

Final Report

Biodiversity Assessment: Wombelano Wind Farm, Charam-Wombelano Road, Wombelano, Victoria

Prepared for

Wind Projects Australia Project 1 Pty Ltd

September 2021

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Ecology and Heritage Partners Pty Ltd

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1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Wind Projects Australia Project 1 Pty Ltd in July 2018 to conduct a Biodiversity Assessment within the relevant area of the proposed Wombelano Wind Farm, Charam-Wombelano Road, Wombelano, Victoria (Figure 1). It is understood that the property is being considered for a wind farm, comprising up to seven wind turbines and associated infrastructure.

The objective of the biodiversity assessment was to assess ecological values within the study area, review the development design, and provide recommendations to avoid and minimise impact to ecological values. The site assessment identified the type and extent native vegetation present within 180-200 metres of the property boundaries, and two potential access locations into the property from Goroke-Harrow Road reserve (Figure 2), and was undertaken to determine the presence or otherwise of significant flora and fauna species and/or ecological communities. The report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed development. The report also provides recommendations to address or reduce impacts throughout the development of the wind farm.

In October 2020 Wind Projects Australia Project 1 PTY LTD commissioned an investigation to document flight behaviours of South-eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne* near Edenhope, Victoria (Biosis 2020). Red-tailed Black-Cockatoos flights were recorded during fieldwork in July 2020. The results of the survey concluded that a high proportion of Red-tailed Black-Cockatoos flights were observed to be below the rotor-swept height of turbines proposed for the Wombelano Wind Farm, and that the probability of birds colliding with turbines is very low (Biosis 2020).

In January 2021 Wind Projects Australia Project 1 PTY LTD submitted a referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2020/8857) associated with the construction and operation of a wind farm (Wind Projects Australia Project 1 Pty Ltd 2021). The project was considered to have the potential to impact 'Listed threatened species and communities (Section 18 and 18A)', specifically South-eastern Red-tailed Black Cockatoo and White-throated Needletail *Hirundapus caudacutus*. On 22 January 2021, a 'Not a Controlled Action' decision was made by a delegate for the Department of Agriculture, Water and Environment (DAWE) for the project under Section 75 of the EPBC Act.

Additional site assessments were undertaken by Ecology and Heritage Partners Pty Ltd in July 2021 to respond to outstanding matters raised in two Request for Further Information (RFI) letters from the Department of Environment, Land, Water and Planning (DELWP). The RFI relates to Tree Protection Zones (TPZ) and opportunity to avoid impacts to trees (particularly Buloke *Allocasuarina luehmannii* located along the southern boundary of the study area), and nesting and foraging opportunities for the south-eastern Red-tailed Black Cockatoo within and surrounding the proposed impact area. Investigations were also undertaken to determine whether Buloke or stringybarks (eucalypts) within the study area are in close proximity to other cohorts to allow pollination and/or produce seed crops.

1.2 Study Area

The property is located at Wombelano Wind Farm, Charam-Wombelano Road, Wombelano, Victoria, approximately 320 kilometres north-west of Melbourne's CBD (Figure 1). The site covers approximately 250

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hectares and is bound by Charam-Wombelano Road to the north, Harrow-Goroke Road to the east, and farming properties to the south and west (Figure 2). The investigation also included areas of road reserve at the intersection of Charam-Wombelano Road and Goroke-Harrow Road (Figure 2d), and at the alternative site access point in the south east of the study area (Figure 2b).

While the property is generally flat there is a wide-spanning basin in the north-eastern corner of the property, and a large majority of the property is currently being used for grazing and cropping which occur on rotation.

According to the DELWP Native Vegetation Information Management (NVIM) Tool (DELWP 2021a), the study area occurs within the Wimmera bioregion. It is located within the jurisdiction of the Wimmera Catchment Management Authority (CMA) and the West Wimmera Shire Council municipality.

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2 METHODS

2.1 Relevant State and Commonwealth Legislation

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

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Environmental Effects Act 1978* (EE Act);
- *Flora and Fauna Guarantee Act 1988* (FFG Act);
- *Planning and Environment Act 1987* (P&E Act);
 - The Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017a);
- Policy and Planning Guidelines for Development of Wind Energy Facilities in Victoria (DELWP 2017b);
- Interim Guidelines for the Assessment, Avoidance, Mitigation and Offsetting of Potential Wind Farm Impacts on the Victorian Brolga Population (DSE 2012);
- *Wildlife Act 1975* (Wildlife Act); and,
- *Catchment and Land Protection Act 1994* (CaLP Act).

