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Barnawartha Solar Farm and Energy Storage

Flora and Fauna Assessment

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Executive summary

Aurecon was commissioned by Barnawartha Solar Pty Ltd to undertake a flora and fauna assessment to inform the development of a ~64MW AC Solar Farm with ~64MW of battery storage to be located in Barnawartha, in northern Victoria.

The investigation identified that the site largely supported farmland dominated by introduced pasture grasses. Despite the heavily altered nature of the ground layer, the site contained several remnant native eucalypts, many of which classified as large trees. Native vegetation, distinguished by the presence of mature eucalypts, was also present within the adjoining road reserves, particularly along Murray Valley Highway, Coyles Road and Hermitage Road, as well as along the proposed grid connection route along Baxter-Whelans Road.

The following native vegetation was recorded in the study area:

- 2.303 hectares of Plains Grassy Woodland (EVC 55_61), across 28 patches (including 56 large trees in patches); and
- 229 scattered trees (including 93 large and 136 small).

No *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Flora and Fauna Guarantee Act 1988* (FFG Act) listed threatened communities were identified in the study area.

The Project has aimed to avoid and minimise impacts on native vegetation at both strategic and site planning levels. The extent of native vegetation has been assessed during the planning and design phase, and Aurecon's project ecologists have had several meetings and other correspondence with the proponent's design team to provide detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values. The proponent has adopted the avoid and minimise approach by incorporating recommendations into the design where possible. Residual impacts to native vegetation have been determined based on the final proposed site layout of the Barnawartha Solar Farm and Energy Storage, cable route and are summarised as follows:

- Removal of 0.354 hectares of native patch vegetation (across five patches), including 11 large trees in patches; and
- Removal of 57 Scattered trees (including 35 large and 22 small trees) (of the 57 scattered trees, 29 are dead)

No threatened flora species were recorded within the study area. Due to the heavily modified nature of the site and almost exclusively introduced ground layer, it was determined that no threatened flora species are likely to occur.

Five threatened fauna species were considered to have a moderate likelihood of occurrence in the study area, namely Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Swift Parrot and Turquoise Parrot. However, the treed habitat in the study area does not represent a key habitat corridor for these species, and individuals would continue to utilise more significant foraging habitat available in the region such as Chiltern Mt Pilot National Park and along the Murray River. It has been determined that while these species may occasionally visit the treed habitats in the study area, the extent of tree removal required for the Project would represent a minor impact on these species. Importantly, the Project is considered unlikely to result in a significant impact on Swift Parrot which is listed as critically endangered under the EPBC Act.

Consideration of the relevant significant impact criteria outlined under the EPBC Act has determined the Project is unlikely to result in a significant impact on any Matters of National Environmental Significance. As such, a referral under the EPBC Act is not considered to be required for the Project.

The project is not likely to trigger a referral under the *Environment Effects Act 1978* (EE Act) based on any criteria specifically relevant to flora, fauna or biodiversity. No FFG Act listed threatened or protected flora species were recorded in the study area. As such, a Protected Flora Permit is not required for the Project.

This removal of native vegetation in the Project area would trigger a permit under Clause 52.17 of the Indigo Planning Scheme. The removal would be assessed under the Detailed Assessment Pathway, which requires that the project be referred to the Victorian Department of Environment, Land, Water and Planning (DELWP). Offsets for the removal of native vegetation are required in accordance with the Guidelines and include the following:

- 0.504 general habitat units, with the following requirements:
 - Offset must be located in North East Catchment Management Authority (CMA) or Indigo Local Government Area
 - Offset must have minimum strategic biodiversity value (SBV) of 0.188
 - Offset must include the protection of 46 large trees

An online search of the Native Vegetation Credit Register (NVCR) on 16th March 2022 has shown that a sufficient amount of general habitat units are readily available in the North East CMA. Based on the proposed design for the solar farm and the Native Vegetation Removal Report which has been prepared by DELWP, no species offsets are required.

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- Appendix G: EPBC Act Protected Matters Search Tool (PMST) Report
- Appendix H: Barnawartha Solar Farm and Energy Storage Site Layout
- Appendix I: Native Vegetation Removal Report
- Appendix J: Search for Offset availability

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1 Introduction

1.1 Project background

Aurecon was commissioned by Barnawartha Solar Pty Ltd to undertake a flora and fauna assessment to inform the development of a ~60MW AC Solar Farm to be located in Barnawartha, in northern Victoria. The project entity is known as Barnawartha Solar Pty Ltd. Wirsol Energy are co-developing the Barnawartha Solar Farm and Energy Storage (the Project) with ARP Australia Solar (ARP).

This flora and fauna assessment report has been prepared to inform the planning application for the project and to determine the implications of the project under relevant environmental legislation, particularly the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Victorian *Planning and Environment Act 1987*, *Flora and Fauna Guarantee Act 1988* (FFG Act) and *Environment Effects Act 1978* (EE Act).

1.2 Scope and purpose of the assessment

The purpose of the flora and fauna assessment was to provide an assessment of the biodiversity values at the project site, including an assessment of any potential impacts to native vegetation and/or significant flora, fauna and ecological communities. This assessment identifies the environmental approvals that may be triggered under Commonwealth and state legislation. This assessment also provides identification of any key risk areas of the project site and recommendations for locating project infrastructure to avoid impacts.

The scope of the assessment was to:

- Undertake a review of existing ecological information for the project site, including preparation of database searches for native vegetation, flora and fauna;
- Undertake an ecological field survey to determine the type, extent and quality of native vegetation and fauna habitat present in the study area;
- Identify any significant ecological values (including threatened species or communities) that have potential to occur in the study area;
- Identify the potential implications for the project based on relevant legislation and policy;
- Provide recommendations to assist with project design and locating of project infrastructure; and
- Identify the need for any future targeted surveys.

1.3 Location

The study area for this ecological investigation comprised 170 hectares of land in Barnawartha, four kilometres north of the Barnawartha township and 20km west of Wodonga. The study area included:

- The project site, which comprises two private farmland properties either side of Hermitage Road;
- Road reserves that adjoined the project site including Hermitage Road, Murray Valley Highway (southern reserve only), Coyles Road, Baxter-Whelan Road and Barnawartha-Howlong Road; and
- The proposed route for the grid connection along the road reserve (both sides) of Baxter-Whelan Road.

The study area is shown in Figure 1.

1.4 Limitations

The outcomes of this report are limited to the scope of the assessment as defined in Section 1.2 and is limited to the study area as defined in Section 1.3. Should further information become available regarding the conditions in the study area, Aurecon reserves the right to review the report in the context of the additional information. Ecological assessments can be undertaken at any time of year, however seasonal variations can result in some flora and fauna not being detectable at certain times. Particularly, many flowering plant species are only detectable/identifiable when producing flowers or fruits. The spring timing of the ecological

field survey that informed this assessment was optimal to ascertain the extent and condition of native vegetation and habitat in the study area.

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Legend

- Study Area
- River
- Road
- LGA outline

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Notes:

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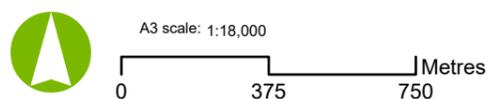
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Author: Nick Chen



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Coordinate System: GDA2020 MGA Zone 55

Barnawartha Solar Farm
Figure 1: Study Area

2.1 Desktop assessment

The desktop assessment comprised a review of current databases for information on native vegetation and threatened flora, fauna and ecological communities listed under the EPBC Act and FFG Act.

The methods adopted for the database search, likelihood of occurrence and impact assessment are outlined in the following sections.

2.1.1 Database search

The database searches undertaken for the Project provided a shortlist of the potential flora, fauna and ecological communities that may occur within 10 km of the study area. Database information was obtained from a circular search area with a radius of 10 km centred on the site of the proposed solar farm (coordinates: latitude 36° 03' 38" S and longitude 146° 41' 36" E).

Records from the following databases were collated and reviewed for the search area:

- Protected Matters Search Tool (PMST) of the Australian Government Department of Agriculture, Water and the Environment (DAWE) for matters protected by the EPBC Act (DAWE 2021a, See Appendix G); and
- The Victorian Biodiversity Atlas (DELWP 2021a) for records of listed threatened flora and fauna species.

The following information was also reviewed for the study area as part of the desktop assessment:

- The Victorian DELWP Native Vegetation Information Management System (NVIM) (DELWP 2021b);
- NatureKit (DELWP 2021c);
- VicPlan (DELWP 2021d); and
- Aerial imagery.

2.1.2 Likelihood of occurrence analysis for threatened flora and fauna

The likelihood of occurrence of all threatened flora and fauna species collated in the database search was considered for the study area. The following threatened species were considered as part of this assessment:

- Flora listed as threatened under the EPBC Act;
- Fauna listed as threatened and/or migratory under the EPBC Act; and
- Flora and fauna listed as threatened under the FFG Act.

Each of these species were considered against the suitability of habitat, to determine their likelihood of occurrence in the study area. The likelihood of a species occurring within the study area was classified as 'Negligible', 'Low', 'Moderate' or 'High' based on the consideration of:

- The presence/absence of previous records in the search region (as returned from the database search);
- The known habitat requirements and distribution of the species; and
- The suitability of habitat in the study area (based on the findings of the overview field assessment, and previous reports for the site).

The likelihood of occurrence of ecological communities are also considered in this report.

Details of the ranking criteria used to determine likelihood of occurrence of threatened flora and fauna in the study area is provided in Tables 1 and 2 respectively. Those determined to have a high to moderate likelihood of occurrence in the study area are considered further and discussed in Sections 3.2.4 and 3.2.5.

Table 1 Likelihood of occurrence criteria for threatened flora species

Likelihood of Occurrence	Criteria
High	Recent records of the species in the local vicinity (i.e. within the last 10 years)
	Known resident in the area based on site observations, database records or expert advice and/or the project area contains high quality habitat
Moderate	Previous reputable records of the species in the local vicinity and/or the project area contains moderate quality habitat
Low	Limited previous records of the species in the local vicinity; and/or, the project area contains poor or limited habitat. May also be considered low if other environmental factors are present such as fragmented or isolated habitat
Negligible	No suitable habitat and/or the project area falls outside the known species range

Table 2 Likelihood of occurrence criteria for threatened and migratory fauna species

Likelihood of Occurrence	Criteria
High	Known resident in the area based on site observations, database records or expert advice
	Recent reputable records (within 5 years) of the species in the local area
	The project area contains the species' preferred habitat
Moderate	The species is likely to visit the project area regularly (i.e. at least seasonally)
	Previous reputable records of the species in the local area
	The project area contains some characteristics of the species' preferred habitat
Low	The species is likely to visit the project area occasionally or opportunistically whilst en-route to more suitable sites
	There are only limited or historical records of the species in the local area (>20 years old)
	The project area contains few or no characteristics of the species' preferred habitat
Negligible	No previous records of the species in the local area
	Previous records of the species exist in the local area but >30 years old
	The species may fly over the area when moving between areas of more suitable habitat
	Out of the known species' range
	No suitable habitat present within the project area
	Species is known to be regionally extinct

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2.1.3 Impact assessment

Listed threatened species and ecological communities determined as having a High or Moderate likelihood of occurrence in the project area are then considered further in regard to the level of likely impact on these values from the proposed development.

2.2 Field assessment

The ecology field assessment was undertaken from the 19th to 21st October 2021. Assessment of native vegetation, flora and fauna was undertaken on foot. Parts of the site that were lacking in ecological value (i.e. broad areas of crop or introduced pasture) were assessed more rapidly based on observation from a vehicle.

The field survey was undertaken by two ecologists and was led by Justin Sullivan, an experienced senior ecologist, with appropriate skills in the identification of Victoria's flora and fauna, and accreditation to undertake the assessment of native vegetation as listed on DELWP's Vegetation Quality Assessment Competency Register.

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2.2.1 Flora survey

A vegetative description of the study area was recorded along with a list of the flora species observed. The presence of any suitable habitat for threatened flora species was recorded and mapped, to inform the likelihood of occurrence analysis and inform the potential requirement for future targeted species surveys.

All native vegetation (including patches and scattered trees) recorded in the study area was mapped using Arc Collector on a device with in-built GPS (with 4-5 metre accuracy). Patches of native vegetation were classified to Ecological Vegetation Class (EVC) and a Vegetation Quality Assessment (VQA) was undertaken. All scattered trees and large trees in patches were identified to species and their diameter at breast height (DBH) was measured. The assessment of native vegetation undertaken was consistent with DELWP's Habitat hectare method (DSE 2004) and Victoria's *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a), herein referred to as the Guidelines.

Visual surveying for the presence of any significant flora species was undertaken along transects spaced 4 metres apart within patches of native vegetation that supported a native ground layer. This was limited to two locations only (Habitat Zones AL and AU), where the ground layer was found to comprise a low-moderate cover of native grasses.

2.2.2 Fauna survey

A list of all fauna species observed within the project area was recorded through active searching, and general observations. The presence of any suitable habitat for threatened fauna species was recorded and mapped, to inform the likelihood of occurrence analysis as well as the potential requirement for future targeted fauna surveys.

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3 Results

This section of the report presents the integrated results of the database review and ecological field assessment.

3.1 Database review

The review of the relevant databases (PMST and VBA) returned 24 listed threatened flora species and 72 listed threatened and/or migratory fauna species (including 49 birds, seven mammals, five reptiles, two frogs, eight fish and one invertebrate) in the 10 km search area. Details of each of these species habitat requirements as well as an analysis of the likelihood of occurrence in the study area is provided in Appendix E and F.

The study area lies within the Victorian Riverina bioregion and falls within the North East Catchment Management Authority (CMA). The study area largely falls within land currently mapped as Farming Zone (FZ) in the Indigo Local Government Area (LGA), with the exception of the eastern extent of the proposed grid connection route which occurs within the Wodonga LGA and is mapped as Industrial 1 Zone (IN1Z). The majority of the study area (namely the portion of the study area that is within the Indigo LGA) is subject to Environmental Significance Overlay – Schedule 3 (ESO3). No other Vegetation Protection Overlays or Significant Landscape Overlays apply. While the Bushfire Management Overlay does not apply, the entire study area and broader region is designated as a Bushfire Prone Area (BPA).

3.2 Ecological assessment

3.2.1 Site description

The study area included portions of two large farm properties either side of Hermitage Road, both of which supported a ground layer comprised exclusively of introduced pasture, namely Rye Grass, Barley Grass, Soft Brome, Sheep Sorrel and Clover (Photo 1). Two of the paddocks in the property to the west of Hermitage Road were being cut for silage at the time of the survey. Both properties had a small number of cattle grazing in the paddocks. The two paddocks in the south west corner of the study area supported existing wheat crop. Overall, paddocks were largely uniform.

Despite the heavily altered nature of the ground layer, both farm properties in the study area were distinguished by the presence of remnant trees, including White Box, Grey Box, Blakely's Red-gum, Yellow Box and Red Box, many of which were mature and well exceeded the benchmark diameter at breast height (DBH) of a large tree (Photos 2-3). While some groups of remnant trees formed patches (based on the continuity of canopy), most trees in the study area occurred as scattered trees. Trees ranged from healthy, spreading specimens to long-dead individuals (Photo 5).

Native vegetation distinguished by the presence of mature eucalypts was also present within the adjoining road reserves, particularly along Murray Valley Highway, Coyles Road and Hermitage Road (Photo 4), as well as along the proposed grid connection route which extended approximately 2.6 kilometres east from the project site along Baxter-Whelans Road (Photo 6). The understorey of adjoining road reserves was largely disturbed and was heavily dominated by introduced flora, namely Rye Grass, Great Brome and Oat. Native flora species were only recorded in the ground layer of two roadside patches.

A number of farm dams were recorded throughout the study area, all of which largely lacked any fringing, floating or emergent vegetation. Two narrow planted tree rows, comprising Blue Gum and other non-indigenous native species, occurred in the south west portion of the study area. Other planted trees and shrubs were present around the existing farmhouse to the east of Hermitage Road.



Photo 1: Farmland within the study area, comprising a monoculture of introduced grasses



Photo 2: Scattered Grey Box (*Eucalyptus microcarpa*) within the study area (south east corner)



Photo 3: Large Scattered Yellow Box (*Eucalyptus melliodora*) in paddock within the study area



Photo 4: Plains Grassy Woodland, with canopy of Blakely's Red-gum (*E. blakelyi*), Hermitage Road



Photo 5: Dead trees within the study area



Photo 6: Scattered Yellow Box, Baxter-Whelan Road

3.2.2 Native vegetation

Types of native vegetation that may be present within the study area were ascertained through the database review (DELWP 2021b; DELWP 2021c). This review noted the presence of one main pre-1750 modelled vegetation community within and surrounding the study area, namely Plains Grassy Woodland (EVC 55), which has a bioregional conservation status of endangered. Other vegetation communities modelled in the broader region include Grassy Woodland (EVC 175) and Riverine Grassy Woodland (EVC 295).

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Patches of native vegetation

Twenty-eight (28) patches (also termed “habitat zones”) of Plains Grassy Woodland (EVC 55_61) were recorded in the study area, totalling an area of 2.303 hectares of native patch vegetation. Patches of native vegetation were classified based on the continuity of canopy of three or more adjoining canopy trees (as per the definition in the Guidelines). A total of 56 large trees were recorded in patches. All patches of native vegetation, (as well as all large trees in patches) are shown in Figure 2 and in detail in Figures 2-1 to 2-5. Details of each habitat zone are provided in Table 3, with detailed results of the vegetation quality assessment in Appendix B. Large trees in patches are summarised in Table 3 with details provided in Appendix C.

All patches were distinguished by the presence of native canopy trees. Native ground flora species (including Common Wallaby-grass, Rough Spear-grass and Black-anther Flax-lily) were only recorded in Habitat Zones AL and AU. Otherwise, all other patches had a ground layer comprised exclusively of introduced flora.

Table 3 Details of native vegetation (habitat zones) recorded in the study area

Habitat Zone ID	Area (ha)	EVC	Number of Large Trees in patch	Habitat Score (out of 100)
AA	0.062	55_61	1	32
AB	0.098	55_61	4	24
AC	0.072	55_61	1	23
AD	0.065	55_61	3	20
AE	0.052	55_61	3	15
AF	0.081	55_61	0	15
AG	0.071	55_61	4	24
AH	0.088	55_61	2	28
AI	0.068	55_61	2	25
AJ	0.06	55_61	1	29
AK	0.085	55_61	1	20
AL	0.027	55_61	1	29
AM	0.324	55_61	7	23
AN	0.269	55_61	6	23
AO	0.037	55_61	1	24
AP	0.027	55_61	0	20
AQ	0.098	55_61	4	28
AR	0.067	55_61	4	23
AS	0.06	55_61	2	23
AT	0.121	55_61	6	23
AU	0.072	55_61	0	20
AV	0.059	55_61	1	20
AW	0.034	55_61	0	11
AX	0.137	55_61	0	11
AY	0.012	55_61	0	11
AZ	0.008	55_61	0	11
BA	0.022	55_61	0	11
BB	0.127	55_61	2	20
Totals	2.303		56	

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Scattered Trees

In addition to native vegetation recorded in patches, 229 scattered trees were recorded in the study area. Scattered trees recorded are considered to have once comprised the canopy component of Plains Grassy Woodland (EVC 55). Details of all scattered trees recorded are listed in Appendix C. A summary of scattered trees recorded is provided in Table 4. Of the 229 scattered trees recorded, 93 were classified as large, 34 of which had a DBH of ≥ 120 cm.

