subjected to cattle grazing and mostly shaded by various species of trees. A small flock (7 or 8 birds) were seen but were far to be identified, but most probably S.T. Sandpipers.
DEECA Wetland 29405 (Wetland 3c) Southern end of lake	Medium	Medium-High	Medium-High	Very similar to the northern section. Brolgas were seen there earlier in October but not again in either December or the current survey.
DEECA Wetland 28236 (Wetland 18)	Low	Low	Low	A fair-sized dam >1 ha, and accompanying creek. Dam fenced but open for cattle drinking, bare muddy edges with little aquatic veg. The creek very dry.
DEECA Wetlands 28252 and 28248 (Wetlands 13 and 14)	Medium	High	High	Sections of the Mustons Creek at the eastern section of the WF. Habitat similar to other parts of the creek with dense vegetation and expanded pools of water. Water seemed standing and not flowing as in last month. Aural record during the day at W 14.
Wetland J (Wetland 2)	Medium	High	High	Another section of the Mustons Creek with similar vegetation, at this section parts of the creek was fully dry and water stream is interrupted. Aural record during the day.
Wetland 5b	Low	Medium-High	Medium-High	A section of one of the Mustons Creek tributaries, part dry and part still retain some shallow water pools with dense aquatic veg, similar to other parts of the Mustons Rivers.