2.2 Desktop Assessment

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

- The DELWP NVIM Tool (DELWP 2021a) and NatureKit (DELWP 2021b) for:
 - Modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species; and,
 - The extent of historic and current EVCs.
- EVC benchmarks (DELWP 2021c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2021d);
- The Illustrated Flora Information System of Victoria (IFLISV) (Gullan 2017) for assistance with the distribution and identification of flora species;
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2021);

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- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DELWP 2021e) and Protected (DELWP 2019) Lists;
- The online VicPlan Map (DELWP 2021f) to ascertain current zoning and environmental overlays in the study area;
- Other relevant environmental legislation and policies as required; and,
- Aerial photography of the study area.

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2.3 Field Assessment

Field assessments were undertaken in order to obtain information on ecological values within the study area. The study area was walked and/or driven, with all observed vascular flora (and fauna) species recorded, any significant records mapped and the overall condition of vegetation and habitats noted. Native vegetation in the local area was also investigated to assist in determining the pre-European vegetation within the study area. Ecological Vegetation Classes (EVCs) were determined with reference to DELWP pre-1750 and extant EVC mapping and their published descriptions (DELWP 2021c).

Additional field assessments were completed in July 2021 to assess the trees located along the southern boundary of the study area and to investigate nesting and foraging opportunities for the South-eastern Red-tailed Black Cockatoo within and surrounding the proposed impact area. Investigations were also undertaken to determine whether any Buloke or Stringybark trees within the study area are in close proximity to other Bulokes to facilitate pollination and/or produce large seed crops or have a history of producing large seed crops.

All fieldwork was carried out under the appropriate licences, including a Research Permit (10006893) and Scientific Procedures Fieldwork Licence (SPFL 410) issued by DELWP under the *Wildlife Act 1975*, and an Animal Research permit issued by the Wildlife and Small Institutions Animal Ethics Committee (22.13).

2.4 Habitat Hectare Assessment

Several detailed flora and habitat hectare assessments have been undertaken by Ecology and Heritage Partners, with the aim of determining native vegetation quality and extent within the study area.

Field assessments were undertaken within the project area (Figures 2a – 2d) during 4 and 5 October 2018, and 19 and 20 July 2021. Additional assessments were undertaken at two locations identified by Wind Projects Australia Project 1 Pty Ltd. These additional assessments were undertaken to investigate the potential impacts caused by the underground power supply route at the intersection of Charam-Wombelano Road and Goroke-Harrow Road to the Charam Zone Substation (Figure 2d), and at the alternative site access point in the south east of the study area (Figure 2b).

Where native vegetation was identified a habitat hectare assessment was undertaken following methods described in the Vegetation Quality Assessment Manual (DSE 2004).

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

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

Under the *Planning and Environment Act 1987*, Clause 52.17 of the Planning Scheme requires a planning permit from the Responsible Authority to remove, destroy or lop native vegetation. The Minister for Planning is the Responsible Authority for wind and solar projects in Victoria, and not Council. The assessment process for the clearing of vegetation follows the ‘Guidelines for the removal, destruction or lopping of native vegetation’ (Guidelines) (DELWP 2017). The ‘Assessor’s handbook – applications to remove, destroy or lop native vegetation’ (Assessor’s handbook) (DELWP 2018) provides clarification regarding the application of the Guidelines.

2.5.1 Assessment Pathway

Guidelines manage the impacts on biodiversity from native vegetation removal (DELWP 2017). The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed. The location risk (1, 2 or 3) has been determined for all areas in Victoria and is available on DELWP’s Native Vegetation Information Management (NVIM) Tool (DELWP 2021a). Determination of assessment pathway is summarised in Table 1. The assessment pathway for an application to remove native vegetation reflects its potential to impact on biodiversity as described in the Guidelines (2017).

Table 1. Assessment pathways for applications to remove native vegetation (DELWP 2017)

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

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

2.5.2 Vegetation Assessment

Native vegetation (as defined in Table 2)

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Table 2) is assessed using two key parameters: extent (in hectares) and condition. Extent is determined through a field assessment. For the purposes of this assessment, both extent and condition were determined as part of the habitat hectare assessment (Table A1.3).