Table 4 Summary of scattered trees recorded in the study area

Scattered Tree Size	Representative EVC	DBH range (cm)	No. of scattered trees
Small	Plains Grassy Woodland (EVC 55_61)	<80cm	136
Large		≥ 80 cm	93
Total Scattered Trees recorded			229

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Legend

- Study Area
 - Planted tree rows
 - Dams
 - River
 - Road
- Native Vegetation Patch**
- Plains Grassy Woodland (EVC 55_61)
- Native Tree**
- ▲ Large Tree in patch
 - ▲ Large Tree in patch (Dead)
 - Large Scattered Tree
 - Large Scattered Tree (Dead)
 - Small Scattered Tree
 - Small Scattered Tree (Dead)

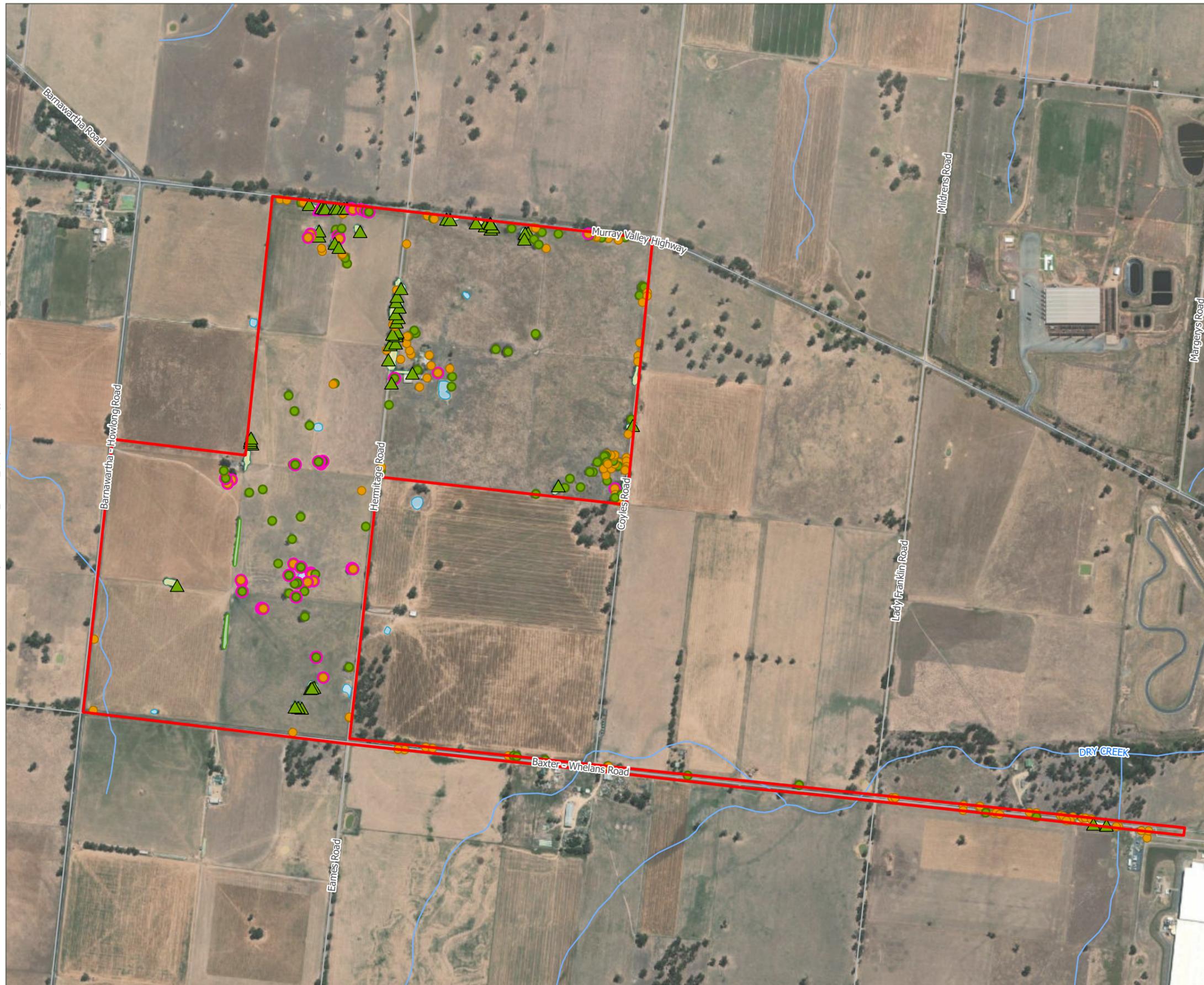
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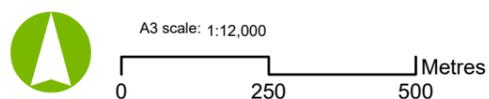
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Barnawartha Solar Farm
Figure 2: Study area and ecological values

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3.2.3 Threatened ecological communities

Six EPBC Act listed threatened ecological communities were listed in the PMST as known or likely to occur within 10 km of the study area (DAWE 2021a). No native vegetation that matched the criteria for any of these EPBC Act listed communities occurred in the study area. An assessment against the listing criteria for each of the EPBC Act listed communities noted in the PMST is provided below in Table 5.

Table 5 Assessment of presence/absence of EPBC Act listed threatened ecological communities in the study area

EPBC Act listed ecological community	Assessment and conclusion
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered)	No Buloke trees were recorded in the study area. This community does not occur in the study area.
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered)	Several remnant Grey Box trees were recorded in the study area, many of which were large. However, the understorey in these areas was dominated (and often was exclusively comprised) by introduced (perennial) grasses. To be classified as the listed community, at least 50% of the plant cover in the ground layer must comprise perennial native species. As such, none of the areas of Grey Box recorded in the study area meet the classification as the listed community. This community does not occur in the study area.
Natural Grasslands of the Murray Valley Plains (Critically Endangered)	No native grassland was recorded in the study area. This community does not occur in the study area.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)	No wetlands or areas that would support wetlands were recorded in the study area. This community does not occur in the study area.
Weeping Myall Woodlands (Endangered)	No Weeping Myall trees were recorded in the study area. This community does not occur in the study area.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered)	Several remnant White Box, Yellow Box and Blakely's Red-gum trees were recorded in the study area, many of which were large. However, the understorey in these areas was largely dominated (and often was exclusively comprised) by introduced (perennial) grasses. To be classified as the listed community, at least 50% of the plant cover in the ground layer must comprise perennial native species. One patch of native vegetation recorded (HZ AL) comprised a canopy of Yellow Box and had a ground layer cover of 50% native perennial species. However, this patch was only 0.027 hectares in area. To be classified as the listed ecological community, the patch must be at least 0.1 hectares in area. As such, HZ AL is too small to be recognised as the listed community. As such, none of the areas of White Box, Yellow Box and Blakely's Red-gum recorded in the study area met the classification as the listed community. This community does not occur in the study area.

Similarly, due to the degraded understorey and scattered nature of canopy trees the study area does not support any FFG Act listed ecological communities.

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3.2.4 Flora

The study area supported a high diversity of canopy species, with six remnant eucalypt species recorded. However, the ground layer of the study area comprised almost exclusively of introduced flora. During the field assessment 41 flora species were recorded, 13 (32%) of which were native species. Native species were limited to six canopy (eucalypt) species and common native ground flora species. Native ground flora species were only recorded in Habitat Zones AL and AU.

A full list of the flora species recorded in the study area is provided in Appendix D. No threatened flora species were recorded within the study area. The likelihood of the threatened flora species which were detected in the database searches occurring within 10 km of the study area are considered in Appendix E.

Due to the limited extent of native vegetation and long agricultural use of the area which resulted in a heavily altered ground layer, it was determined that no suitable habitat for threatened flora exists, and that no threatened flora species are likely to occur in the Project area.

3.2.5 Fauna

Land within the study area consisted of farmland. Fauna habitats within the study area consisted of pasture, remnant treed vegetation and aquatic habitat in the form of farm dams, each discussed further below.

- **Pasture:** A large proportion of the study area consisted of uniform areas of pasture which comprised of a small number of species, namely Barley Grass, Rye Grass, Soft Brome, Sheep Sorrel and Clover. This habitat lacked diversity and variability and supported common farmland birds such as Australian Raven, Australian Magpie, Australian Pipit, Brown Songlark and Rufous Songlark which were recorded regularly during the survey. This habitat also provided large areas for hunting for birds of prey including Brown Falcon, a resident pair of which were recorded on each day during the survey in the property west of Hermitage Road. Overall, the pasture habitat in the study area was considered to be of low quality for native fauna.
- **Remnant treed vegetation:** Several remnant eucalypts occurred throughout the study area, some making up patches of native vegetation, and many others being classified as scattered trees. A high proportion of all trees recorded within the study area were large trees, which is defined by having a diameter at breast height (DBH) of ≥ 80 cm. Notably, 45 trees recorded in the study area had a DBH of ≥ 120 cm. Such trees were particularly mature, and often supported a large spreading canopy.

It is also to be noted that of the trees recorded as part of the native vegetation assessment, 43 of them were dead. While dead trees lack some particular habitat values, they often provide important habitat for fauna by providing birds with excellent foraging opportunities (particularly birds of prey) and providing roosting and nesting opportunities for hollow bearing fauna (including birds and mammals). While limited hollows were observed in the living trees recorded, many of the dead trees supported hollows of some shape or form.

While trees were sparsely distributed within the farm paddocks in the study area, treed vegetation along the adjoining road reserves was more regularly distributed, providing roadside habitat corridors with connectivity to adjoining habitats in the region including the Murray River and Indigo Creek. In this way, the study area is reasonably representative of the coverage of treed vegetation in the surrounding area. Overall, the treed vegetation in the study area was considered to support high quality habitat for native fauna.

- **Aquatic habitat:** Aquatic habitat was limited to six small farm dams which were located across the two farm properties in the study area. All farm dams within and nearby to the study area are mapped in Figure 2-1 to 2-5. Farm dams recorded lacked any fringing, emergent or floating vegetation, and were bordered by disturbed soil, pasture grasses and/or crop. During the survey, dams were occasionally observed being visited by common waterbird species including Pacific Black Duck, Australian Wood-duck and Australian Shelduck. Overall, the aquatic habitat in the study area was considered to be of low quality for native fauna.

During the survey, a total of 42 fauna species were recorded in the study area, 38 (90%) of which were native species. Fauna species recorded mainly represented common, northern Victoria farmland birds. A full list of the fauna species recorded in the study area is provided in Appendix D. No threatened fauna species

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were recorded within the study area. The likelihood of the listed fauna species detected in the database searches occurring within 10 km of the study area was considered in Appendix F. Based on the assessment in Appendix F, the following threatened fauna species were considered to have a moderate likelihood of occurrence in the study area:

- Diamond Firetail (FFG Act)
- Grey-crowned Babbler (FFG Act)
- Hooded Robin (FFG Act)
- Swift Parrot (EPBC Act; FFG Act)
- Turquoise Parrot (FFG Act)

Treed habitat in and adjacent to the study area has the potential to occasionally support **Diamond Firetail**, **Grey-crowned Babbler** and **Hooded Robin**. These birds are known to use farmland trees though are likely to prefer larger areas of bushland in the region.

Grey Box and White Box, both of which are known as some of the main feed trees for the **Swift Parrot**, occur in the study area. Many of these were large trees. While the closest records of Swift Parrot to the study area are from Chiltern Mt Pilot National Park, there is potential for the species to occasionally use the trees in the study area for foraging during winter while they are on the mainland.

The study area supports open treed habitat with several dead trees. While this may present potential nesting opportunities for **Turquoise Parrot**, the species favours sites near permanent water and is more likely to utilise habitats adjacent to waterways in the region (i.e. the Murray River and Indigo Creek). While most of the records of the species in the region are from Chiltern Mt Pilot National Park, the species may occasionally visit the trees in the study area for foraging and/or nesting.

An impact assessment against the proposed development layout for these species is provided in Section 4.

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4 Proposed impacts and implications

4.1 Details of proposed development

Barnawartha Solar Pty Ltd propose to develop a ~60MW AC Solar Farm with ~64MW of battery storage in the study area. The solar panels are proposed to be located within the paddocks of two properties either side of Hermitage Road (See Appendix H). Access to both sides of the solar farm is from Hermitage Road, with an alternative access to the eastern portion from Coyles Road and an alternative access to the western property from further south on Hermitage Road. Associated construction and operational areas, including working bays, substation and material laydown areas have been located in disturbed areas.

A powerline route which will provide grid connection for the project extends approximately 2.5 kilometres east from the project site along the southern side of Baxter-Whelans Road. The western portion of the powerline route will be above ground and utilise existing overhead lines within the road reserve. The eastern portion of the powerline route will be situated immediately south of the road reserve, within an existing Wodonga Council easement, and will be installed above ground.

The following sections outline the potential impacts to ecological values based on the project footprint (Section 4.2) as well as the implications under relevant environmental legislation and policy (Section 4.3). Consideration of bushfire risk is also provided in Section 4.4.

The design presented in this report is the result of several discussions and meetings with the proponent, in which the ecology team provided detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values. Details on how the proposed design has adopted the approach of 'avoid and minimise' is provided in Section 4.3.4. Further recommendations to assist the planning and development of the Project are provided in Section 5.2.

4.2 Impacts on ecological values

4.2.1 Proposed impacts to native vegetation

The proposed solar farm project is situated in modified, sparsely treed farmland, with the solar panels and associated construction areas all to be located on private land. The solar panel layout has been developed with the aim to avoid impacts to native vegetation where possible. This is detailed further in the 'avoid and minimise statement' which has been prepared to address the application requirements of the Guidelines in Section 4.3.4. Importantly, the design of the solar panel layout has included several areas for the retention of native vegetation within the associated private land parcels, particularly along the northern perimeter and south east corner of the eastern property, as well as the retention of two particularly large trees in the centre of the site. No native vegetation removal is required for the development of the powerline along Baxter-Whelan Road. Despite the above efforts, some removal of native vegetation in the form of both patches and scattered trees is proposed to allow for the development of the Project.

Impacts to native vegetation have been determined based on the proposed site layout of the Barnawartha Solar Farm and Energy Storage (Appendix H).

The extent of native vegetation removal proposed for the Project is summarised for native vegetation in patches and scattered trees in Table 6 and Table 7 respectively.

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Table 6 Summary of native vegetation proposed to be removed from patches

Habitat Zone ID	EVC	Area (ha)	Number of Large Trees in patch
AD	Plains Grassy Woodland (EVC 55_61)	0.065	3
AE		0.052	3
AF		0.081	0
AG		0.071	4
AK		0.085	1
Total		0.354	11

Table 7 Proposed removal of scattered trees

Scattered Tree Size	Representative EVC	DBH range (cm)	No. of scattered trees
Small	Plains Grassy Woodland (EVC 55_61)	<80cm	22 (17 of which are dead trees)
Large		≥80cm	35 (12 of which are dead trees)
Total Scattered Trees to be removed			57 (29 of which are dead trees)

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The following native vegetation is required to be removed for the Project:

- Removal of 0.354 hectares of native patch vegetation (across five patches), including 11 large trees in patches; and
- Removal of 57 Scattered trees (including 35 large and 22 small trees) (of the 57 scattered trees, 29 are dead)

In accordance with the Guidelines, all native vegetation removal, including scattered trees is converted into an equivalent hectare area. This is done for scattered trees based on the area of a circle of 15m radius for large trees, and 10m radius for small trees. The total extent of proposed native vegetation removal is determined based on the DELWP issued Native Vegetation Removal Report (NVR) which is provided in Appendix I.

As per the NVR, the total extent of native vegetation to be removed for the Project is 2.742 hectares (which includes 46 large trees). This represents a significant reduction in the proposed removal of native vegetation compared to earlier plans. An earlier draft layout for the project considered in January 2022 would have resulted in the removal of 3.780 hectares of native vegetation (including 62 large trees).

Native vegetation has been considered as removed where it intersects the proposed Project layout, as well as allowing for a 10m wide (vegetation-free) firebreak buffer around the extent of the proposed solar farm panel layout to meet CFAs Renewable Energy Guidelines (CFA 2021). Guidance outlined in DELWPs Assessors Handbook has also been considered to determine impacts to trees, particularly along the proposed grid connection route. The Handbook states that “unless an arborist report indicates otherwise, a tree, or trees will be deemed lost if the encroachment (of compaction and excavation) into the TPZ is greater than 10 per cent, or is inside the SRZ (Structural Root Zone)”.

Impacts to native vegetation from the Project are shown in Figure 3 and in detail in Figure 3-1 to 3-3.

4.2.2 Potential impacts to listed matters

Potential impacts to threatened species deemed to have a moderate to high likelihood of occurrence in Section 3 are considered against the development layout below. The following threatened fauna species were considered to have a moderate likelihood of occurrence in the study area:

- Diamond Firetail (FFG Act)
- Grey-crowned Babbler (FFG Act)
- Hooded Robin (FFG Act)
- Swift Parrot (EPBC Act; FFG Act)
- Turquoise Parrot (FFG Act)

The proposed removal of native vegetation in the study area will result in some loss of treed habitat. However, based on the detail provided in Appendix F and discussed in Section 3.2.5, the Project is unlikely to result in the removal of habitat critical to the survival of any of the above listed threatened fauna species. Rather, impacts would be largely limited to a reduction in foraging opportunities in the local area.

Given the higher quality and better-connected treed habitats that will be retained along the adjoining road reserves, it is considered foraging opportunities will largely be maintained at a local scale. Similar open treed habitats also exist broadly throughout the region that would continue to provide foraging opportunities for birds such as Swift Parrot as they move through the landscape.

Consideration has been given to the relevant significant impact criteria outlined under the EPBC Act (DoE 2013) for the potential impacts of the project on Swift Parrot. Foraging habitats (preferred feed trees) in the study area for this species are considered to be limited to Grey Box and White Box. Of the trees proposed for removal by the Project, a large proportion are dead and would not attract the species for the purpose of foraging. Of the living scattered trees or large trees in patches assessed as being removed, 16 are Grey Box and 12 are White Box. This is considered to represent a minor reduction in the extent of available food resources in the region. Based on assessment against the significant impact criteria (DoE 2013), it is considered unlikely that the Project would result in a significant impact on Swift Parrot.

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Legend

- Study Area
 - Site Boundary
 - Solar Farm Development Footprint
 - Proposed Cable Route
 - Planted Tree Rows to be Removed
 - Tree Protection Zones (TPZs)
 - Dams
 - Road
 - River
- Native Tree**
- ▲ Large Tree in patch
 - Large Scattered Tree
 - Small Scattered Tree
 - ▲ Large Tree in patch to be removed
 - Large Scattered Tree to be Removed
 - Small Scattered Tree to be Removed
- Native Vegetation Patch**
- Plains Grassy Woodland (EVC 55_61)
 - Native Vegetation Patch to be Removed

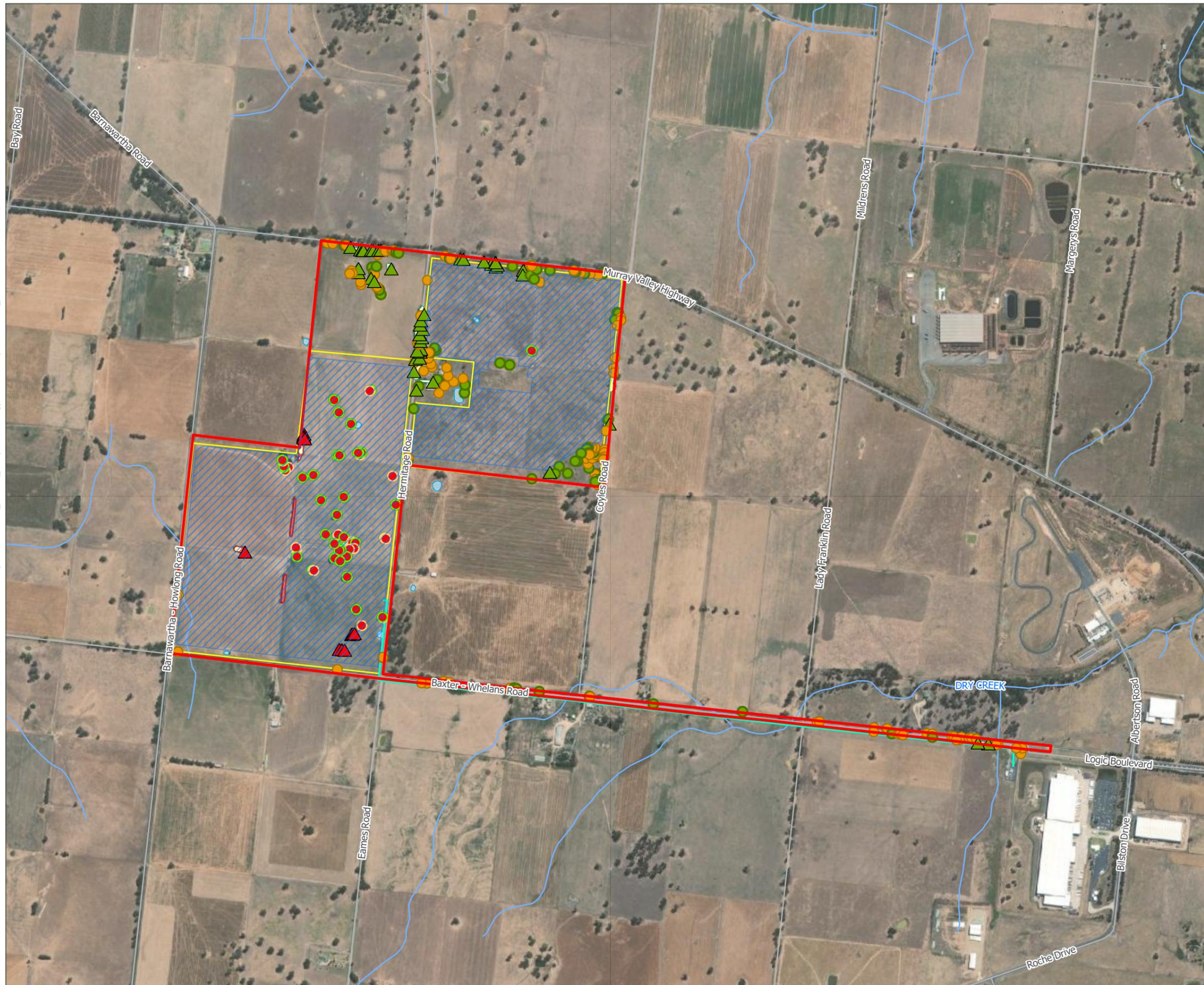
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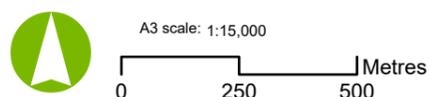
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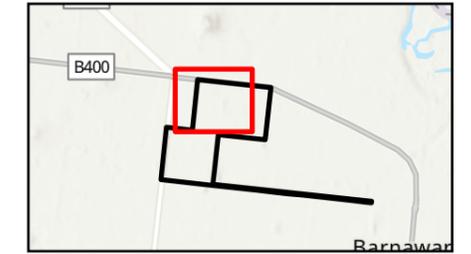
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Barnawartha Solar Farm
Removal of native vegetation overview



Legend

- Study Area
 - Site Boundary
 - Solar Farm Development Footprint
 - Tree Protection Zones
 - Dams
 - River
 - Road
- Native Tree**
- ▲ Large Tree in patch
 - Large Scattered Tree
 - Small Scattered Tree
 - ▲ Large Tree in patch to be removed
 - Large Scattered Tree to be Removed
 - Small Scattered Tree to be Removed
- Native Vegetation Patch**
- Plains Grassy Woodland (EVC 55_61)
 - Native Vegetation Patch to be Removed

Notes:

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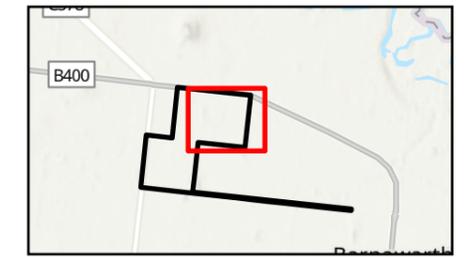


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Author: Nick Chen



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Legend

- Study Area
 - Site Boundary
 - Solar Farm Development Footprint
 - Tree Protection Zones
 - Dams
 - Road
 - River
- Native Tree**
- ▲ Large Tree in patch
 - Large Scattered Tree
 - Small Scattered Tree
 - ▲ Large Tree in patch to be removed
 - Large Scattered Tree to be Removed
 - Small Scattered Tree to be Removed
- Native Vegetation Patch**
- Plains Grassy Woodland (EVC 55_61)
 - Native Vegetation Patch to be Removed

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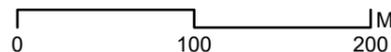
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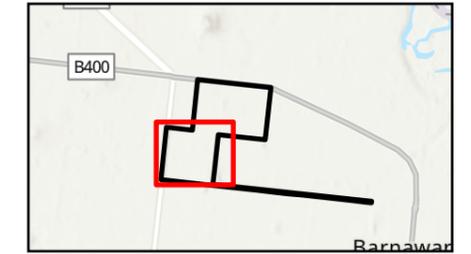
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Barnawartha Solar Farm

Removal of native vegetation - 2 of 3



Legend

- Study Area
 - Site Boundary
 - Solar Farm Development Footprint
 - Proposed Cable Route
 - Planted Tree Rows to be Removed
 - Tree Protection Zones
 - Dams
 - River
 - Road
- Native Tree**
- ▲ Large Tree in patch
 - Large Scattered Tree
 - Small Scattered Tree
 - ▲ Large Tree in patch to be removed
 - Large Scattered Tree to be Removed
 - Small Scattered Tree to be Removed
- Native Vegetation Patch**
- Plains Grassy Woodland (EVC 55_61)
 - Native Vegetation Patch to be Removed

Notes:

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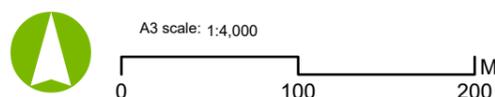
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4.3 Implications under relevant environmental legislation and policy

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is Commonwealth legislation that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, termed Matters of National Environmental Significance (MNES). Under the EPBC Act, an action that has, will have, or is likely to have, a significant impact on a MNES must be referred to the Commonwealth Minister for the Environment. The Minister will then determine whether the proposed action requires formal assessment and approval under the EPBC Act.

The results from the database search of the EPBC Act PMST identified multiple MNES potentially occurring within a 10 km radius search area. The MNES relevant to the project area are summarised in Table 8, with threatened and migratory species tabulated in Appendix E and F. The likelihood of occurrence of each relevant MNES are summarised in the following sub sections.

Table 8 Summary of Matters of National Environmental Significance (MNES) relevant to the search area

Matters of National Environmental Significance	MNES relevant to the project search area
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Importance	7
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	6
Listed Threatened Species	33
Listed Migratory Species	12

Wetlands of international importance (Ramsar)

Seven Ramsar wetlands are listed in the EPBC Act PMST, including Banrock Station Wetlands, Barmah Forest, Gunbower Forest, Hattah-Kulkyne Lakes, NSW Central Murray State Forests, Riverland and The Coorong, all of which are associated with the Murray River. The study area is located approximately two kilometres south of the Murray River, and greater than 100 kilometres upstream of each of the listed wetland sites.

Given the separation from the Murray River and the listed wetlands, the project is unlikely to result in a significant impact on any wetland of international importance.

Listed threatened species

Based on the assessments in Appendix E and F, and the detail provided in Sections 3.2.4 and 3.2.5, it has been determined that one EPBC Act listed threatened species, the Swift Parrot, has a moderate likelihood of occurrence in the study area. Based on the discussion provided in Section 4.2, it was concluded that the Project would represent a minor reduction in the extent of available food resources in the region, and as such it is considered unlikely that the Project would result in a significant impact on Swift Parrot.

As such, no EPBC Act listed threatened species are considered to be at risk of a significant impact from the proposed action.

Listed threatened ecological communities

See EPBC Act listed threatened ecological community was listed in the PMST as potentially being present in the search area (See Appendix G). As detailed in Section 0, no native vegetation in the study area was consistent with any EPBC Act listed ecological communities. As such, no EPBC Act listed threatened ecological communities are at risk of a significant impact from the proposed action.

Migratory

Based on the assessment in Appendix F, no EPBC Act migratory listed fauna species are considered to have a high or moderate likelihood of occurrence in the study area. As such, no EPBC Act migratory listed fauna species are at risk of a significant impact from the proposed action.

Conclusion – Implications under the EPBC Act

Consideration of the relevant significant impact criteria outlined under the EPBC Act (DoE 2013) has determined the Project is unlikely to result in a significant impact on any Matters of National Environmental Significance. As such, a referral under the EPBC Act is not considered to be required for the Project.

4.3.2 Environment Effects Act 1978

The *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DSE 2006) outlines the triggers for referral of a project to the Victorian Minister for Planning who will determine if an Environmental Effects Statement (EES) is required. Criteria relevant to flora and fauna are broadly summarised to include:

- Extensive removal of native vegetation (>10 hectares);
- Specified significant impacts to threatened species listed in Victoria; and
- Long term changes to Ramsar wetlands.

Based on the results of the flora and fauna assessment, the project is not likely to trigger a referral under the *Environment Effects Act 1978* (EE Act) based on any criteria specifically relevant to flora, fauna or biodiversity.

Other criteria beyond those relating to flora and fauna that trigger a referral may apply but have not been considered as part of this assessment.

4.3.3 Flora and Fauna Guarantee Act 1988

The FFG Act is the key piece of Victorian legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. Under the FFG Act a permit is required from DELWP to take (kill, injure, disturb or collect) threatened or protected flora species from public land.

No FFG Act listed threatened or protected flora species were recorded in the study area. As such, a Protected Flora Permit is not required for the Project.

4.3.4 Planning and Environment Act 1987

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

The majority of the study area (namely the portion of the study area that is within the Indigo LGA) is subject to Environmental Significance Overlay – Schedule 3 (ESO3). The key environmental objective of ESO3 is to maintain the quality of water within the catchment of Black Dog Creek which runs from Chiltern Mt Pilot National Park, north west to the Murray River. One of the key decision guidelines for this overlay is the need to retain natural vegetation in the vicinity of streams and watercourses. Given the Project site is situated

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more than 10 kilometres from the Black Dog Creek, the Project is unlikely to result in any adverse impacts on the water quality of Black Dog Creek.

Clause 12.01-2S (Native vegetation management) and Clause 52.17 (Native Vegetation) of the State Planning Policy Framework requires that the removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity, and that this is achieved by applying the three-step approach outlined in Victoria's 'Guidelines for the removal, destruction or lopping of native vegetation' (the Guidelines):

1. **Avoid** the removal, destruction or lopping of native vegetation.
2. **Minimise** impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Provide an **offset** to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

A planning permit is required under Clause 52.17 to remove, destroy or lop native vegetation, including dead native vegetation. Decision guidelines must be considered by the Referral and Responsible Authorities in deciding to grant or otherwise the planning permit. Exemptions to the requirement for a permit to remove native vegetation are specified in Clause 52.17 and include themes such as regrowth, dead vegetation and planted vegetation.

The Guidelines are incorporated into the Victorian Planning Provisions to regulate the clearance of native vegetation across the state. The Guidelines use a risk-based approach to determine the significance of native vegetation based on the extent, quality and location of vegetation proposed to be removed. Further details on the application of the guidelines are provided in Appendix A.

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

- The application triggers 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.

Impacts to native vegetation and implications under the Guidelines

Based on the impacts detailed in Section 4.2 and shown in Figure 3, the proposed action will result in the following impacts to native vegetation:

- Removal of 0.354 hectares of native patch vegetation (across five patches), including 11 large trees in patches; and
- Removal of 57 Scattered trees (including 35 large and 22 small trees) (of the 57 scattered trees, 29 are dead).

The total extent of proposed native vegetation removal is determined based on the DELWP issued NVRR which is provided in Appendix I.

As per the NVRR, the total extent of native vegetation to be removed for the Project is 2.742 hectares (which includes 46 large trees). This represents a significant reduction in the proposed removal of native vegetation compared to earlier plans.

Such removal of native vegetation in the Project area would trigger a permit under Clause 52.17 of the Indigo Planning Scheme. This report has been prepared to respond to the application requirements of the Guidelines.

It is understood that no native vegetation has been approved for removal on the property within the last five years. Representative photos of the native vegetation to be removed are provided in Section 3.2.1.

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Assessment pathway

The assessment pathway is determined by the location category and the extent of native vegetation, detailed in Appendix I and summarised as followed:

- Location Category: 2
- Extent loss of native vegetation: A total of 2.742 hectares of native vegetation

Based on these details, the Guidelines stipulate that the proposal is to be assessed under the **Detailed Assessment Pathway**. As such, the proposed action is required to be referred to DELWP.

Avoid and minimise statement

In accordance with the requirements under the Guidelines, any application to remove native vegetation requires the preparation of an 'avoid and minimise statement'. This statement is required to clearly identify the actions undertaken and efforts made throughout the planning process to avoid the removal of, and minimise impacts on, the biodiversity and other values of native vegetation.

At a strategic level, the proposed location for the solar farm has been selected based on the availability of a solar resource in a rural farmland setting.

At a site planning level, efforts have been made to avoid and minimise impacts to native vegetation where possible, without undermining the key objectives of the project. The extent of native vegetation has been assessed during the planning and design phase, and Aurecon's project ecologists have had several meetings and other correspondence with the proponent's design team to provide detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values. The proponent has adopted the avoid and minimise approach by refining the design of the project footprint to incorporate all key recommendations. This process has led to the final design footprint for the Project as shown in Figure 3, which has allowed for the retention of native vegetation in the Project area as follows:

- Retention of high significance native vegetation in the north west of the study area – The north west of the study area supports a remnant stand of large, old Red Box trees, some that have been classified as patches and some as scattered trees as per the Guidelines. Given the lack of Red Box elsewhere in the study area, this stand of Red Box was considered to be of local significance. While previous designs for the solar panel layout would have required the removal of native vegetation in this area, the design has been significantly refined to re-locate the solar panels from this area to another paddock to the south west. This design change has resulted in the avoidance of three patches of native vegetation, 5 large trees in patches, and 17 scattered trees (six large and 11 small) in this area. This area of native vegetation is also mapped as Location Category 3 as per DELWPs statewide Location map based on having high modelled habitat importance for Wedge Tailed Shearwater (*Diuris dendrobioides*). This particular area has since been avoided in the current plan.
- Retention of all native vegetation around the perimeter of the solar farm – While early concept designs for the project would have resulted in impacts to some vegetation along adjoining road reserves, the design has since been updated to ensure that impacts to native vegetation from the solar farm layout (as well as the area required for the implementation of an appropriate firebreak) is limited to private land. The design also includes the retention of native vegetation within private land around the perimeter of the Project site. This includes the retention of over 30 native trees on private land in the south east of the project area (Trees 38 to 68 and Habitat Zone AC).
- Retention of two of the largest and most significant trees recorded in the project area – While the initial design proposed the removal of Trees 16 and 17, the proponent has adopted the recommendation to avoid and retain these two large scattered trees. These two trees were deemed to be particularly significant due to their tremendously large size (DBH of 161 and 162 cm respectively), healthy canopy and impressive spreading nature.
- Locating the powerline cable route so as to have no impacts to native vegetation - Most of the native vegetation along Baxter-Whelan Road exists on the northern side of the road, so the powerline will be located on the southern side of the road. While the western portion will be located in the road reserve using existing overhead lines, the eastern portion of the powerline will be located south of the road

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reserve (in the Council easement) to avoid native vegetation in the eastern part of the road reserve. The route for the powerline cable avoids any impact to native vegetation.

It is considered that no feasible opportunities exist to further avoid or minimise impacts on native vegetation without undermining the key objectives of the project.

Native vegetation offsets

Native vegetation offsets would be required to compensate for any approved removal of native vegetation. A Native Vegetation Removal Report (NVR) has been prepared to detail the relevant offset requirements and is provided in Appendix I.

A summary of the native vegetation removal details and offset requirements as per the NVR is provided in Table 9 below.

Table 9: Summary of information from the Native Vegetation Removal Report

Removal and offset details	Information requirement	Project information from NVR
Removal details	Risk based pathway	Detailed
	Total extent of native vegetation removal	2.742 ha
	Location Category	2
Offset details	Offset requirements	<p>0.504 general habitat units, with the following requirements:</p> <ul style="list-style-type: none"> Offset must be located in North East Catchment Management Authority (CMA) or Indigo Local Government Area Offset must have minimum strategic biodiversity value (SBV) of 0.188 Offset must include the protection of 46 large trees

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The required offset target must be sourced and secured prior to any removal of native vegetation.

Offset statement

An online search of the Native Vegetation Credit Register (NVCR) on 16th March 2022 has shown that a sufficient amount of general habitat units are readily available in the North East CMA (See Appendix J). Based on the proposed design for the solar farm and the Native Vegetation Removal Report which has been prepared by DELWP, no species offsets are required.

4.3.5 Wildlife Act 1975 and Wildlife Regulations 2002

The main legislation for protecting and managing fauna in Victoria is the *Wildlife Act 1975*. This covers indigenous vertebrate species (except declared pest species), invertebrate species listed under the FFG Act and some introduced game species. A Management Authorisation permit would be required under the Act if salvage and relocation of fauna are to be undertaken as part of any removal of habitat associated with the works. This is likely to be required for the removal of native trees proposed within the study area.

4.3.6 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) identifies and classifies certain species as noxious weeds or pest animals and provides a system of controls on noxious species.

The CaLP Act also provides a legislative framework for the management of private and public land and sets out the responsibilities of land managers, stating that they must take all reasonable steps to:

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

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The study area contains the following noxious weeds listed as regionally controlled within the North East Catchment Management Authority region:

- St John's Wort (sparsely recorded in roadside vegetation); and
- Variegated Thistle (recorded on private land, around a dam in the south east of the Project site)

Appropriate weed control and hygiene measures should be outlined in the Construction and Operational Environmental Management Plans for the Project. Specific attention should be given to ensuring appropriate measures are in place during construction to prevent the spread of high threat weeds in the study area.

4.4 Bushfire risk

While numerous scattered trees existing around the perimeter of the Project area, the broader surrounds are largely distinguished by open farmland. As such grassland presents the main bushfire hazard vegetation type in the region. The closest areas of bushland in the region are along Indigo Creek to the south west and along the Murray River to the north east. Dense forested habitats occur at Chiltern-Mt Pilot National Park which is located 6.5 km to the south west, beyond Indigo Creek.

While no part of the study area is in a Bushfire Management Overlay (BMO), like much of Victoria, the entire study area is designated as a Bushfire Prone Area (BPA).

Clause 13.02-1S of the Indigo and Wodonga Planning Schemes lists types of applications for which bushfire risk should be considered in a BPA. As the proposed development is not specifically listed, the application requirements of Clause 13.02 are not considered to apply and have not been considered further here.

However, as the Minister for Planning refers the application to the Country Fire Authority (CFA), it is recommended that the requirements of the *CFA guidelines for renewable energy facilities* (CFA 2021) are applied to the Project. The key implications of these guidelines relevant to Project are discussed below.

Implications for the Project under the CFA Guidelines (CFA 2021)

To reduce the risk of bushfire associated with the operation of renewable energy facilities, the CFA have provided specific guidance for siting, operation and fuel/vegetation management for renewable energy projects, with particular guidance for solar farm facilities (CFA 2021).

The following measures are likely to be required by the CFA as per the renewable energy guidelines. As such the following measures should be incorporated into the development of the Project:

- Firebreak, siting and access requirements:
 - All renewable energy installations within a BMO or BPA must maintain an appropriate firebreak around the perimeter of the facility as follows:
 - A fire break area of at least ten (10) metres width must be maintained around the perimeter of the facility, where vegetation in the screening zone/landscape buffer is a width of 20m or less
 - Solar facilities are to have grass or other vegetation maintained to 100mm or mineral earth or non-combustible mulch such as crushed rock under solar panels and within fire breaks during the Fire Danger Period.

A 10-metre-wide firebreak has been incorporated into the design and has been considered as part of the ecological impact assessment. The firebreak will include a perimeter road as shown in Appendix H, as

well as additional offsetting to achieve a 10m break between the solar panels and the treed vegetation in the adjoining road reserves.