In addition, all mapped wetlands (based on the DELWP 'Current Wetlands' layer) must be included as native vegetation, with the modelled condition score assigned to them (DELWP 2018).

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Table 2. Determination of remnant native vegetation (DELWP 2017)

Category	Definition	Extent	Condition
Patch of native vegetation	<p>An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native.</p> <p>OR</p> <p>An area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy.</p> <p>OR</p> <p>any mapped wetland included in the <i>Current Wetlands map</i>, available in DELWP systems and tools.</p>	<p>Measured in hectares.</p> <p>Based on hectare area of the native patch.</p>	<p>Vegetation Quality Assessment Manual (DSE 2004).</p> <p>OR</p> <p>Modelled condition for <i>Current Wetlands</i></p>
Scattered tree	<p>A native canopy tree that does not form part of a patch.</p>	<p>Measured in hectares.</p> <p>Each Large scattered tree is assigned an extent of 0.071 hectares (15m radius).</p> <p>Each Small scattered tree is assigned a default extent of 0.031 hectares (10 metre radius)</p>	<p>Scattered trees are assigned a default condition score of 0.2 (outside a patch).</p>

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

2.5.3 Offsets

Biodiversity offsets are required to compensate for the permitted removal of native vegetation. Offset obligations and offset site criteria are determined in accordance with the Guidelines (DELWP 2017) and are divided into two categories, being General Habitat Units and Species Habitat Units.

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

2.6 Assessment Qualifications and Limitations

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

The field assessments were undertaken during a sub-optimal season for the identification of some flora and fauna species (i.e. winter/spring). The ‘snapshot’ nature of a standard biodiversity assessment, along with sub-optimal timing of the survey, meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent.

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

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Ecological values identified within the study area were recorded using a hand-held GPS or tablet with an accuracy of +/-5 metres. This level of accuracy is considered to provide an accurate assessment of the ecological values present within the study area; however, this data should not be used for detailed surveying purposes.

The terrestrial flora and fauna data collected during the field assessment and information obtained from relevant desktop sources is adequate to provide an accurate assessment of the ecological values present within the study area.

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3 RESULTS

3.1 Vegetation Condition

Remnant vegetation within the study area is representative of two EVCs, being scattered trees from Red Gum Swamp (EVC 292) and patches and scattered trees from Plains Woodland (EVC 803), with exotic species dominating the understory in most areas (60-80% exotic). The remainder of the site contains exotic crops, pasture grass and weeds.

3.1.1 Remnant Patches

Remnant patches identified as Plains Woodland EVC were mapped along the southern boundary of the study area in the form of three to six individual Bulokes forming patches (Plate 1; identified as PW1 in Appendix 1 and Figure 2a). A shallow, artificial drainage line runs north-south towards the southern boundary, which contains the native Common Spike-rush *Eleocharis palustris* and Finger Rush *Juncus subsecundus* (Plate 2; identified as PW2 in Appendix 1 and Figure 2a). This patch has also been assigned to the Plains Woodland EVC, but it also has affinities with the EVC Spike-sedge Wetland (EVC 819).

Roadside vegetation adjoining the study area's northern and eastern boundaries was consistent with Plains Woodland EVC, containing canopy trees of River Red-gums and an understorey of Bulokes (Plate 3; identified as PW3 in Appendix 1 and Figure 2a). Very few native ground layer species were observed (e.g. Silky Bush-pea *Pultenaea prostrata*, Sheep's Burr *Acaena echinata*), with the ground layer being dominated by the exotic pasture grass species Wild Oat *Avena fatua*, with other exotic grasses being Toowoomba Canary-grass *Phalaris aquatica*, Lesser Quaking-grass *Briza minor* and Barley *Hordeum glaucum*.



Plate 1. A patch of Buloke to the right and scattered Bulokes in the remaining area along the study area's southern boundary (Ecology and Heritage Partners Pty Ltd 04/10/2018).



Plate 2. Common Spike-rush and Finger Rush within a shallow artificial drainage line along the study area's southern boundary (Ecology and Heritage Partners Pty Ltd 04/10/2018).

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Plate 3. Plains Woodland EVC along the road reserve adjoining the study area's eastern boundary near the existing access point (Ecology and Heritage Partners Pty Ltd 04/10/2018).