Other considerations of the CFA renewable energy guidelines are provided as followed:

- Solar facilities are to have a six (6) metre separation between solar panel banks.
- A fire protection system must be provided to allow adequate response to the risks and hazards at the facility, in consultation with CFA. The fire protection system must incorporate one (1) x 45kL static water tank for every 150ha.
- Where solar installations include a battery energy storage system, design of fire protection systems must consider the additional risks and hazards of the installation.
- The site is likely to require the preparation of an Emergency Management Plan, which must outline fire prevention measures, and the facilitation of firefighting response.

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5 Summary and recommendations

5.1 Summary

The ecological investigation undertaken for the proposed Barnawartha Solar Farm and Energy Storage identified that the site largely supported farmland comprising introduced pasture grasses as well as several remnant native eucalypts, many of which classified as large trees. Native vegetation distinguished by the presence of mature eucalypts was also present within the adjoining road reserves, particularly along Murray Valley Highway, Coyles Road and Hermitage Road, as well as along the proposed grid connection route along Baxter-Whelans Road.

The following native vegetation was recorded in the study area:

- 2.303 hectares of Plains Grassy Woodland (EVC 55_61), across patches (including 56 large trees in patches); and
- 229 scattered trees (including 93 large and 136 small).

No EPBC Act or FFG Act listed threatened communities were identified in the study area.

No threatened flora species were recorded within the study area. Due to the heavily modified nature of the site and almost exclusively introduced ground layer, it was determined that no threatened flora species are likely to occur.

Five threatened fauna species were considered to have a moderate likelihood of occurrence in the study area, namely Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Swift Parrot and Turquoise Parrot. However, the treed habitat in the study area does not represent a key habitat corridor for these species, and individuals would continue to utilise more significant foraging habitat available in the region such as Chiltern Mt Pilot National Park and along the Murray River. It has been determined that while these species may occasionally visit the treed habitats in the study area, the extent of tree removal required for the Project would represent a minor impact on these species. Importantly, the Project is considered unlikely to result in a significant impact on Swift Parrot which is listed as critically endangered under the EPBC Act.

Consideration of the relevant significant impact criteria outlined under the EPBC Act has determined the Project is unlikely to result in a significant impact on any Matters of National Environmental Significance. As such, a referral under the EPBC Act is not considered to be required for the Project.

The project is not likely to trigger a referral under the EE Act based on any criteria specifically relevant to flora, fauna or biodiversity. No FFG Act listed threatened or protected flora species were recorded in the study area. As such, a Protected Flora Permit is not required for the Project.

The Project has aimed to avoid and minimise impacts on native vegetation at both strategic and site planning levels. The extent of native vegetation has been assessed during the planning and design phase, with Aurecon's project ecologists detailed recommendations for avoidance and minimisation of impacts on native vegetation and other ecological values being incorporated into the design where possible.

Residual impacts to native vegetation have been determined based on the final proposed site layout of the Barnawartha Solar Farm and Energy Storage, cable route and are summarised as follows:

- Removal of 0.354 hectares of native patch vegetation (across five patches), including 11 large trees in patches; and
- Removal of 57 Scattered trees (including 35 large and 22 small trees) (of the 57 scattered trees, 29 are dead).

The total extent of proposed native vegetation removal is determined based on the DELWP issued NVRP which is provided in Appendix I. As per the NVRP, the total extent of native vegetation to be removed, including conversion of scattered trees to area, is 2.742 hectares (which includes 46 large trees). This represents a significant reduction in the proposed removal of native vegetation compared to earlier plans.

Such removal of native vegetation in the Project area would trigger a permit under Clause 52.17 of the Indigo Planning Scheme. The removal would be assessed under the Detailed Assessment Pathway, which requires

that the project be referred to DELWP. Offsets for the removal of native vegetation are required in accordance with the Guidelines and include the following:

- 0.504 general habitat units, with the following requirements:
 - Offset must be located in North East Catchment Management Authority (CMA) or Indigo Local Government Area
 - Offset must have minimum strategic biodiversity value (SBV) of 0.188
 - Offset must include the protection of 46 large trees

An online search of the Native Vegetation Credit Register (NVCR) on 16th March 2022 has shown that a sufficient amount of general habitat units are readily available in the North East CMA. Based on the proposed design for the solar farm and the Native Vegetation Removal Report which has been prepared by DELWP, no species offsets are required.

5.2 Recommendations

The following recommendations are provided to further assist the planning and development of the Project:

- Engage a suitably qualified wildlife handler to inspect all trees approved for removal to determine presence and/or suitability for nesting fauna. This is particularly relevant to hollow-bearing trees.
- At the time of approved tree removal, a suitably qualified wildlife handler should be onsite to undertake salvage and translocation of any nesting fauna. This is likely to be a condition of any permit for tree removal.

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Appendix B: Vegetation quality assessment results

Habitat Hectare Criteria		Max score	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	
Site Condition	Area (ha)		0.062	0.098	0.072	0.065	0.052	0.081	0.071	0.088	0.068	0.060	0.085	0.027	0.324	0.269	
	Number of Large Trees in patch		1	4	1	3	3	0	4	2	2	1	1	1	7	6	
	Bioregion	Victorian Riverina															
	EVC	Plains Grassy Woodland (EVC 55_61)															
	Large Old Trees	10	10	9	9	9	9	0	9	9	9	9	9	9	10	9	9
	Canopy Cover	5	5	4	4	4	4	4	4	4	4	4	4	4	5	4	4
	Lack of Weeds	15	7	0	0	0	0	0	4	4	0	0	0	0	4	0	0
	Understorey	25	5	5	5	0	0	0	5	5	5	5	5	5	5	5	5
	Recruitment	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Organic Matter	5	3	4	3	0	0	0	0	0	3	0	5	0	3	3	3
	Logs	5	0	0	0	5	0	0	0	0	5	5	4	0	0	0	0
	Total Site Score		30	22	21	18	13	13	22	26	23	27	18	27	21	21	
	Standardiser		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Standardised Score		30	22	21	18	13	13	22	26	23	27	18	27	21	21		
Landscape Value	Patch Size	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Distance to Core	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Total Landscape Score		2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Final score	Habitat Score (out of 100)	100	32	24	23	20	15	15	24	28	25	29	20	29	23	23	
	Condition Score (out of 1)	1	0.32	0.24	0.23	0.2	0.15	0.15	0.24	0.28	0.25	0.29	0.2	0.29	0.23	0.23	

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Habitat Hectare Criteria		Max score	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	
Site Condition	Area (ha)		0.037	0.027	0.098	0.067	0.060	0.121	0.072	0.059	0.034	0.137	0.012	0.008	0.022	0.127	
	Number of Large Trees in patch		1	0	4	4	2	6	0	1	0	0	0	0	0	2	
	Bioregion	Victorian Riverina															
	EVC	Plains Grassy Woodland (EVC 55_61)															
	Large Old Trees	10	10	0	9	9	9	9	0	9	0	0	0	0	0	0	9
	Canopy Cover	5	4	5	4	4	4	4	5	4	4	4	4	4	4	4	4
	Lack of Weeds	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Understorey	25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Recruitment	10	0	5	0	0	0	0	0	5	0	0	0	0	0	0	0
	Organic Matter	5	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0
	Logs	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
	Total Site Score		22	18	26	21	21	21	21	18	18	9	9	9	9	9	18
	Standardiser		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Standardised Score		22	18	26	21	21	21	21	18	18	9	9	9	9	9	18	
Landscape Value	Patch Size	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Neighbourhood	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Distance to Core	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Total Landscape Score		2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Final score	Habitat Score (out of 100)	100	24	20	28	23	23	23	20	20	11	11	11	11	11	20	
	Condition Score (out of 1)	1	0.24	0.2	0.28	0.23	0.23	0.23	0.2	0.2	0.11	0.11	0.11	0.11	0.11	0.2	

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Appendix C: Details of scattered trees and large trees in patches

Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
1	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	92	289	11.0	Large	Scattered Tree		
2	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	139	437	15.0	Large	Scattered Tree	Dead	
3	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	94	295	11.3	Large	Large Tree in patch (HZ AA)		
4	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	26	82	3.1	Small	Scattered Tree		
5	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	22	69	2.6	Small	Scattered Tree		
6	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	23	72	2.8	Small	Scattered Tree		
7	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	14	44	2.0	Small	Scattered Tree		
8	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	71	223	8.5	Small	Scattered Tree		
9	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	56	176	6.7	Small	Scattered Tree	Dead	
10	Yellow Box	<i>Eucalyptus melliodora</i>	127	399	15.0	Large	Scattered Tree	Re-rooting from top	
11	Yellow Box	<i>Eucalyptus melliodora</i>	110	346	13.2	Large	Scattered Tree		
12	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	42	132	5.0	Small	Scattered Tree		
13	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	78	245	9.4	Small	Scattered Tree		
14	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	47	148	5.6	Small	Scattered Tree		
15	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	57	179	6.8	Small	Scattered Tree		
16	Yellow Box	<i>Eucalyptus melliodora</i>	161	506	15.0	Large	Scattered Tree	Very large specimen	
17	Yellow Box	<i>Eucalyptus melliodora</i>	162	509	15.0	Large	Scattered Tree		
18	Yellow Box	<i>Eucalyptus melliodora</i>	124	390	14.9	Large	Scattered Tree		Removed
19	Yellow Box	<i>Eucalyptus melliodora</i>	85	267	10.2	Large	Scattered Tree		
20	Yellow Box	<i>Eucalyptus melliodora</i>	115	361	13.8	Large	Scattered Tree		
21	Yellow Box	<i>Eucalyptus melliodora</i>	103	324	12.4	Large	Scattered Tree		
22	Yellow Box	<i>Eucalyptus melliodora</i>	77	242	9.2	Small	Scattered Tree		
23	White Box	<i>Eucalyptus albens</i>	97	305	11.6	Large	Large Tree in patch (HZ AT)		
24	White Box	<i>Eucalyptus albens</i>	86	270	10.3	Large	Large Tree in patch (HZ AT)		
25	White Box	<i>Eucalyptus albens</i>	83	261	10.0	Large	Large Tree in patch (HZ AT)		
26	But-But	<i>Eucalyptus bridgesiana</i>	143	449	15.0	Large	Scattered Tree		
27	But-But	<i>Eucalyptus bridgesiana</i>	123	386	14.8	Large	Large Tree in patch (HZ AB)		
28	Yellow Box	<i>Eucalyptus melliodora</i>	123	386	14.8	Large	Large Tree in patch (HZ AB)		
29	Yellow Box	<i>Eucalyptus melliodora</i>	94	295	11.3	Large	Large Tree in patch (HZ AB)		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
30	Yellow Box	<i>Eucalyptus melliodora</i>	139	437	15.0	Large	Large Tree in patch (HZ AB)		
31	Yellow Box	<i>Eucalyptus melliodora</i>	138	434	15.0	Large	Scattered Tree		
32	Yellow Box	<i>Eucalyptus melliodora</i>	108	339	13.0	Large	Scattered Tree		
33	Red Box	<i>Eucalyptus polyanthemos</i>	76	239	9.1	Small	Scattered Tree		
34	But-But	<i>Eucalyptus bridgesiana</i>	119	374	14.3	Large	Scattered Tree		
35	Grey Box	<i>Eucalyptus microcarpa</i>	123	386	14.8	Large	Scattered Tree		
36	Grey Box	<i>Eucalyptus microcarpa</i>	200	628	15.0	Large	Scattered Tree		
37	Grey Box	<i>Eucalyptus microcarpa</i>	194	609	15.0	Large	Scattered Tree		
38	Grey Box	<i>Eucalyptus microcarpa</i>	64	201	7.7	Small	Scattered Tree		
39	Grey Box	<i>Eucalyptus microcarpa</i>	82	258	9.8	Large	Scattered Tree		
40	Grey Box	<i>Eucalyptus microcarpa</i>	121	380	14.5	Large	Scattered Tree		
41	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	56	176	6.7	Small	Scattered Tree	Dead	
42	Grey Box	<i>Eucalyptus microcarpa</i>	74	232	8.9	Small	Scattered Tree		
43	Grey Box	<i>Eucalyptus microcarpa</i>	120	377	14.4	Large	Scattered Tree		
44	Grey Box	<i>Eucalyptus microcarpa</i>	117	368	14.0	Large	Scattered Tree		
45	Grey Box	<i>Eucalyptus microcarpa</i>	42	132	5.0	Small	Scattered Tree		
46	Grey Box	<i>Eucalyptus microcarpa</i>	81	254	9.7	Large	Scattered Tree		
47	Grey Box	<i>Eucalyptus microcarpa</i>	93	292	11.2	Large	Scattered Tree		
48	Grey Box	<i>Eucalyptus microcarpa</i>	55	173	6.6	Small	Scattered Tree		
49	Grey Box	<i>Eucalyptus microcarpa</i>	65	204	7.8	Small	Scattered Tree		
50	Grey Box	<i>Eucalyptus microcarpa</i>	43	135	5.2	Small	Scattered Tree		
51	Grey Box	<i>Eucalyptus microcarpa</i>	48	151	5.8	Small	Scattered Tree		
52	Grey Box	<i>Eucalyptus microcarpa</i>	81	254	9.7	Large	Scattered Tree		
53	Grey Box	<i>Eucalyptus microcarpa</i>	64	201	7.7	Small	Scattered Tree		
54	Grey Box	<i>Eucalyptus microcarpa</i>	75	236	9.0	Small	Scattered Tree		
55	Grey Box	<i>Eucalyptus microcarpa</i>	61	192	7.3	Small	Scattered Tree		
56	Grey Box	<i>Eucalyptus microcarpa</i>	66	207	7.9	Small	Scattered Tree		
57	Grey Box	<i>Eucalyptus microcarpa</i>	83	261	10.0	Large	Scattered Tree		
58	Grey Box	<i>Eucalyptus microcarpa</i>	117	368	14.0	Large	Scattered Tree		
59	Grey Box	<i>Eucalyptus microcarpa</i>	81	254	9.7	Large	Scattered Tree		
60	Grey Box	<i>Eucalyptus microcarpa</i>	45	141	5.4	Small	Scattered Tree		
61	Grey Box	<i>Eucalyptus microcarpa</i>	106	333	12.7	Large	Scattered Tree		
62	Grey Box	<i>Eucalyptus microcarpa</i>	121	380	14.5	Large	Scattered Tree		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
63	Grey Box	<i>Eucalyptus microcarpa</i>	105	330	12.6	Large	Scattered Tree		
64	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	83	261	10.0	Large	Scattered Tree		
65	Grey Box	<i>Eucalyptus microcarpa</i>	91	286	10.9	Large	Scattered Tree		
66	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	81	254	9.7	Large	Scattered Tree		
67	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	80	251	9.6	Large	Large Tree in patch (HZ AC)	Bee hive at base	
68	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	210	660	15.0	Large	Scattered Tree	On fence line	
69	White Box	<i>Eucalyptus albens</i>	124	390	14.9	Large	Scattered Tree		Removed
70	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	112	352	13.4	Large	Scattered Tree		Removed
71	White Box	<i>Eucalyptus albens</i>	141	443	15.0	Large	Scattered Tree	Bee hive at base	Removed
72	Grey Box	<i>Eucalyptus microcarpa</i>	101	317	12.1	Large	Scattered Tree	nest	Removed
73	White Box	<i>Eucalyptus albens</i>	145	456	15.0	Large	Scattered Tree	nest	Removed
74	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	74	232	8.9	Small	Scattered Tree	Dead	Removed
75	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	106	333	12.7	Large	Scattered Tree	Dead	Removed
76	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	56	176	6.7	Small	Scattered Tree	Dead	Removed
77	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	70	220	8.4	Small	Scattered Tree	Dead	Removed
78	White Box	<i>Eucalyptus albens</i>	104	327	12.5	Large	Scattered Tree		Removed
79	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	62	195	7.4	Small	Scattered Tree	Dead	Removed
80	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	43	135	5.2	Small	Scattered Tree	Dead	Removed
81	White Box	<i>Eucalyptus albens</i>	108	339	13.0	Large	Scattered Tree		Removed
82	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	83	261	10.0	Large	Scattered Tree	Dead	Removed
83	Grey Box	<i>Eucalyptus microcarpa</i>	94	295	11.3	Large	Scattered Tree	Re-rooting from top	Removed
84	Grey Box	<i>Eucalyptus microcarpa</i>	121	380	14.5	Large	Scattered Tree		Removed
85	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	88	276	10.6	Large	Scattered Tree	Dead	Removed
86	White Box	<i>Eucalyptus albens</i>	98	308	11.8	Large	Scattered Tree	Poor health	Removed
87	White Box	<i>Eucalyptus albens</i>	116	364	13.9	Large	Scattered Tree		Removed
88	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	71	223	8.5	Small	Scattered Tree	Dead	Removed
89	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	58	182	7.0	Small	Scattered Tree	Dead	Removed
90	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	76	239	9.1	Small	Scattered Tree	Dead	Removed
91	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	78	245	9.4	Small	Scattered Tree	Dead	Removed
92	White Box	<i>Eucalyptus albens</i>	124	390	14.9	Large	Scattered Tree		Removed
93	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	25	79	3.0	Small	Scattered Tree		Removed
94	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	62	195	7.4	Small	Scattered Tree	Dead	Removed
95	Grey Box	<i>Eucalyptus microcarpa</i>	68	214	8.2	Small	Scattered Tree		Removed

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
96	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	79	248	9.5	Small	Scattered Tree	Dead	Removed
97	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	99	311	11.9	Large	Scattered Tree	Dead	Removed
98	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	106	333	12.7	Large	Scattered Tree	Dead	Removed
99	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	73	229	8.8	Small	Scattered Tree	Dead	Removed
100	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	74	232	8.9	Small	Scattered Tree	Dead	Removed
101	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	85	267	10.2	Large	Scattered Tree	Dead	Removed
102	Grey Box	<i>Eucalyptus microcarpa</i>	174	547	15.0	Large	Scattered Tree	Very large specimen	Removed
103	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	124	390	14.9	Large	Scattered Tree	Dead	Removed
104	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	77	242	9.2	Small	Scattered Tree	Dead	Removed
105	Grey Box	<i>Eucalyptus microcarpa</i>	104	327	12.5	Large	Large Tree in patch (HZ AD)		Removed
107	Grey Box	<i>Eucalyptus microcarpa</i>	95	298	11.4	Large	Large Tree in patch (HZ AD)		Removed
108	Grey Box	<i>Eucalyptus microcarpa</i>	100	314	12.0	Large	Large Tree in patch (HZ AD)		Removed
109	Grey Box	<i>Eucalyptus microcarpa</i>	93	292	11.2	Large	Large Tree in patch (HZ AE)		Removed
110	Grey Box	<i>Eucalyptus microcarpa</i>	84	264	10.1	Large	Large Tree in patch (HZ AE)		Removed
111	Grey Box	<i>Eucalyptus microcarpa</i>	96	302	11.5	Large	Large Tree in patch (HZ AE)		Removed
112	Grey Box	<i>Eucalyptus microcarpa</i>	66	207	7.9	Small	Scattered Tree		Removed
113	Grey Box	<i>Eucalyptus microcarpa</i>	85	267	10.2	Large	Scattered Tree		Removed
114	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	48	151	5.8	Small	Scattered Tree	Dead	Removed
115	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	78	245	9.4	Small	Scattered Tree	Dead	Removed
116	Grey Box	<i>Eucalyptus microcarpa</i>	127	399	15.0	Large	Scattered Tree		Removed
117	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	93	292	11.2	Large	Scattered Tree	Dead	Removed
118	White Box	<i>Eucalyptus albens</i>	76	239	9.1	Small	Scattered Tree		Removed
119	Grey Box	<i>Eucalyptus microcarpa</i>	109	342	13.1	Large	Scattered Tree		Removed
120	Yellow Box	<i>Eucalyptus melliodora</i>	107	336	12.8	Large	Large Tree in patch (HZ AG)		Removed
121	Yellow Box	<i>Eucalyptus melliodora</i>	80	251	9.6	Large	Large Tree in patch (HZ AG)		Removed
122	Yellow Box	<i>Eucalyptus melliodora</i>	83	261	10.0	Large	Large Tree in patch (HZ AG)		Removed
123	Yellow Box	<i>Eucalyptus melliodora</i>	113	355	13.6	Large	Large Tree in patch (HZ AG)		Removed
124	Grey Box	<i>Eucalyptus microcarpa</i>	82	258	9.8	Large	Scattered Tree		Removed
125	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	83	261	10.0	Large	Scattered Tree	Dead	Removed
126	White Box	<i>Eucalyptus albens</i>	107	336	12.8	Large	Scattered Tree		Removed
127	Yellow Box	<i>Eucalyptus melliodora</i>	187	587	15.0	Large	Scattered Tree	Re-rooting from top	Removed
128	Yellow Box	<i>Eucalyptus melliodora</i>	125	393	15.0	Large	Scattered Tree	Very large specimen	Removed
129	Yellow Box	<i>Eucalyptus melliodora</i>	84	264	10.1	Large	Scattered Tree		Removed

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
130	White Box	<i>Eucalyptus albens</i>	59	185	7.1	Small	Scattered Tree		Removed
131	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	66	207	7.9	Small	Scattered Tree	Dead	Removed
132	White Box	<i>Eucalyptus albens</i>	106	333	12.7	Large	Scattered Tree		Removed
133	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	81	254	9.7	Large	Scattered Tree	Dead	Removed
134	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	88	276	10.6	Large	Scattered Tree	Dead	Removed
135	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	88	276	10.6	Large	Scattered Tree	Dead	Removed
136	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	17	53	2.0	Small	Scattered Tree		
137	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	29	91	3.5	Small	Scattered Tree		
138	Red Box	<i>Eucalyptus polyanthemos</i>	108	339	13.0	Large	Scattered Tree		
139	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	80	251	9.6	Large	Scattered Tree	Dead	
140	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	78	245	9.4	Small	Scattered Tree	Dead	
142	Red Box	<i>Eucalyptus polyanthemos</i>	92	289	11.0	Large	Large Tree in patch (HZ AH)		
143	Red Box	<i>Eucalyptus polyanthemos</i>	74	232	8.9	Small	Scattered Tree		
144	Red Box	<i>Eucalyptus polyanthemos</i>	43	135	5.2	Small	Scattered Tree		
145	Red Box	<i>Eucalyptus polyanthemos</i>	83	261	10.0	Large	Large Tree in patch (HZ AI)		
146	Red Box	<i>Eucalyptus polyanthemos</i>	98	308	11.8	Large	Large Tree in patch (HZ AI)		
147	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	55	173	6.6	Small	Scattered Tree	Dead	
148	Red Box	<i>Eucalyptus polyanthemos</i>	66	207	7.9	Small	Scattered Tree		
149	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	68	214	8.2	Small	Scattered Tree	Dead	
150	Red Box	<i>Eucalyptus polyanthemos</i>	73	229	8.8	Small	Scattered Tree		
151	Red Box	<i>Eucalyptus polyanthemos</i>	129	405	15.0	Large	Scattered Tree		
152	Red Box	<i>Eucalyptus polyanthemos</i>	69	217	8.3	Small	Scattered Tree		
153	Red Box	<i>Eucalyptus polyanthemos</i>	85	267	10.2	Large	Scattered Tree	Bee hive	
154	Red Box	<i>Eucalyptus polyanthemos</i>	80	251	9.6	Large	Scattered Tree		
155	Red Box	<i>Eucalyptus polyanthemos</i>	58	182	7.0	Small	Scattered Tree		
156	Red Box	<i>Eucalyptus polyanthemos</i>	41	129	4.9	Small	Scattered Tree		
157	Red Box	<i>Eucalyptus polyanthemos</i>	89	280	10.7	Large	Large Tree in patch (HZ AH)		
158	Red Box	<i>Eucalyptus polyanthemos</i>	83	261	10.0	Large	Scattered Tree		
159	Red Box	<i>Eucalyptus polyanthemos</i>	98	308	11.8	Large	Large Tree in patch (HZ AJ)		
160	Yellow Box	<i>Eucalyptus melliodora</i>	80	251	9.6	Large	Large Tree in patch (HZ AK)		Removed
162	White Box	<i>Eucalyptus albens</i>	10	31	2.0	Small	Scattered Tree	In road reserve	
163	River Red-gum	<i>Eucalyptus camaldulensis</i>	45	141	5.4	Small	Scattered Tree		
164	White Box	<i>Eucalyptus albens</i>	55	173	6.6	Small	Scattered Tree		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
165	White Box	<i>Eucalyptus albens</i>	20	63	2.4	Small	Scattered Tree		
166	White Box	<i>Eucalyptus albens</i>	15	47	2.0	Small	Scattered Tree		
167	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	29	91	3.5	Small	Scattered Tree	East side of Hermitage Road	
168	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	22	69	2.6	Small	Scattered Tree	East side of Hermitage Road	
169	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	116	364	13.9	Large	Scattered Tree	East side of Hermitage Road	
170	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	20	63	2.4	Small	Scattered Tree	East side of Hermitage Road	
171	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	98	308	11.8	Large	Scattered Tree	East side of Hermitage Road	
172	Yellow Box	<i>Eucalyptus melliodora</i>	83	261	10.0	Large	Large Tree in patch (HZ AL)	East side of Hermitage Road	
173	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	91	286	10.9	Large	Large Tree in patch (HZ AM)	West side of Hermitage Road	
174	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	89	280	10.7	Large	Large Tree in patch (HZ AM)	West side of Hermitage Road	
175	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	106	333	12.7	Large	Large Tree in patch (HZ AM)	West side of Hermitage Road	
176	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	121	380	14.5	Large	Large Tree in patch (HZ AM)	East side of Hermitage Road	
177	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	80	251	9.6	Large	Large Tree in patch (HZ AM)	East side of Hermitage Road	
178	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	87	273	10.4	Large	Large Tree in patch (HZ AM)	East side of Hermitage Road	
179	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	97	305	11.6	Large	Large Tree in patch (HZ AM)	West side of Hermitage Road	
180	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	23	72	2.8	Small	Scattered Tree	East side of Hermitage Road	
181	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	32	101	3.8	Small	Scattered Tree	West side of Hermitage Road	
182	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	11	35	2.0	Small	Scattered Tree	East side of Hermitage Road	
183	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	10	31	2.0	Small	Scattered Tree	West side of Hermitage Road	
184	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	88	276	10.6	Large	Large Tree in patch (HZ AN)	East side of Hermitage Road	
185	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	157	493	18.8	Large	Large Tree in patch (HZ AN)	East side of Hermitage Road	
187	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	81	254	9.7	Large	Large Tree in patch (HZ AN)	West side of Hermitage Road	
188	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	189	594	15.0	Large	Large Tree in patch (HZ AN)	East side of Hermitage Road	
189	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	80	251	9.6	Large	Large Tree in patch (HZ AN)	West side of Hermitage Road	
190	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	98	308	11.8	Large	Large Tree in patch (HZ AN)	West side of Hermitage Road	
191	White Box	<i>Eucalyptus albens</i>	21	66	2.5	Small	Scattered Tree		
192	White Box	<i>Eucalyptus albens</i>	82	258	9.8	Large	Large Tree in patch (HZ AO)		
194	White Box	<i>Eucalyptus albens</i>	77	242	9.2	Small	Scattered Tree	East side of Hermitage Road	
195	Yellow Box	<i>Eucalyptus melliodora</i>	47	148	5.6	Small	Scattered Tree	South of MV Hwy	
196	Yellow Box	<i>Eucalyptus melliodora</i>	65	204	7.8	Small	Scattered Tree	South of MV Hwy	
197	White Box	<i>Eucalyptus albens</i>	102	320	12.2	Large	Scattered Tree	South of MV Hwy	
198	White Box	<i>Eucalyptus albens</i>	20	63	2.4	Small	Scattered Tree		
199	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	90	283	10.8	Large	Large Tree in patch (HZ AQ)		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
200	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	88	276	10.6	Large	Large Tree in patch (HZ AQ)	Dead	
201	White Box	<i>Eucalyptus albens</i>	123	386	14.8	Large	Large Tree in patch (HZ AQ)		
202	White Box	<i>Eucalyptus albens</i>	87	273	10.4	Large	Large Tree in patch (HZ AQ)		
203	White Box	<i>Eucalyptus albens</i>	85	267	10.2	Large	Large Tree in patch (HZ AR)		
204	White Box	<i>Eucalyptus albens</i>	80	251	9.6	Large	Large Tree in patch (HZ AR)		
205	White Box	<i>Eucalyptus albens</i>	100	314	12.0	Large	Large Tree in patch (HZ AR)		
206	White Box	<i>Eucalyptus albens</i>	163	512	15.0	Large	Large Tree in patch (HZ AR)		
207	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	57	179	6.8	Small	Scattered Tree	Dead	
208	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	18	57	2.2	Small	Scattered Tree	Dead	
209	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	11	35	1.3	Small	Scattered Tree	Dead	
210	White Box	<i>Eucalyptus albens</i>	20	63	2.4	Small	Scattered Tree		
211	White Box	<i>Eucalyptus albens</i>	25	79	3.0	Small	Scattered Tree		
212	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	111	349	13.3	Large	Scattered Tree	Dead	
213	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	88	276	10.6	Large	Scattered Tree	Dead	
214	White Box	<i>Eucalyptus albens</i>	15	47	1.8	Small	Scattered Tree		
215	White Box	<i>Eucalyptus albens</i>	75	236	9.0	Small	Scattered Tree		
216	White Box	<i>Eucalyptus albens</i>	101	317	12.1	Large	Scattered Tree		
217	White Box	<i>Eucalyptus albens</i>	12	38	2.0	Small	Scattered Tree		
218	Red Box	<i>Eucalyptus polyanthemos</i>	99	311	11.9	Large	Large Tree in patch (HZ AS)		
219	White Box	<i>Eucalyptus albens</i>	116	364	13.9	Large	Large Tree in patch (HZ AS)		
220	White Box	<i>Eucalyptus albens</i>	150	471	15.0	Large	Large Tree in patch (HZ AT)		
221	White Box	<i>Eucalyptus albens</i>	83	261	10.0	Large	Large Tree in patch (HZ AT)		
222	White Box	<i>Eucalyptus albens</i>	125	393	15.0	Large	Large Tree in patch (HZ AT)		
223	Yellow Box	<i>Eucalyptus melliodora</i>	30	94	3.6	Small	Scattered Tree		
224	Yellow Box	<i>Eucalyptus melliodora</i>	30	94	3.6	Small	Scattered Tree		
225	White Box	<i>Eucalyptus albens</i>	95	298	11.4	Large	Scattered Tree		
226	White Box	<i>Eucalyptus albens</i>	160	503	15.0	Large	Scattered Tree		
227	White Box	<i>Eucalyptus albens</i>	50	157	6.0	Small	Scattered Tree		
228	But-But	<i>Eucalyptus bridgesiana</i>	74	232	8.9	Small	Scattered Tree		
229	But-But	<i>Eucalyptus bridgesiana</i>	175	550	15.0	Large	Scattered Tree	Very large specimen; bee-hive	
230	White Box	<i>Eucalyptus albens</i>	28	88	3.4	Small	Scattered Tree		
231	White Box	<i>Eucalyptus albens</i>	25	79	3.0	Small	Scattered Tree		
232	White Box	<i>Eucalyptus albens</i>	25	79	3.0	Small	Scattered Tree		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
233	White Box	<i>Eucalyptus albens</i>	125	393	15.0	Large	Scattered Tree		
234	White Box	<i>Eucalyptus albens</i>	20	63	2.4	Small	Scattered Tree		
235	Eucalyptus (dead)	<i>Eucalyptus sp.</i>	20	63	2.4	Small	Scattered Tree	Dead	
236	Grey Box	<i>Eucalyptus microcarpa</i>	56	176	6.7	Small	Scattered Tree		
237	Grey Box	<i>Eucalyptus microcarpa</i>	45	141	5.4	Small	Scattered Tree		
238	Grey Box	<i>Eucalyptus microcarpa</i>	40	126	4.8	Small	Scattered Tree		
239	White Box	<i>Eucalyptus albens</i>	20	63	2.4	Small	Scattered Tree		
240	Grey Box	<i>Eucalyptus microcarpa</i>	50	157	6.0	Small	Scattered Tree		
241	Grey Box	<i>Eucalyptus microcarpa</i>	62	195	7.4	Small	Scattered Tree		
242	Grey Box	<i>Eucalyptus microcarpa</i>	144	452	15.0	Large	Scattered Tree		
243	Grey Box	<i>Eucalyptus microcarpa</i>	87	273	10.4	Large	Large Tree in patch (HZ AV)		
245	Grey Box	<i>Eucalyptus microcarpa</i>	30	94	3.6	Small	Scattered Tree		
246	Grey Box	<i>Eucalyptus microcarpa</i>	25	79	3.0	Small	Scattered Tree		
247	Grey Box	<i>Eucalyptus microcarpa</i>	25	79	3.0	Small	Scattered Tree		
248	Grey Box	<i>Eucalyptus microcarpa</i>	40	126	4.8	Small	Scattered Tree		
249	Grey Box	<i>Eucalyptus microcarpa</i>	20	63	2.4	Small	Scattered Tree		
250	Grey Box	<i>Eucalyptus microcarpa</i>	25	79	3.0	Small	Scattered Tree		
251	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	46	145	5.5	Small	Scattered Tree		
252	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	79	248	9.5	Small	Scattered Tree		
253	But-But	<i>Eucalyptus bridgesiana</i>	41	129	4.9	Small	Scattered Tree		
254	But-But	<i>Eucalyptus bridgesiana</i>	190	597	15.0	Large	Scattered Tree		
255	But-But	<i>Eucalyptus bridgesiana</i>	170	534	15.0	Large	Scattered Tree		
256	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	151	474	15.0	Large	Scattered Tree	Very large specimen	
257	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	82	258	9.8	Large	Scattered Tree		
258	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	42	132	5.0	Small	Scattered Tree		
259	Yellow Box	<i>Eucalyptus melliodora</i>	80	251	9.6	Large	Scattered Tree		
260	Yellow Box	<i>Eucalyptus melliodora</i>	153	481	15.0	Large	Scattered Tree	Very large specimen	
261	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	40	126	4.8	Small	Scattered Tree		
262	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	25	79	3.0	Small	Scattered Tree		
263	White Box	<i>Eucalyptus albens</i>	61	192	7.3	Small	Scattered Tree		
264	White Box	<i>Eucalyptus albens</i>	42	132	5.0	Small	Scattered Tree		
265	Yellow Box	<i>Eucalyptus melliodora</i>	76	239	9.1	Small	Scattered Tree		
266	Yellow Box	<i>Eucalyptus melliodora</i>	20	63	2.4	Small	Scattered Tree		

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Tree Number	Common Name	Scientific Name	DBH (cm)	Circumference (cm)	TPZ (m)	Size	Type	Note	Status
267	Yellow Box	<i>Eucalyptus melliodora</i>	128	402	15.0	Large	Scattered Tree		
268	Yellow Box	<i>Eucalyptus melliodora</i>	15	47	2.0	Small	Scattered Tree		
269	Yellow Box	<i>Eucalyptus melliodora</i>	52	163	6.2	Small	Scattered Tree		
270	Yellow Box	<i>Eucalyptus melliodora</i>	27	85	3.2	Small	Scattered Tree		
271	Yellow Box	<i>Eucalyptus melliodora</i>	10	31	2.0	Small	Scattered Tree		
272	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	30	94	3.6	Small	Scattered Tree		
273	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	111	349	13.3	Large	Scattered Tree		
274	Grey Box	<i>Eucalyptus microcarpa</i>	20	63	2.4	Small	Scattered Tree		
275	Grey Box	<i>Eucalyptus microcarpa</i>	21	66	2.5	Small	Scattered Tree		
276	Grey Box	<i>Eucalyptus microcarpa</i>	10	31	2.0	Small	Scattered Tree		
277	Grey Box	<i>Eucalyptus microcarpa</i>	15	47	2.0	Small	Scattered Tree		
278	Grey Box	<i>Eucalyptus microcarpa</i>	20	63	2.4	Small	Scattered Tree		
279	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	13	41	2.0	Small	Scattered Tree		
280	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	29	91	3.5	Small	Scattered Tree		
281	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	40	126	4.8	Small	Scattered Tree		
282	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	25	79	3.0	Small	Scattered Tree		
283	Yellow Box	<i>Eucalyptus melliodora</i>	50	157	6.0	Small	Scattered Tree	Surrounded by introduced trees	
284	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	40	126	4.8	Small	Scattered Tree		
285	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	35	110	4.2	Small	Scattered Tree		
286	Yellow Box	<i>Eucalyptus melliodora</i>	130	408	15.0	Large	Large Tree in patch (HZ BB)		
287	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	85	267	10.2	Large	Large Tree in patch (HZ BB)		
288	Grey Box	<i>Eucalyptus microcarpa</i>	30	94	3.6	Small	Scattered Tree		
289	Grey Box	<i>Eucalyptus microcarpa</i>	35	110	4.2	Small	Scattered Tree		
290	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	10	31	2.0	Small	Scattered Tree		
291	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	5	16	2.0	Small	Scattered Tree		

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Appendix D: Flora and fauna recorded in study area

Origin	Common Name	Scientific Name	Recorded
Flora species recorded in study area			
*	Annual Veldt-grass	<i>Ehrharta longiflora</i>	X
*	Barley-grass	<i>Hordeum leporinum</i>	X
	Black-anther Flax-lily	<i>Dianella revoluta s.l.</i>	X
	Blakely's Red-gum	<i>Eucalyptus blakelyi</i>	X
* (p)	Blue Gum	<i>Eucalyptus globulus</i>	X
	But-But	<i>Eucalyptus bridgesiana</i>	X
*	Chilean Needle-grass	<i>Nassella neesiana</i>	X
*	Cleavers	<i>Galium aparine</i>	X
*	Clover	<i>Trifolium spp.</i>	X
*	Common Evening-primrose	<i>Oenothera stricta subsp. Stricta</i>	X
*	Common Sow-thistle	<i>Sonchus oleraceus</i>	X
	Common Wallaby-grass	<i>Rytidosperma caespitosum</i>	X
*	Cootamundra Wattle	<i>Acacia baileyana</i>	X
*	Curled Dock	<i>Rumex crispus</i>	X
*	Desert Ash	<i>Fraxinus angustifolia subsp. angustifolia</i>	X
	Drooping Mistletoe	<i>Amyema pendula</i>	X
*	Elm	<i>Ulmus sp.</i>	X
*	Fig	<i>Ficus carica</i>	X
*	Flatweed	<i>Hypochaeris radicata</i>	X
*	Great Brome	<i>Bromus diandrus</i>	X
	Grey Box	<i>Eucalyptus microcarpa</i>	X
*	Mallow of Nice	<i>Malva nicaeensis</i>	X
*	Mustard	<i>Brassica spp.</i>	X
*	Oat	<i>Avena spp.</i>	X
*	Oleander	<i>Nerium oleander</i>	X
*	Perennial Rye-grass	<i>Lolium perenne</i>	X
	Red Box	<i>Eucalyptus polyanthemops</i>	X
*	Ribwort	<i>Plantago lanceolata</i>	X
	River Red-gum	<i>Eucalyptus camaldulensis</i>	X
	Rough Spear-grass	<i>Austrostipa scabra</i>	X
	Rush	<i>Juncus spp.</i>	X
*	Sheep Sorrel	<i>Acetosella vulgaris</i>	X
*	Small Nettle	<i>Urtica urens</i>	X
*	Soft Brome	<i>Bromus hordeaceus</i>	X
*	Squirrel-tail Fescue	<i>Vulpia bromoides</i>	X
*	St John's Wort	<i>Hypericum perforatum</i>	X
*	Variegated Thistle	<i>Silybum marianum</i>	X
*	Vetch	<i>Vicia spp.</i>	X
	Wattle Mat-rush	<i>Lomandra filiformis</i>	X
	White Box	<i>Eucalyptus albens</i>	X
	Yellow Box	<i>Eucalyptus melliodora</i>	X
Fauna species recorded in study area			
	Australian Magpie	<i>Gymnorhina tibicen</i>	X
	Australian Pipit	<i>Anthus australis</i>	X
	Australian Raven	<i>Corvus coronoides</i>	X
	Australian Shelduck	<i>Tadorna tadornoides</i>	X
	Australian White Ibis	<i>Threskiornis molucca</i>	X
	Australian Wood Duck	<i>Chenonetta jubata</i>	X
	Black Kite	<i>Milvus migrans</i>	X

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Origin	Common Name	Scientific Name	Recorded
	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	x
	Black-shouldered Kite	<i>Elanus axillaris</i>	x
	Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	x
	Brown Falcon	<i>Falco berigora</i>	x
	Brown Songlark	<i>Cincloramphus cruralis</i>	x
*	Common Myna	<i>Acridotheres tristis</i>	x
*	Common Starling	<i>Sturnus vulgaris</i>	x
	Crested Pigeon	<i>Ocyphaps lophotes</i>	x
	Eastern Rosella	<i>Platycercus eximius</i>	x
*	European Rabbit	<i>Oryctolagus cuniculus</i>	x
	Galah	<i>Eolophus roseicapilla</i>	x
	Grey Butcherbird	<i>Cracticus torquatus</i>	x
*	House Sparrow	<i>Passer domesticus</i>	x
	Laughing Kookaburra	<i>Dacelo novaeguineae</i>	x
	Little Friarbird	<i>Philemon citreogularis</i>	x
	Magpie-lark	<i>Grallina cyanoleuca</i>	x
	Nankeen Kestrel	<i>Falco cenchroides</i>	x
	Noisy Friarbird	<i>Philemon corniculatus</i>	x
	Noisy Miner	<i>Manorina melanocephala</i>	x
	Pacific Black Duck	<i>Anas superciliosa</i>	x
	Red Wattlebird	<i>Anthochaera carunculata</i>	x
	Red-rumped Parrot	<i>Psephotus haematonotus</i>	x
	Rufous Songlark	<i>Cincloramphus mathewsi</i>	x
	Sacred Kingfisher	<i>Todiramphus sanctus</i>	x
	Straw-necked Ibis	<i>Threskiornis spinicollis</i>	x
	Striated Pardalote	<i>Pardalotus striatus</i>	x
	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	x
	Superb Fairy-wren	<i>Malurus cyaneus</i>	x
	Welcome Swallow	<i>Hirundo neoxena</i>	x
	White-faced Heron	<i>Egretta novaehollandiae</i>	x
	White-necked Heron	<i>Ardea pacifica</i>	x
	White-plumed Honeyeater	<i>Ptilotula penicillata</i>	x
	Willie Wagtail	<i>Rhipidura leucophrys</i>	x
	Yellow Rosella	<i>Platycercus elegans flaveolus</i>	x
	Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>	x

* introduced, x = recorded in study area during survey.