Plate 4. Buloke sapling proposed to be impacted (far left) by the trenching of the underground power supply route at the intersection of Charam-Wombelano Road and Goroke-Harrow Road to the Charam Zone Substation (Ecology and Heritage Partners Pty Ltd 19/07/2021) (Figure 2d).



Plate 5. Plains Woodland EVC along the road reserve adjoining the study area's eastern boundary (Ecology and Heritage Partners Pty Ltd 19/07/2021).



Plate 6. Buloke sapling proposed to be impacted (far left) by the trenching of the underground power supply route at the intersection of Charam-Wombelano Road and Goroke-Harrow Road to the Charam Zone Substation (Ecology and Heritage Partners Pty Ltd 19/07/2021).

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3.1.2 Scattered Trees and Large Trees in Patches

The Red Gum Swamp EVC would have likely occurred within the basin in the study area's north-eastern corner, with two remnant scattered River Red-gums *Eucalyptus camaldulensis* present along its south-eastern slope (Plate 7; Figure 2 [Trees 1 and 2]). The remaining 98 remnant scattered trees and large trees in patches are consistent with Plains Woodland EVC, with River Red-gums and Bulokes occurring throughout the study area (Plates 1 and 7; Figures 2 and 2a).

The Bulokes present on the property were located in sufficient proximity to facilitate pollination. A small number of seed pods were observed during the field assessment; these were typically small in size and low in abundance. No obvious signs of Red-tailed Black Cockatoo foraging could be detected. However, it is important

to note that the inspection was undertaken at a suboptimal time (i.e. mid-winter; Buloke seeds usually ripen and fall during late summer and early autumn). It is likely that the birds would frequent the area seasonally when seed pods are available.

A majority of the mature River Red-gums, both as scattered trees and as large trees in patches, have at least one hollow, with many having several hollows of varying sizes (Plate 8).



Plate 7. Two scattered River Red-gums within the Red Gum Swamp EVC (Trees 1 and 2 in Figure 2) (Ecology and Heritage Partners Pty Ltd 04/10/2018).



Plate 8. Large hollow in the canopy of this River Red-gum (Tree 4 in Figure 2a) (Ecology and Heritage Partners Pty Ltd 05/10/2018).

3.1.3 Introduced Vegetation

Apart from the patches and scattered trees within the study area, the remainder of the site contains exotic crops, pasture grass and weeds. Wheat *Triticum aestivum* is grown in the northern-most paddock. The remaining paddocks are used for grazing and contain exotic pasture grass and weeds. Common species within these paddocks include Cape Weed *Arctotheca calendula*, Ribwort *Plantago lanceolata*, White Clover *Trifolium repens* and Cat’s Ear *Hypochoeris radicata* (Plate 10).

One noxious weed (Spear Thistle *Cirsium vulgare*) was recorded within a small area (approximately 10 individuals within 100 square metres) along the study area’s southern boundary. The taller plants appear to have been sprayed and partially died, with new shoots from these plants and new plants emerging (Plate 10).

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Plate 9. Pasture grass and other exotic species within the study area paddocks (Ecology and Heritage Partners Pty Ltd 04/10/2018).

Plate 10. Previously sprayed and new Spear Thistle in a small area along the study area's southern boundary (Ecology and Heritage Partners Pty Ltd 05/10/2018).

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3.2 Fauna Habitat

The majority of the study area consists of paddocks that contain exotic pasture grass (Plate 9), which are likely to be used as a foraging resource by common generalist bird species that are tolerant of modified open areas. Fauna observed using this habitat included the Australian Magpie *Cracticus tibicen*, Crimson Rosella *Platycercus elegans*, Australian Raven *Corvus coronoides* and Galah *Eolophus roseicapilla*. A Nankeen Kestrel *Falco cenchroides* was also observed flying overhead.

The majority of remnant mature River Red-gum trees throughout the study area contain hollows of various sizes, limb failure points (Plate 8) and lifting bark, which provide valuable habitat for foraging, roosting and nesting native birds, possums and bats.

Artificial waterbodies such as dams were located within the study area along the southern boundary and near the centre of the property, providing habitat for common waterbird species including Australian Wood Duck *Chenonetta jubata* and the Northern Mallard *Anas platyrhynchos* (Figure 2).

3.2.1 South-eastern Red-tailed Black Cockatoo habitat

The South-eastern Red-tail Black Cockatoo generally feeds on the seeds of Brown Stringybark *Eucalyptus baxteri* and Desert Stringybark *Eucalyptus arenacea*, and seasonally on Buloke seeds over late summer and early autumn. It is often possible to determine where the species has been feeding by the presence of a trash of leaves, twigs and chewed nuts left underneath the tree in which the birds have been feeding. Generally, a surveyor is more likely to hear Red-tail Black Cockatoo before they are seen as the species is active, noisy and conspicuous, especially when feeding (Higgins 1999).

During the field assessment undertaken in July 2021, multiple hollow-bearing River Red-gum trees were identified as providing potential nesting opportunities for the Red-tailed Black Cockatoo. Although none were located within the development footprint or proposed to be impacted by the development. These trees were inspected using a telescopic endoscope to inspect the hollows and no evidence of Red-tailed Black Cockatoo was observed. In addition, scattered Buloke were observed in the northern region of the site, as well as a large stand of mature trees along Goroke Harrow Road. These trees may provide foraging resources for the Red-tailed Black Cockatoo and are likely to be frequented seasonally when seed pods are present (Plate 11; Plate

12). While some old seed pods were observed during the field assessment, the abundance was relatively low and they bore no obvious signs of Red-tailed Black Cockatoo feeding.



Plate 11. Old seed pod observed beneath a stand of mature Buloke trees (Ecology and Heritage Partners Pty Ltd 04/10/2018).



Plate 12. Stand of Buloke trees present along the roadside (Ecology and Heritage Partners Pty Ltd 04/10/2018).

3.3 Guidelines for the removal, destruction or lopping of native vegetation (Guidelines)

3.3.1 Vegetation proposed to be removed

An access point from the main road into the property already exists along the study area's eastern boundary (Plate 3), which currently provides approximately four metres of cleared space in the form of a dirt driveway. The wind turbines will be transported in sections to the study area on large trucks, which will require an access point with a clearance of 30 metres. Consequently, a secondary access point will be positioned in the south of the study area (Plate 5 and 6). As thirteen metres of native vegetation either side of the track will need to be removed, the use of the secondary access point will minimise impacts to native vegetation and trees that would otherwise be impacted through the expansion of the existing access point. The habitat hectares assessment for this patch (PW3 on Figure 2a) to be removed is in Appendix 1.

The study area is within Location 2, with 0.127 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Intermediate assessment pathway (Table 3).

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Table 3. Removal of Native Vegetation (the Guidelines) (DELWP 2017).

Assessment pathway	Intermediate
Total Extent (past and proposed) (ha)	0.127
Remnant patch (ha)	0.127
Extent of past removal (ha)	0.00
Extent of proposed removal (ha)	0.127
Large Trees within patches (no.)	0
Scattered trees (no.)	0
Location Risk	2
Strategic Biodiversity Value Score	0.466

3.3.2 Offset Targets

The offset requirement for native vegetation removal is 0.044 General Habitat Units.

A summary of proposed vegetation losses and associated offset requirements is presented in Table 4. The Native Vegetation Removal report provided by DELWP is presented in Appendix 3.

Table 4. Offset targets

General Offsets Required	0.044
Species Offsets Required	None
Vicinity (catchment / LGA)	Wimmera CMA / West Wimmera Shire Council
Minimum Strategic Biodiversity Score*	0.466

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3.4 Significance Assessment

3.4.1 Flora

Twenty-six flora species (seven indigenous and 19 non-indigenous or introduced) were recorded within the study area during the field assessment. Buloke is listed as a protected species under the FFG Act. A consolidated list of flora species recorded is provided in Appendix 1.

No nationally significant and 18 State significant flora species previously recorded within 10 kilometres of the study area (DELWP 2021d) (Appendix 1). The PMST nominated an additional 17 nationally significant species which have not been previously recorded but have the potential to occur in the locality (DAWE 2021).

The small patches of Plains Woodland proposed to be removed along the road reserve are dominated by exotic pasture grasses, with very few native ground cover species present. These patches are therefore considered to have a low likelihood of supporting significant species that have been found within 10 km of the study area (Figure 3).

The remainder of the study area (i.e. the paddocks) is heavily disturbed and highly degraded, including soil disturbance and grazing. As such, it is unlikely that these areas support habitat for any additional significant flora.