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Appendix E: Likelihood of occurrence analysis of threatened flora

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Broom Bitter-pea	<i>Daviesia genistifolia</i> s.s.		en	Scattered across northern Victoria from the South Australian border to near Wangaratta (e.g. Dimboola, Wedderburn, Nagambie and Chiltern areas) but rare. Found in dry sclerophyll forests.	5	19/10/2002	Negligible - No suitable habitat occurs in the study area.
Buloke	<i>Allocasuarina luehmannii</i>		cr	Usually growing in woodland with <i>Eucalyptus microcarpa</i> , on non-calcareous soils.	1	1/07/2000	Negligible - Conspicuous tree species. No Buloke was recorded in the study area.
Buloke Mistletoe	<i>Amyema linophylla</i> subsp. <i>orientalis</i>		cr	Widespread in western Victoria but scarce due to the depletion of its main host plant <i>Allocasuarina luehmannii</i> (Buloke).	1	1/07/2000	Negligible - No host tree (Buloke) occurs in the study area.
Clover Glycine	<i>Glycine latrobeana</i>	VU	VU	Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Cottony Cassinia	<i>Cassinia ozothamnoides</i>		en	An uncommon pioneer species of disturbed sites in dry open-forests on poor shaly or stony soils of the north-east.	3	19/02/1992	Negligible - No suitable habitat occurs in the study area.
Crimson Spider-orchid	<i>Caladenia concolor</i>	VU	en	Sporadic and uncommon in dry open-forests, mostly of north-eastern Victoria, on ridges and slopes in well-drained shallow stony or skeletal soils.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Deane's Wattle	<i>Acacia deanei</i> subsp. <i>paucijuga</i>		vu	Common in dry forest in north-central Victoria and in the Suggan Buggan area of East Gippsland, often on stony slopes and rocky outcrops.	2	28/11/1998	Negligible - No suitable habitat occurs in the study area.
Deane's wattle	<i>Acacia deanei</i> subsp. <i>deanei</i>		en	Known from a few small populations in the Chiltern area, in <i>Eucalyptus sideroxyylon</i> forest.	25	8/11/2006	Negligible - No suitable habitat occurs in the study area.
Dookie Daisy	<i>Brachyscome gracilis</i> subsp. <i>gracilis</i>		en	Rare in Victoria where mostly in the north-east (e.g. near Benalla, Dookie, the Warby Range, Beechworth and Mt Pilot) in sandy to clay loams or shallow, rocky soils in open <i>Eucalyptus</i> woodland.	6	25/10/2000	Negligible - No suitable habitat occurs in the study area.
Emerald-lip Greenhood	<i>Pterostylis smaragdyna</i>		en	Apparently localized in Victoria (e.g. outer north-eastern suburbs of Melbourne, Brisbane Ranges, Ararat), but exact range uncertain due to confusion with allied species. Grows in drier forests and woodlands on well-drained shallow clay loam.	1	24/06/2014	Negligible - No suitable habitat occurs in the study area.

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Hooded Mosquito-orchid	<i>Acianthus collinus</i>		cr	Open forests on well-drained sandy or clay loam soils. Currently known in Victoria by a few small populations in north-east Victoria in the Wangaratta-Chiltern area.	7	13/08/2009	Negligible - No suitable habitat occurs in the study area.
Large-headed Fireweed	<i>Senecio macrocarpus</i>	VU	cr	In Victoria largely confined to remnant Kangaroo Grass grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Mountain Swainson-pea	<i>Swainsona recta</i>	EN	cr	An endangered species, previously recorded in Victoria from low hill country in north and north-east but known only from 1 recent (1995) collection near Glenrowan.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Mugga	<i>Eucalyptus sideroxylon</i> <i>subsp. sideroxylon</i>		en	In Victoria confined to the Chiltern area, northern Warby Range and south of Winton, while the other ironbark, <i>Eucalyptus tricarpa</i> , with its 3-budded inflorescences and larger fruit is widespread.	44	18/07/2012	Negligible - Conspicuous tree species. No remnant Ironbark trees were recorded in the study area.
Narrow Goodenia	<i>Goodenia macbarronii</i>		en	Rare in Victoria where apparently confined to forests and grassy areas between Wedderburn and Moyhu in the north-east and north to the Murray River, usually in damp sandy or silty soils. Sometimes recorded from seepage areas below farm dams.	1	13/04/1999	Negligible - No suitable habitat occurs in the study area.
River Swamp Wallaby-grass	<i>Amphibromus fluitans</i>	VU		Permanent swamps, lagoons, billabongs and dams.	None	N/A	Negligible - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No records in the search region.
Small-leaf Bush-pea	<i>Pultenaea foliolosa</i>		en	Uncommon in Victoria, confined to small areas in the north-east, from the Warby Range to Myrtleford and Wodonga areas, and in Gippsland near Briagolong and north of Dargo, usually in dry, open-forest.	7	24/01/2004	Negligible - No suitable habitat occurs in the study area.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Straw Wallaby-grass	<i>Rytidosperma richardsonii</i>		en	Recorded from grassy woodlands in a few localities in north-east Victoria (e.g. Barnawartha, Dookie, Rutherglen, Springhurst and Yarrowonga).	1	10/07/2006	Low - The ground layer in the study area was exclusively comprised of introduced flora with the exception of two small roadside patches (HZ AL and AU). Given the presence of native flora in the ground layer in these patches, detailed transect survey was undertaken in these locations and this species was not recorded. Rather these areas were noted as comprising Common Wallaby-grass and Rough Spear-grass.
Sturdy Leek-orchid	<i>Prasophyllum validum</i>	VU		Dry woodland habitats, generally with a low sparse understorey in SA and VIC. In Victoria, it occurs in box and box-ironbark woodland with overstorey trees and an open grassy to sparsely shrubby understorey.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Tarengo Leek Orchid	<i>Prasophyllum petilum</i>	EN		Rare orchid of grasslands and grassy woodlands of the Southern Tablelands of New South Wales and in the Australian Capital Territory	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Tick Indigo	<i>Indigofera adesmiifolia</i>		en	Rare and confined to drier hill country in the north-east of the State.	6	27/10/2001	Negligible - No suitable habitat occurs in the study area.
Umbrella Grass	<i>Digitaria divaricatissima</i> var. <i>divaricatissima</i>		en	Rare in Victoria and collected in recent times only from Dimboola, Mildura, Charlton, Tocumwal, Mitiamo and Springhurst areas, and Mt Arapiles. Mostly on heavier soils prone to occasional flooding.	1	19/05/2011	Negligible - No suitable habitat occurs in the study area.
Western Golden-tip	<i>Goodia medicaginea</i>		en	In Victoria occurs sporadically in the south-west (e.g. north of Portland, Mt Arapiles), at Long Forest west of Melbourne, in central Victoria near Eaglehawk and at Killawarra Forest, and near Suggan Buggan in the east. Favours drier sites than <i>Goodia lotifolia</i> .	22	24/01/2004	Negligible - No suitable habitat occurs in the study area.
Winged Peppergrass	<i>Lepidium monoplacoides</i>	EN	en	Uncommon in north-western quarter of State, mostly on heavy soils near lakes and watercourses.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.

Legend: EPBC Act (Status under the EPBC Act): CR = critically endangered, EN = endangered, VU = vulnerable; FFG Act (Status under the FFG Act): CR = critically endangered, EN = endangered, VU = vulnerable

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Appendix F: Likelihood of occurrence analysis of threatened fauna

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Birds							
Apostlebird	<i>Struthidea cinerea</i>		vu	Found in open dry forests and woodlands near water. It may also be found in farmlands with trees, as well as along roadsides, in orchards and on golf courses	2	1/02/1984	Low - Treed habitat occurs within the study area and adjoining road reserves, though the ground layer throughout is highly disturbed. No records in the search region for over 35 years.
Australasian Bittern	<i>Botaurus poiciloptilus</i>	EN	cr	Frequents reedbeds, and other vegetation in water such as cumbungi, lignum and sedges.	1	1/02/1984	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No recent records in the search region.
Australasian Shoveler	<i>Spatula rhynchotis</i>		vu	Found in all kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast.	26	15/03/2019	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Australian Little Bittern	<i>Ixobrychus dubius</i>		en	Favours reedbeds, dense freshwater swamps and well-fringed watercourses, including thick reedbeds	1	1/12/1977	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No recent records in the search region.
Australian Painted-snipe	<i>Rostratula australis</i>	EN	cr	Inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	1	1/01/1977	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No recent records in the search region.
Barking Owl	<i>Ninox connivens</i>		cr	Found in open woodlands and the edges of forests, often adjacent to farmland. They are less likely to use the interior of forested habitat.	12	8/07/2019	Low - Most records in the search area are from edges of large forest blocks around Chiltern Mt Pilot National Park. While treed habitat in the study area may occasionally be visited for hunting, the study area and surrounds lack large bush blocks required to regularly support the species.
Black Falcon	<i>Falco subniger</i>		cr	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day	2	7/10/1980	Low - May occasionally visit the area, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Blue-billed Duck	<i>Oxyura australis</i>		vu	Almost wholly aquatic. Non-breeding flocks congregate on large, deep open freshwater dams and lakes in autumn.	4	23/02/2006	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Bush Stone-curlew	<i>Burhinus grallarius</i>		cr	Inhabits open forests and woodlands with a sparse grassy ground-layer and fallen timber	10	15/11/1984	Negligible - No suitable habitat occurs in the study area.
Chestnut-rumped Heathwren	<i>Calamanthus pyrrhopygius</i>		vu	Dense undergrowth in heathland	6	4/07/2018	Negligible - No suitable habitat occurs in the study area.
Common Greenshank	<i>Tringa nebularia</i>	M	EN	Found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity, typically with large mudflats and saltmarsh, mangroves or seagrass.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Common Sandpiper	<i>Actitis hypoleucos</i>	M	VU	Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Crested Bellbird	<i>Oreoica gutturalis</i>		en	The Crested Bellbird occurs from semi-arid coastlines to the arid Australia interior. They are found in acacia shrublands, eucalypt woodlands, spinifex and chenopod (saltbush) plains or dunes.	18	31/12/1987	Negligible - No suitable habitat occurs in the study area.
Curlew Sandpiper	<i>Calidris ferruginea</i>	CR, M	cr	Intertidal mudflats in sheltered coastal areas. Non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Diamond Dove	<i>Geopelia cuneata</i>		vu	Diamond Doves gather in small parties or flocks in dry open savanna in mulga areas often among spinifex or grasses. They are also often in open riparian woodland (beside waterways).	2	9/04/1977	Negligible - No suitable habitat occurs in the study area.
Diamond Firetail	<i>Stagonopleura guttata</i>		vu	Found in open grassy woodland, heath and farmland or grassland with scattered trees	96	15/03/2019	Moderate - Farmland and treed habitat occurs within the study area and adjoining road reserves. Numerous records in the search region.
Eastern Curlew	<i>Numenius madagascariensis</i>	CR, M	CR	Largest shorebird in Australia. Breeds in Russia and north-eastern China, arrives back to Australia in August to feed on crabs and molluscs in intertidal mudflats on the coast.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Eastern Great Egret	<i>Ardea alba modesta</i>		vu	Occurs in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt marshes and mudflats.	8	15/03/2019	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Fork-tailed Swift	<i>Apus pacificus</i>	M		Almost exclusively aerial. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas	None	N/A	Low - No suitable habitat occurs in the study area. No records in the search region.
Freckled Duck	<i>Stictonetta naevosa</i>		en	Prefers permanent fresh water swamps and creeks with heavy growth of cumbungi (bullrushes), lignum or tea-tree.	1	1/12/1980	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Grey Falcon	<i>Falco hypoleucos</i>	VU	vu	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	None	N/A	Low - No preferred habitat occurs in the study area. No records in the search region.
Grey Goshawk	<i>Accipiter novaehollandiae</i>		en	Occurs in coastal areas in northern and eastern Australia, found in most forest types, especially tall closed forests, including rainforests.	1	1/09/1977	Negligible - No suitable habitat occurs in the study area.
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>		vu	The Grey-crowned Babbler is found in open forests and woodlands, favouring inland plains with an open shrub layer, little ground cover and plenty of fallen timber and leaf litter. May be seen along roadsides and around farms.	62	15/03/2019	Moderate - Treed habitat occurs within the study area and adjoining road reserves. Numerous records in the search region.
Hardhead	<i>Aythya australis</i>		vu	Found in freshwater swamps and wetlands and occasionally in sheltered estuaries	31	12/01/2019	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Hooded Robin	<i>Melanodryas cucullata</i>		vu	Found in lightly timbered woodland, mainly dominated by acacia and/or eucalypts.	18	4/07/2018	Moderate - Treed habitat occurs within the study area and adjoining road reserves. Numerous records in the search region.
Latham's Snipe	<i>Gallinago hardwickii</i>	M		Occurs in a range of permanent and ephemeral wetlands including freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies)	None	N/A	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No records in the search region.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Lewin's Rail	<i>Lewinia pectoralis</i>		vu	Freshwater to saline wetlands, either permanent or ephemeral.	1	23/12/1973	Negligible - No suitable habitat occurs in the study area.
Little Eagle	<i>Hieraaetus morphnoides</i>		vu	Seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.	32	26/11/2010	Low - May occasionally visit area though unlikely to use the site regularly.
Little Egret	<i>Egretta garzetta</i>		en	Tidal mudflats, saltwater and freshwater wetlands, and mangroves.	6	1/09/1981	Negligible - No suitable habitat occurs in the study area.
Masked Owl	<i>Tyto novaehollandiae</i>		cr	The Masked Owl inhabits forests, woodlands, timbered waterways and open country on the fringe of these areas. The main requirements are tall trees with suitable hollows for nesting and roosting and adjacent areas for foraging. Masked Owls are territorial, and pairs remain in or near the territory all year round.	1	1/12/1977	Low - Most records of the Masked Owl in Victoria are associated with larger forested blocks, which are lacking in and adjacent to the study area. No recent records in the search region.
Musk Duck	<i>Biziura lobata</i>		vu	Range of wetland habitats	12	9/12/1981	Low - Species may occasionally visit one of the several small farm dams, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Painted Honeyeater	<i>Grantiella picta</i>	VU	vu	Found in dry open forests and woodlands, and is strongly associated with mistletoe.	33	12/12/2018	Low - While treed habitat occurs within the study area and adjoining road reserves, Mistletoe is largely absent from the project site, and limited to isolated occurrences within nearby roadsides. Most of the records of Painted Honeyeater in the search region are from Chiltern Mt Pilot National Park. Unlikely to occur regularly.
Pectoral Sandpiper	<i>Calidris melanotos</i>	M		Prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	None	N/A	Negligible - No suitable habitat occurs in the study area.
Plains-wanderer	<i>Pedionomus torquatus</i>	CR	cr	Inhabit sparse native grasslands and are often absent from areas where grass becomes too dense or too sparse. They nest amongst native grasses and herbs, or sometimes amongst crops.	None	N/A	Low - No preferred habitat occurs in the study area. Ground layer highly altered. No records in the search region.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Plumed Egret	<i>Ardea intermedia plumifera</i>		cr	Prefers freshwater swamps, billabongs, floodplains and wet grasslands with dense aquatic vegetation, and is only occasionally seen in estuarine or intertidal habitats.	5	25/03/1997	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No preferred habitat.
Powerful Owl	<i>Ninox strenua</i>		vu	Occurs in open forests and woodlands, as well as along sheltered gullies in wet forests with dense understoreys, especially along watercourses. Will sometimes be found in open areas near forests such as parks and suburban areas. Needs old growth trees to nest.	2	4/06/1993	Low - Powerful Owl are mainly associated with larger forested blocks, which are lacking in and adjacent to the study area. No records in the search region for almost 30 years.
Red-chested Button-quail	<i>Turnix pyrrhotorax</i>		en	Grassland (and open grassy woodland) habitats	1	7/06/1998	Negligible - No suitable habitat occurs in the study area.
Regent Honeyeater	<i>Anthochaera phrygia</i>	CR	cr	Primarily occurs in box-ironbark woodland, but also occurs in other forest types. Mainly feeds on nectar from eucalypts and mistletoes with movements governed by the flowering of select eucalypt species.	110	21/05/2018	Low - Most of the records of Regent Honeyeater in Victoria are from Chiltern Mt Pilot National Park, the last known refuge for this species in the state. While the study area lacks Ironbark, Box trees (namely White Box and Grey Box) are common both as scattered paddock trees and along adjoining road reserves. Mistletoe was largely absent in the project site and limited to isolated occurrences in nearby road reserves. Given the lack of connectivity with the known population at Chiltern, the species is considered unlikely to regularly utilise the treed habitats in the study area. The Regent Honeyeater may occasionally or opportunistically visit the project area whilst en-route to more suitable sites.
Rufous Fantail	<i>Rhipidura rufifrons</i>	M		Inhabits wet sclerophyll forests, often in gullies dominated by tall eucalypts, usually with a dense shrubby understorey and ferns.	None	N/A	Negligible - No suitable habitat occurs in the study area.
Satin Flycatcher	<i>Myiagra cyanoleuca</i>	M		Inhabits heavily vegetated gullies in eucalypt-dominated forests and taller woodlands	None	N/A	Negligible - No suitable habitat occurs in the study area.
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	M		Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	None	N/A	Negligible - No suitable habitat occurs in the study area.
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>		en	Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	51	4/09/2019	Low - Most of the records of Speckled Warbler in the region are from Chiltern Mt Pilot National Park. The study area lacks the species preferred open ground layer.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Square-tailed Kite	<i>Lophoictinia isura</i>		vu	The species mainly inhabits open eucalypt forests and woodlands, often where there is a broken canopy, but it also ranges into nearby open habitats.	6	4/09/2006	Low - May occasionally visit the area, however the study area lacks preferred habitat and the species is unlikely to use the site regularly.
Superb Parrot	<i>Polytelis swainsonii</i>	VU	en	Found along timbered waterways and nearby well-watered woodlands, especially in River Red Gums along the Murray and Murrumbidgee Rivers. They are usually seen in family parties or small flocks. They roost communally in trees.	15	12/12/2018	Low - Most records of Superb Parrot in Victoria are from River Red-gum forests around Barmah on the Murray River. A small number of records exist from Chiltern Mt Pilot National Park. While treed habitat occurs in the study area, the site is situated away from the known core range of the species. Flowering eucalypts could occasionally be utilised by the species, but it is considered unlikely that the species regularly occurs in the study area.
Swift Parrot	<i>Lathamus discolor</i>	CR	cr	Breeds in Tasmania and overwinters in Victoria. Found in dry sclerophyll forests and woodlands, suburban parks and gardens where it feeds on the nectar of flowering eucalypts, namely Grey Box, Red Ironbark, Mugga Ironbark, Yellow Gum and White Box. Also feed on lerp psyllids amongst Red Gum.	66	22/08/2018	Moderate - Grey Box and White Box, both of which are known as some of the main feed trees for the Swift Parrot, occur in the study area. Many of these were large trees. While the closest records of Swift Parrot to the study area are from Chiltern Mt Pilot National Park, there is potential for the species to use the trees in the study area for foraging during winter while they are on the mainland.
Turquoise Parrot	<i>Neophema pulchella</i>		vu	Favours open, grassy woodland with dead trees near permanent water. It also inhabits coastal heaths and pastures with exotic grasses and weeds, along roadsides and in orchards.	107	5/07/2019	Moderate - Study area comprises open treed habitats, including several dead trees, though lacks access to permanent water. Many records exist in the search region, mostly from Chiltern Mt Pilot National Park. There is potential for the species to use the trees in the study area for foraging and/or nesting.
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>		en	Distributed along the coastline of mainland Australia, also extending inland along some of the larger waterways.	3	8/07/2019	Negligible - No suitable habitat occurs in the study area.
White-throated Needletail	<i>Hirundapus caudacutus</i>	VU	vu	Almost exclusively aerial, over a wide variety of habitats.	8	11/12/2018	Low - May occasionally visit the area, however given the species almost exclusive aerial habit, it is unlikely to be reliant on the habitats in the study area.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Yellow Wagtail	<i>Motacilla flava</i>	M		Regular non-breeding visitor in northern Australia mainly spring-summer, vagrant to the south. Wide range of habitats, including areas with low vegetation, often recorded near water.	None	N/A	Negligible - No suitable habitat occurs in the study area. No records in the search region.
Mammals							
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>		vu	Prefers dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter	17	11/12/2005	Low - No preferred dry sclerophyll forest habitat occurs in the study area. While large trees (some with hollows) occur, the ground layer is highly disturbed and overgrown with introduced grasses.
Eastern Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>		cr	Caves are the primary roosting habitat, for which the species congregates in during Oct-Nov. In March, when young are independent, depart maternity cave and form small scattered colonies. Forage above tree canopies.	1	23/10/2000	Low - No caves present in the study area. Trees in the study area provide potential foraging habitat that may be occasionally utilised by the species, particularly along more densely treed areas along road reserves. No records in the search region for over 20 years.
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	VU	vu	Requires foraging resources and roosting sites. The primary food source is blossom from Eucalyptus and related genera but commonly forages on fruit trees in urban areas.	1	1/02/1984	Low - No roosting colony's known in the study area. Trees in the study area provide potential foraging habitat that may be occasionally utilised by the species, particularly along more densely treed areas along road reserves. No records in the search region for over 35 years.
Koala	<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	VU		Occurs in a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by species from the genus Eucalyptus.	None	N/A	Low - No preferred habitat occurs in the study area. Koala only listed as threatened in NSW and QLD (Not VIC).
Platypus	<i>Ornithorhynchus anatinus</i>		vu	Inhabits freshwater streams, ranging from alpine creeks to tropical lowland rivers; also lakes, shallow reservoirs and farm dams. Prefers areas with steep, vegetated banks in which to burrow; entrances concealed under overhangs or vegetation.	6	29/09/2005	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation.
Spot-tailed Quoll	<i>Dasyurus maculatus maculatus</i>	EN	EN	Temperate and subtropical rainforests in mountain areas wet sclerophyll forest lowland forests open and closed eucalypt woodlands.	None	N/A	Negligible - No suitable habitat occurs in the study area.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Squirrel Glider	<i>Petaurus norfolcensis</i>		vu	Mostly in dry sclerophyll forest on inland slopes and nearby riverine corridors.	38	23/07/2018	Low - Most records in the search region are from Chiltern Mt Pilot National Park. While treed habitat in the study area may occasionally be used by the species, the low connectivity to other habitats, sparse occurrence of trees and heavily farmed ground layer in the project site suggests the species is unlikely to regularly use the project site.
Reptiles							
Bearded Dragon	<i>Pogona barbata</i>		vu	Woodlands and dry sclerophyll forest	3	12/11/1997	
Lace Monitor	<i>Varanus varius</i>		en	Distributed along the east coast of Australia, occurring in a range of habitats including open forest and coastal plains.	37	11/12/2018	Low - While treed habitat may occasionally be used by the species, the sparse occurrence of trees in the study area and heavily farmed ground layer suggests the species is unlikely to regularly use the site.
Murray River Turtle	<i>Emydura macquarii</i>		cr	Rivers, creeks, dams and lagoons associated with the Murray-Darling drainage systems of south east Australia.	2	1/11/1998	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation.
Pink-tailed Worm-Lizard	<i>Aprasia parapulchella</i>	VU	en	Habitat includes rocky outcrops or scattered partly buried rocks in grassland and woodland in south-east Australia.	None	N/A	Negligible - No suitable habitat occurs in the study area.
Striped Legless Lizard	<i>Delma impar</i>	VU	en	Inhabits intact grassland habitats where it shelters in grass tussocks, under rocks and in cracks in the soil	None	N/A	Negligible - No suitable habitat occurs in the study area.
Frogs							
Growling Grass Frog	<i>Litoria raniformis</i>	VU	VU	Persists in waterways and other aquatic habitats in the greater Melbourne region. Key habitat features for the species includes submerged vegetation for egg-laying, rocks and logs for basking, permanent freshwater lagoons for breeding and cracks, as well as debris and dense vegetation for refuge.	None	N/A	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No records in the search region.

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Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Sloane's Froglet	<i>Crinia sloanei</i>	EN	en	Inland NSW and north central Vic where it lives and breeds in temporary and permanent waterbodies including oxbows off creeks and rivers, farm dams, large and small natural wetlands, constructed frog ponds and temporary puddles. It prefers wetlands that contain riparian and aquatic vegetation.	None	N/A	Low - Aquatic habitat in the study area was limited to farm dams which were heavily pugged by cattle and lacked any fringing vegetation. No records in the search region.
Fish							
Flat-headed Galaxias	<i>Galaxias rostratus</i>	CR	vu	Only known from the southern half of the Murray-Darling Basin system where it inhabits a variety of habitats including billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters.	None	N/A	Low - No waterways or suitable aquatic habitat occurs in the study area.
Macquarie Perch	<i>Macquaria australasica</i>	EN	en	Across the Murray-Darling Basin and in an east coast catchment, within small and geographically separated populations	1	28/09/1993	Low - No waterways or suitable aquatic habitat occurs in the study area.
Murray Cod	<i>Maccullochella peelii</i>	VU	en	Distributed throughout the Murray-Darling Basin.	62	3/06/2010	Low - No waterways or suitable aquatic habitat occurs in the study area.
Murray Spiny Crayfish	<i>Euastacus armatus</i>		th	Found in a variety of habitats ranging from pasture-lands to sclerophyll forest. They prefer cool, flowing water that is well oxygenated.	6	20/05/2009	Low - No suitable aquatic habitat occurs in the study area.
Murray-Darling Rainbowfish	<i>Melanotaenia fluviatilis</i>		en	Inhabit rivers, streams, billabongs, drainage ditches, reservoirs, overflows, swamps, and ponds with dense aquatic vegetation in the Murray-Darling River system	1	3/06/2010	Low - No waterways or suitable aquatic habitat occurs in the study area.
Silver Perch	<i>Bidyanus bidyanus</i>	CR	en	Inhabits faster flowing water within the Murray-Darling system	3	1/06/2010	Low - No waterways or suitable aquatic habitat occurs in the study area.
Southern Pygmy Perch (Murray-Darling lineage)	<i>Nannoperca australis (Murray-Darling lineage)</i>	VU	vu	Occurs in low-gradient waterways and floodplains with slow-flowing or still water, in the Murray-Darling basin	None	N/A	Low - No waterways or suitable aquatic habitat occurs in the study area.
Trout Cod	<i>Maccullochella macquariensis</i>	EN	en	Limited to a single population on the Murray River.	6	20/05/2009	Low - No waterways or suitable aquatic habitat occurs in the study area.
Invertebrates							

Common Name	Scientific Name	EPBC Act	FFG Act	Habitat Preference	No. of sightings in search region	Last Record	Likelihood of occurrence in study area
Golden Sun Moth	<i>Synemon plana</i>	CR	vu	Occurs in grassy areas in the greater Melbourne region, mainly in areas dominated by native grasses such as wallaby grass and spear grass, but also in areas of introduced grasses such as Chilean Needle-grass.	None	N/A	Negligible - No suitable habitat occurs in the study area.

Legend: EPBC Act (Status under the EPBC Act): CR = critically endangered, EN = endangered, VU = vulnerable, M = migratory; FFG Act (Status under the FFG Act): CR = critically endangered, EN = endangered, VU = vulnerable

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Appendix G: EPBC Act Protected Matters Search Tool (PMST) Report

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 08/07/21 14:33:21

[Summary](#)

[Details](#)

[Matters of NES](#)

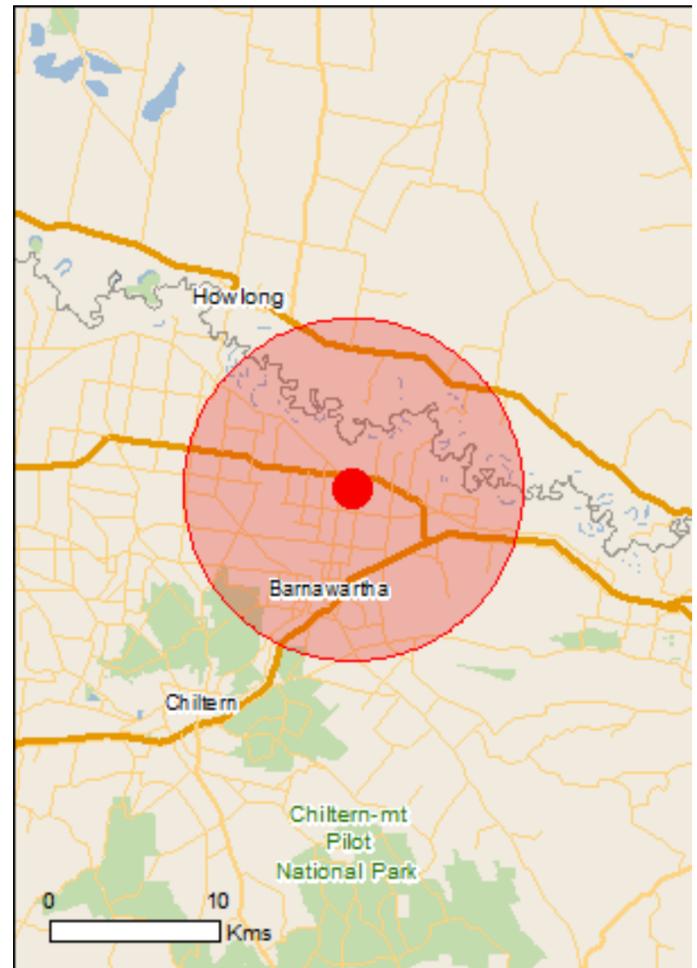
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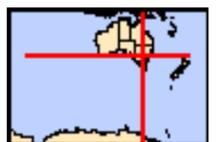
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[Coordinates](#)

Buffer: 10.0Km



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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	7
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	33
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	5
Regional Forest Agreements:	1
Invasive Species:	35
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

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Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	600 - 700km upstream
Barmah forest	100 - 150km upstream
Gunbower forest	150 - 200km upstream
Hattah-kulkyne lakes	300 - 400km upstream
Nsw central murray state forests	100 - 150km upstream
Riverland	500 - 600km upstream
The coorong, and lakes alexandrina and albert wetland	600 - 700km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community may occur within area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Breeding known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

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Name	Status	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
ADVERTISED PLAN		
Fish		
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat known to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Nannoperca australis Murray-Darling Basin lineage Southern Pygmy Perch (Murray-Darling Basin lineage) [91711]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
Crinia sloanei Sloane's Froglet [59151]	Endangered	Species or species habitat known to occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		

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Name	Status	Type of Presence
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area
Caladenia concolor Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat likely to occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area
Lepidium monoplacoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum validum Sturdy Leek-orchid, Mount Remarkable Leek-orchid [10268]	Vulnerable	Species or species habitat likely to occur within area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat likely to occur within area

Reptiles

Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

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Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area

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Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

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Name	Threatened	Type of Presence
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

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Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Barnawartha S.R.	VIC
Chiltern-Mt Pilot	VIC
Fryingpan Creek SS.R	VIC
Murray River K16 SS.R.	VIC
River Murray Reserve	VIC

Regional Forest Agreements	[Resource Information]
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Note that all areas with completed RFAs have been included.

Name	State
North East Victoria RFA	Victoria

Invasive Species	[Resource Information]
------------------	--------------------------

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species

Name	Status	Type of Presence	
Alauda arvensis Skylark [656]		habitat likely to occur within area Species or species habitat likely to occur within area	
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area	
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area	
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area	
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area	
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area	
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area	
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area	
Sturnus vulgaris Common Starling [389]	ADVERTISED PLAN	Species or species habitat likely to occur within area	
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area	
Mammals			
Bos taurus Domestic Cattle [16]			Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]			Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area	
Feral deer Feral deer species in Australia [85733]	<div style="border: 1px solid red; padding: 5px; color: red; font-size: small;"> This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright </div>	Species or species habitat likely to occur within area	
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area	
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area	
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area	
Rattus rattus Black Rat, Ship Rat [84]		Species or species	

Name	Status	Type of Presence
Sus scrofa Pig [6]		habitat likely to occur within area Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]	ADVERTISED PLAN	Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323] Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area Species or species habitat likely to occur within area

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Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-36.06083 146.68889

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Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

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The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix H: Barnawartha Solar Farm and Energy Storage Site Layout

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ADVERTISED PLAN



- General Notes**
- BASIC INDICATIVE LAYOUT/DESIGN. FOR PLANNING SUBMISSION ONLY. NOT FOR CONSTRUCTION OR CALCULATION PURPOSES. DESIGN IS NOT FINALISED. SOURCE DRAWING IS BARNSF-GN-LAY-0219.
 - GAS PIPELINE AND COMMS EASEMENT (NOT TO SCALE). ENSURE ADEQUATE STANDOFF OF FENCE AND PERIMETER ROAD. 30M OFFSET FROM PROJECT LANDOWNER PROPERTY BDY TO SOLAR PANELS INC VEGETATION SCREENING.
 - 30M OFFSET FROM SOLAR PANEL TO NEIGHBOURING PROP BDY.
 - 30M OFFSET FROM SOLAR PANEL TO NEIGHBOURING PROP BDY INC VEGETATION SCREENING.
 - RETAINED TREES AREA.
 - APPROX 100 X 50M AREA RESERVED FOR SUBSTATION AND BUILDINGS. REFER TO DWG BARNSF-GN-GAD-0209 FOR INDICATIVE LAYOUT WITHIN.
 - ALT ENTRY TO BE >30M SOUTH OF MURRAY VALLEY HWY COYLES RD INTERSECTION.
 - CONNECTING CABLE TO BE BORED UNDER HERMITAGE RD.
 - EXISTING AUSNET OHL TO AUSNET OHL S OF BAXTER-WHELANS RD. REFER TO SHEET 2.
 - 1 X 45,000L WATER TANK TO BE LOCATED CLOSE TO GATE INSIDE EACH SITE PRIMARY ACCESS POINT. EACH PRIMARY ACCESS POINT TO HAVE BUSINESS IDENTIFICATION SIGN AND CFA WATER TANK DIRECTION SIGN ON OR NEAR GATE FACING OUTWARDS (REF BARNSF-GN-GAD-0228).
 - INTERNAL ROADS 4M. PERIMETER FIRE BREAK 10M INC ROAD.
 - INDICATIVE DESIGN SPECS:
 - LOCATION: BARNAWARTHA, VICTORIA, AUSTRALIA
 - UTM CONVERGENCE: 0.1821 °
 - ALTITUDE: 162.11 M
 - USABLE AREA: 128.93 HA
 - PERIMETER FENCE: 7.37 KM
 - RATED POWER @ POC: 64MW
 - BATTERY CAPACITY: TBC. INDICATIVE 64-192MWH. LOCATION: DISPERSED, NEXT TO PCU.