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3.4.2 Fauna

The VBA contains records of three nationally significant and 13 State fauna species previously recorded within 10 kilometres of the study area (DELWP 2021d) (Appendix 2). The PMST nominated an additional 17 nationally significant threatened species which have historically occurred within the 10-kilometre radius, but which there are no known VBA records (DAWE 2021).

All state significant species have a low likelihood or less of occurring in the study area, based on the lapse in recent records. These species include migratory birds which are unlikely to use the study area due to the lack of suitable wetland habitat (i.e. the “current wetland” modelled in the north-east of the study area is now cropping land, Figure 2). State listed waterbird species with a low likelihood of occurrence include Australasian Shoveler *Anas rhynchos* (2001 record), Freckled Duck *Stictonetta naevosa* (1991) and Brolga *Antigone rubicunda* (1995).

3.4.2.1 South-eastern Red-tailed Black Cockatoo

The South-eastern Red-tailed Black Cockatoo is listed as Endangered under the EPBC Act (1999) and has recent records within five kilometres of the study area (Figure 4). The species is considered to have a moderate – high likelihood of occurring in the study area, due to the proximity of records (2014 latest record) and the suitability of habitat: patches of Buloke as ‘food’ trees and large eucalypt trees (River Red-gums) with nesting hollows (Figure 2). The study area is also located within the known distribution of the south-eastern Red-tailed Black Cockatoo population which covers an area of 18,000 square kilometres that extends west of Horsham into New South Wales and as far south as Cape Bridgewater, Victoria (Associate Professor Maron). All other nationally listed species have a low likelihood of occurring in the study area, as no VBA records exist, with the exception of the Growling Grass Frog which was last recorded in 1982.

3.4.3 Communities

Four nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DAWE 2021).

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (GBGW);
- Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains (SHW); and
- White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (WB-YB-BRG-GW).
- It is likely that the Buloke within the study area formed part of the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion, which is an endangered community type.

The other three modelled communities (GBGW, SHW and WB-YB-BRG-GW) were not identified during the site assessment as present within the study area.

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4 LEGISLATIVE AND POLICY IMPLICATIONS

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

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

The proposed removal of native vegetation is unlikely to have a significant impact on any matters of NES, however following the initial biodiversity assessment it was considered that further information was required to determine the bird mortality risks from the proposed wind farm, particularly for the endangered RTBC. In October 2020 Wind Projects Australia Project 1 PTY LTD commissioned an investigation to document flight behaviours of South-eastern Red-tailed Black-Cockatoo near Edenhope, Victoria (Biosis 2020). Flight data for Red-tailed Black-Cockatoos was recorded during fieldwork on in July 2020. The results of the survey concluded that the vast majority of Red-tailed Black-Cockatoos flights were observed to be below the rotor-swept height of turbines proposed for the Wombelano wind farm, and that the probability of them colliding with turbines proposed for the wind farm would be very low. Following this investigation, the minimum lower tip height was adjusted to be above the height of all RTBC flights observed during the investigation to further mitigate against potential collisions with the species.

In January 2021 Wind Projects Australia Project 1 PTY LTD submitted a referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2020/8857) associated with the construction and operation of a wind farm (Wind Projects Australia Project 1 Pty Ltd 2021). The project was considered to have the potential to impact 'Listed threatened species and communities (Section 18 and 18A)', specifically South-eastern Red-tailed Black Cockatoo and White-throated Needletail. On 22 January 2021, a 'Not a Controlled Action' decision was made by a delegate for the Department of Agriculture, Water and Environment (DAWE) for the project under Section 75 of the EPBC Act.

4.2 *Environment Effects Act 1978* (Victoria)

The *Environment Effects Act 1978* (EE Act) provides for assessment of proposed actions that are capable of having a significant effect on the environment via the preparation of an Environment Effects Statement (EES). A project with potential adverse environmental effects that, individually or in combination, could be significant in a regional or State context should be referred (DSE 2006). An action may be referred for an EES decision where:

- one of the following occurs:
 - Potential clearing of 10 hectares or more of native vegetation from an area that:
 - is of an EVC identified as endangered by DELWP;
 - is, of Very High conservation significance; or,
 - is not authorised under an approved Forest Management Plan or Fire Protection Plan.