- LEGEND:**
- Project area
 - Retained trees area
 - Substation, switchroom, building/facility
 - Colors indicate solar field connection to each power station
 - Mounting structure
 - Roads
 - Medium voltage trenches
 - Fences
 - Medium voltage lines
 - Existing Ausnet overhead line
 - New build overhead line within Wodonga easmt
 - Vegetation screen location
 - Water tank
 - CFA direction to water tank sign
 - Business identification sign

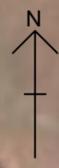
1	Original	30 Mar 2022
2	Addressed DELWP RFI's	24 Jun 2022
No.	Revision/Issue	Date

Firm Name and Address
WIRSOL
 YOUR PARTNER IN RENEWABLE ENERGY
 Wirsol Energy
 201/39 East Esplanade, Manly, NSW, Australia, 2095
 ARP Solar

Project Name and Address
 BARNAWARTHA SOLAR FARM
 INTERSECTION HERMITAGE RD AND BAXTER-WHELANS RD, BARNAWARTHA, VICTORIA, AUSTRALIA 3688

Drawing number BARNSF-GN-LAY-0226-V2	Sheet 1 of 2
Drawing title Indicative basic overall site layout - Planning submission	
Scale 100m	

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- General Notes**
14. EXISTING AUSNET OVERHEAD LINE SOUTH OF BAXTER-WHELANS ROAD TO BE UPGRADED
 15. NEW BUILD OVERHEAD LINE WITHIN WODONGA COUNCIL LAND PARCEL, SOUTH OF ROAD RESERVE TO AVOID VEGETATION CLEARANCE.
 16. AUSNET BARNAWARTHA ZONE SUBSTATION (BWA)
- LEGEND:**
- Project area
 - Retained trees area
 - Substation, switchroom, building/facility
 - Colors indicate solar field connection to each power station
 - Mounting structure
 - Roads
 - Medium voltage trenches
 - Fences
 - Medium voltage lines
 - Existing Ausnet overhead line
 - New build overhead line within Wodonga easmt
 - Vegetation screen location
 - Water tank
 - CFA direction to water tank sign
 - Business identification sign

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1	Original	30 Mar 2022
2	Addressed DELWP RFI's	24 Jun 2022
No.	Revision/Issue	Date

Firm Name and Address
WIRSOL
 YOUR PARTNER IN RENEWABLE ENERGY
 Wirsol Energy
 201/39 East Esplanade, Manly, NSW, Australia, 2095
 ARP Solar

Project Name and Address
 BARNAWARTHA SOLAR FARM
 INTERSECTION HERMITAGE RD AND BAXTER-WHELANS RD, BARNAWARTHA, VICTORIA, AUSTRALIA 3688

Drawing number BARNSP-GN-LAY-0226-V2	Sheet 2 of 2
Drawing title Indicative basic overall site layout - Planning submission	
Scale 1:200m	

Appendix I: Native Vegetation Removal Report

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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: 16/03/2022
Time of issue: 7:53 pm

Report ID: ARU_2022_002

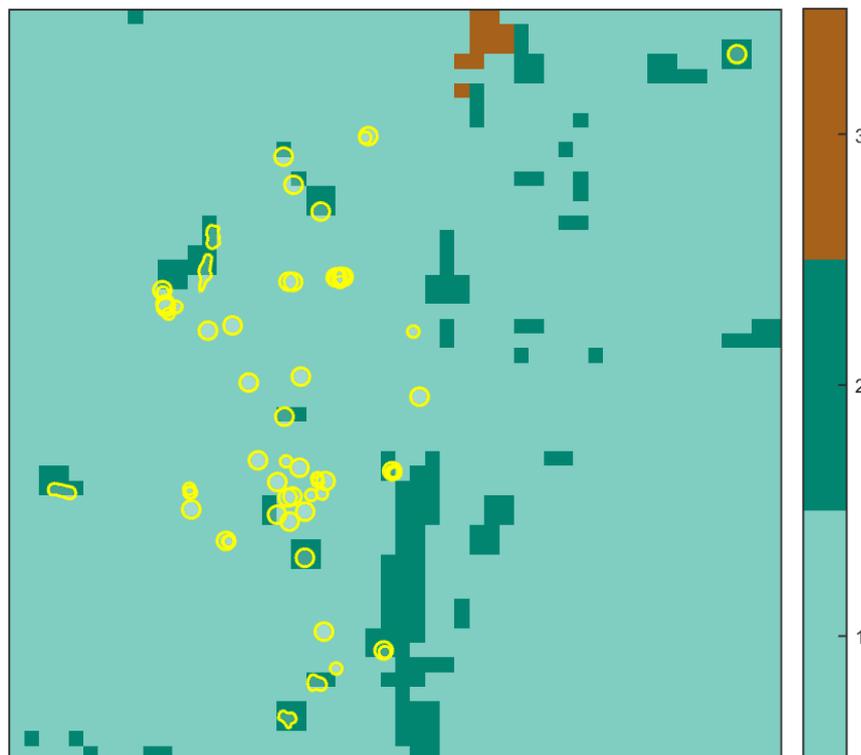
Project ID	ENSYM_0316_transferred
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	2.742 ha
Extent of past removal	0.000 ha
Extent of proposed removal	2.742 ha
No. Large trees proposed to be removed	46
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

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1. Location map



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Offset requirements if a permit is granted

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

General offset amount¹	0.504 general habitat units
Vicinity	North East Catchment Management Authority (CMA) or Indigo Shire Council
Minimum strategic biodiversity value score ²	0.188
Large trees	46 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

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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 defensible 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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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 an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

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.

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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:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

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:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

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

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Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym copyright					
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-AD	Patch	vriv0055_61	Endangered	3	no	0.200	0.065	0.065	0.230		0.012	General
1-AF	Patch	vriv0055_61	Endangered	0	no	0.150	0.081	0.081	0.167		0.011	General
1-AG	Patch	vriv0055_61	Endangered	4	no	0.240	0.071	0.071	0.150		0.015	General
1-74	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.031	0.230		0.006	General
1-76	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.014	0.230		0.003	General
1-77	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.008	0.230		0.001	General
1-79	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.028	0.230		0.005	General
1-80	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.031	0.230		0.006	General

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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
1-88	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000			0.000	
1-91	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000	0.190		0.000	General
1-93	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.031	0.160		0.005	General
1-94	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.013	0.260		0.003	General
1-95	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.013	0.260		0.002	General
1-96	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.021	0.260		0.004	General
1-99	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000			0.000	
1-100	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000	0.230		0.000	General
1-104	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.031	0.470		0.007	General
1-112	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000			0.000	
1-130	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.001	0.190		0.000	General
1-131	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.003	0.140		0.000	General
1-18	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.445		0.015	General
1-69	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.189		0.013	General
1-70	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.180		0.012	General

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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
1-71	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.180		0.012	General
1-72	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.180		0.012	General
1-73	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.180		0.012	General
1-75	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-78	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-81	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-82	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.048	0.230		0.009	General
1-83	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.048	0.230		0.009	General
1-84	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.067	0.230		0.012	General
1-85	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-86	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-87	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.190		0.013	General
1-92	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.160		0.012	General
1-97	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.260		0.013	General
1-98	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General

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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
1-101	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.067	0.230		0.012	General
1-102	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-103	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.230		0.013	General
1-113	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.680		0.018	General
1-124	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.046	0.150		0.008	General
1-125	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.046	0.150		0.008	General
1-126	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.150		0.012	General
1-127	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.150		0.012	General
1-128	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.140		0.012	General
1-129	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.070	0.190		0.013	General
1-132	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.016	0.140		0.003	General
1-133	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.042	0.140		0.007	General
1-134	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.014	0.141		0.002	General
1-135	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.039	0.149		0.007	General
1-AE	Patch	vriv0055_61	Endangered	3	no	0.150	0.052	0.052	0.790		0.011	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
1-89	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000			0.000	
1-90	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000			0.000	
1-114	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.022	0.245		0.004	General
1-115	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.011	0.250		0.002	General
1-118	Scattered Tree	vriv0055_61	Endangered	0	no	0.200	0.031	0.000	0.230		0.000	General
1-116	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.044	0.250		0.008	General
1-117	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.040	0.234		0.007	General
1-119	Scattered Tree	vriv0055_61	Endangered	1	no	0.200	0.070	0.067	0.230		0.012	General
1-AK	Patch	vriv0055_61	Endangered	1	no	0.200	0.085	0.085	0.252		0.016	General

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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
Wedge Diuris	<i>Diuris dendrobioides</i>	504416	Endangered	Dispersed	Habitat importance map	0.0027
Mugga	<i>Eucalyptus sideroxylon subsp. sideroxylon</i>	504493	Rare	Dispersed	Habitat importance map	0.0001
Superb Parrot	<i>Polytelis swainsonii</i>	10277	Endangered	Dispersed	Habitat importance map	0.0001
Yarran Wattle	<i>Acacia omalophylla</i>	500069	Endangered	Dispersed	Habitat importance map	0.0001
Western Silver Wattle	<i>Acacia decora</i>	500027	Vulnerable	Dispersed	Habitat importance map	0.0001
Mueller Daisy	<i>Brachyscome muelleroides</i>	500465	Endangered	Dispersed	Habitat importance map	0.0000
Crimson Spider-orchid	<i>Caladenia concolor</i>	504347	Endangered	Dispersed	Habitat importance map	0.0000
Narrow Goodenia	<i>Goodenia macbarronii</i>	501513	Vulnerable	Dispersed	Habitat importance map	0.0000
Northern Sandalwood	<i>Santalum lanceolatum</i>	503005	Endangered	Dispersed	Habitat importance map	0.0000
Grey Falcon	<i>Falco hypoleucos</i>	10236	Endangered	Dispersed	Habitat importance map	0.0000
Rough-grain Love-grass	<i>Eragrostis trachycarpa</i>	501197	Rare	Dispersed	Habitat importance map	0.0000
Grey-crowned Babbler	<i>Pomatostomus temporalis temporalis</i>	10443	Endangered	Dispersed	Habitat importance map	0.0000
Cottony Cassinia	<i>Cassinia ozothamnoides</i>	501560	Vulnerable	Dispersed	Habitat importance map	0.0000
Deane's Wattle	<i>Acacia deanei subsp. paucijuga</i>	504201	Rare	Dispersed	Habitat importance map	0.0000
Dookie Daisy	<i>Brachyscome gracilis</i>	505494	Vulnerable	Dispersed	Habitat importance map	0.0000
Bush Stone-curlew	<i>Burhinus grallarius</i>	10174	Endangered	Dispersed	Habitat importance map	0.0000
Tick Indigo	<i>Indigofera adesmiifolia</i>	503780	Vulnerable	Dispersed	Habitat importance map	0.0000
Smooth Darling-pea	<i>Swainsona galegifolia</i>	503992	Endangered	Dispersed	Habitat importance map	0.0000
Umbrella Grass	<i>Digitaria divaricatissima var. divaricatissima</i>	501045	Vulnerable	Dispersed	Habitat importance map	0.0000

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Western Golden-tip	<i>Goodia medicaginea</i>	501518	Rare	Dispersed	Habitat importance map	0.0000
Brolga	<i>Grus rubicunda</i>	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Golden Cowslips	<i>Diuris behrii</i>	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Dark Wire-grass	<i>Aristida calycina var. calycina</i>	503630	Rare	Dispersed	Habitat importance map	0.0000
Purple Diuris	<i>Diuris punctata</i>	501084	Vulnerable	Dispersed	Habitat importance map	0.0000
Bearded Dragon	<i>Pogona barbata</i>	12177	Vulnerable	Dispersed	Habitat importance map	0.0000
Squirrel Glider	<i>Petaurus norfolcensis</i>	11137	Endangered	Dispersed	Habitat importance map	0.0000
Grey Grass-tree	<i>Xanthorrhoea glauca subsp. angustifolia</i>	507229	Endangered	Dispersed	Habitat importance map	0.0000
Late-flower Flax-lily	<i>Dianella tarda</i>	505085	Vulnerable	Dispersed	Habitat importance map	0.0000
Dense Mint-bush	<i>Prostanthera decussata</i>	502739	Rare	Dispersed	Habitat importance map	0.0000
Veiled Fringe-sedge	<i>Fimbristylis velata</i>	501369	Rare	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	<i>Gratiola pumilo</i>	503753	Rare	Dispersed	Habitat importance map	0.0000
Waterbush	<i>Myoporum montanum</i>	502240	Rare	Dispersed	Habitat importance map	0.0000
Black Falcon	<i>Falco subniger</i>	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke	<i>Allocasuarina luehmannii</i>	500678	Endangered	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	<i>Grantiella picta</i>	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke Mistletoe	<i>Amyema linophylla subsp. orientalis</i>	500217	Vulnerable	Dispersed	Habitat importance map	0.0000
Barking Owl	<i>Ninox connivens connivens</i>	10246	Endangered	Dispersed	Habitat importance map	0.0000
Lace Monitor	<i>Varanus varius</i>	12283	Endangered	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.

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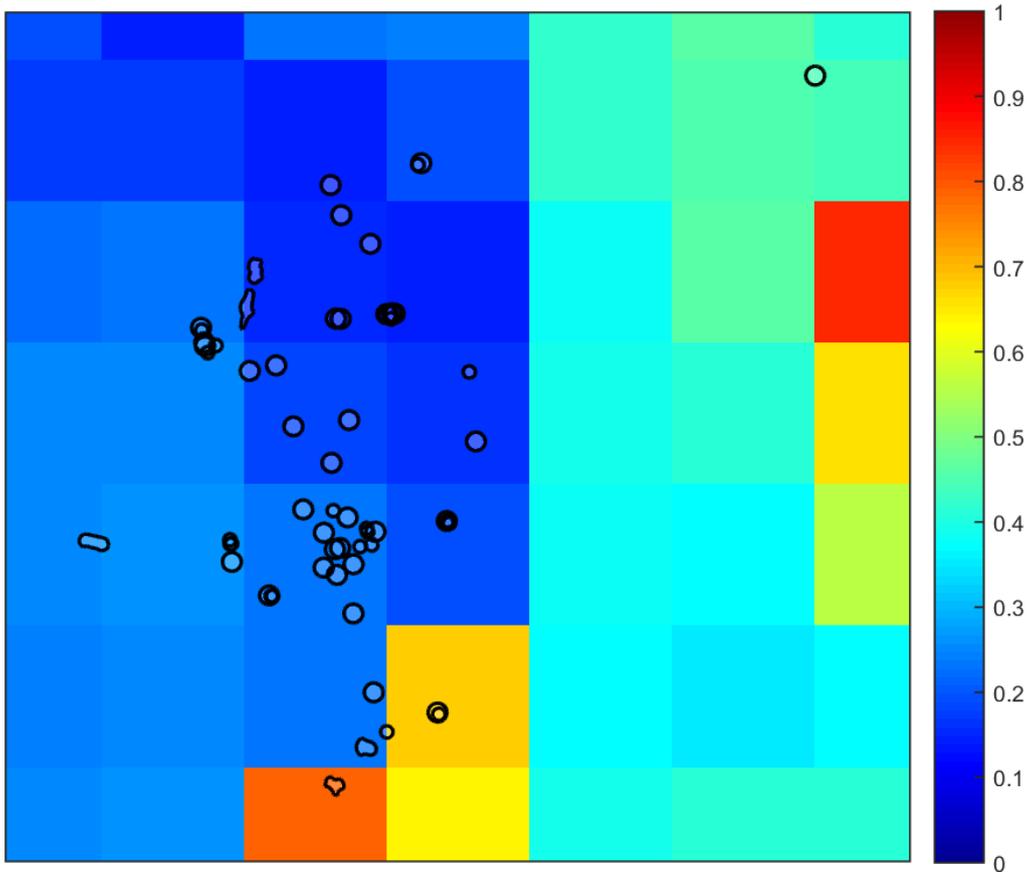
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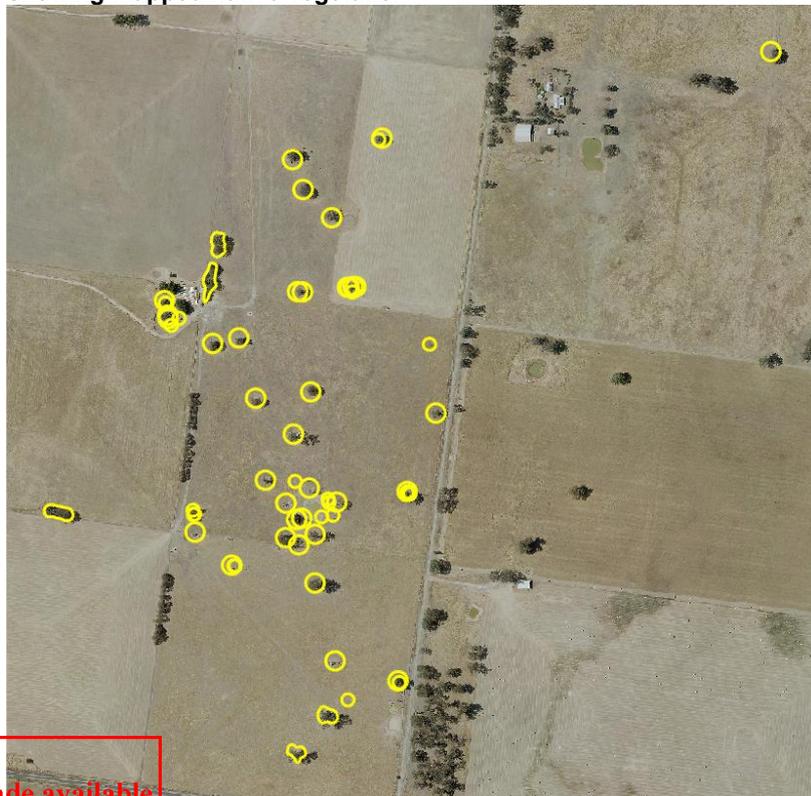
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Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

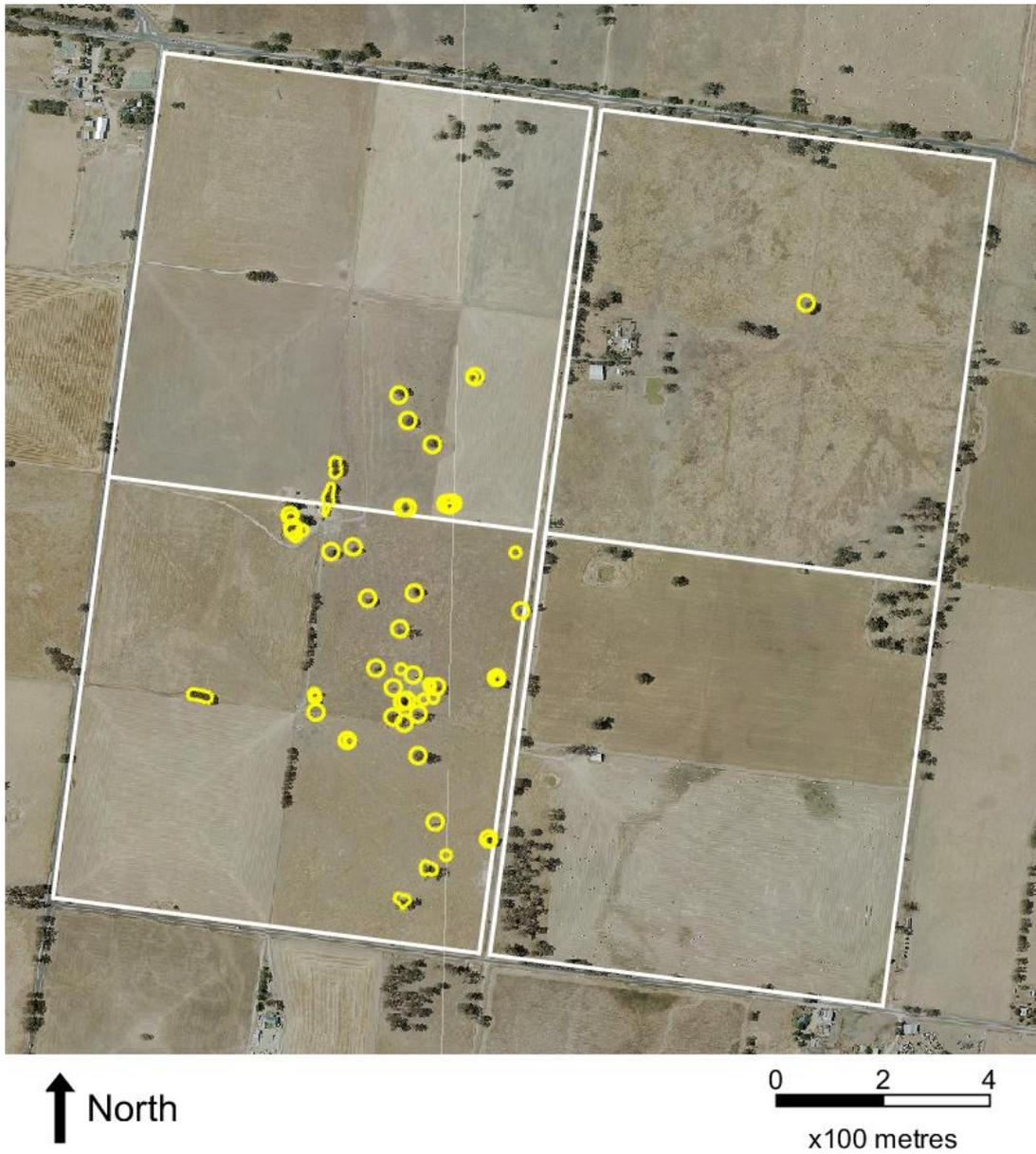


North

0 1 2
x100 metres

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4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

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Appendix J: Search for Offset availability

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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: 16/03/2022 02:28

Report ID: 13169

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.504	0.188	46	CMA	North East
			or LGA	Indigo Shire

Details of available native vegetation credits on 16 March 2022 02:28

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3074_01	20.702	2930	North East	Towong Shire	Yes	Yes	No	VegLink
VC_CLO-3034_01	3.397	60	North East	Mount Hotham Alpine Resort (Unincorporated)	Yes	Yes	No	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)
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There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

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

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3743_01	9.812	508	North East	Wangaratta Rural City	Yes	Yes	No	VegLink

LT - Large Trees

CMA - Catchment Management Authority

LGA - Municipal District or Local Government Authority

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Next steps

If applying for approval to remove native vegetation

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

If you have approval to remove native vegetation

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

Broker contact details

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

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

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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

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