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- Potential long-term loss of a significant proportion (1-5% depending on conservation status of species) of known remaining habitat or population of a threatened species within Victoria.
- or where two or more of the following occur:
 - Potential clearing of 10 hectares or more of native vegetation, unless authorised under an approved Forest Management Act or Fire Protection Plan;
 - Matters listed under the FFG Act:
 - Potential loss of a significant area of a listed ecological community;
 - Potential loss of a genetically important population of an endangered or threatened species;
 - Potential loss of critical habitat; or,
 - Potential significant effects on habitat values of a wetland supporting migratory birds.

4.3 Flora and Fauna Guarantee Act 1988 (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

One Buloke sapling would be impacted by the trenching of the underground power supply route at the intersection of Charam-Wombelano Road and Goroke-Harrow Road to the Charam Zone Substation (Figure 2d) (Plate 4). Buloke is listed under the FFG Act and thus will require a permit to remove it given that it is on public land.

4.4 Planning and Environment Act 1987 (Victoria)

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17 which require a planning permit from the Responsible Authority to remove, destroy or lop native vegetation on a site of more than 0.4 hectares, unless an exemption under clause 52.17-7 of the Victorian Planning Schemes applies or a subdivision is proposed with lots less than 0.4 hectares¹. Local planning schemes may contain other provisions in relation to the removal of native vegetation (Section 4.4.1).

4.4.1 Local Planning Schemes

The study area is located within the West Wimmera Shire Council municipality. The following zoning and overlays apply (DELWP 2021f):

- Farming Zone (FZ)

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¹ In accordance with the Victorian Civil and Administrative Tribunal's (VCAT) decision *Villawood v Greater Bendigo CC* (2005) VCAT 2703 (20 December 2005) all native vegetation is considered lost where proposed lots are less than 0.4 hectares in area and must be offset at the time of subdivision.

- Bushfire Management Overlay (BMO)
- Environmental Significance Overlay – Schedule 2 (ESO2)

Farming Zone (FZ)

A permit is required for the proposed wind farm.

Bushfire Management Overlay (BMO)

A permit is not required under the BMO.

Environmental Significance Overlay – Schedule 2 (ESO2)

The Environmental Significance Overlay - Schedule 2 states the environmental significance and objectives to protect the habitat of the endangered Red-tailed Black Cockatoo. Primarily it aims to ensure the availability of suitable nesting sites by protecting live and dead hollow bearing trees and protect the feeding habitat of the RTBC (i.e. Buloke and Stringybark trees).

The construction footprint has been amended to avoid impacts to Bulokes and hollow-bearing eucalypts within the study area. As such, Red-tailed Black Cockatoo nesting or foraging resources will not be affected by the development. Consequently, no permit is required under the ESO.

4.4.2 The Guidelines

The State Planning Policy Framework and the decision guidelines at Clause 52.17 (Native Vegetation) and Clause 12.01 require Planning and Responsible Authorities to have regard for 'The Guidelines for the removal, destruction or lopping of native vegetation' (Guidelines) (DELWP 2017).

4.4.3 Implications

The study area is within Location 2, with 0.127 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Intermediate assessment pathway.

The offset requirement for native vegetation removal is 0.044 General Habitat Units.

A Planning Permit from the Responsible Authority is required to remove, destroy or lop any native vegetation under Clause 52.17.

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

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

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

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals. Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species to minimise their spread and impact on ecological values.

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Only one weed listed as noxious under the CaLP Act (Spear Thistle) was recorded during the assessment, being the Spear Thistle. Weeds should be managed in accordance with the Act.

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

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

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

4.7.1 Implications

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

An Environmental Management Plan (EMP) will be required to detail how the site will be managed throughout the life of the Project, and across all environmental components. The EMP should include a bat and avifauna management plan (DELWP 2017b). The project must consider impacts on birds and bats, which are known to collide with wind turbines. Research by the Arthur Rylah Institute has improved knowledge of wind turbine impact on bats and birds (DELWP 2020a), and DELWP is developing risk assessment and mitigation guidelines specifically for Brolga, Southern Bent-wing Bat, Red-tailed Black Cockatoo, Black Falcon and White-bellied Sea Eagle (DELWP 2020b).

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5 POTENTIAL IMPACTS

The project footprint has been finalised with reference to the findings of this assessment to avoid and minimise impacts on ecological values where possible.

As part of this report, no impacts to trees within the road reserve along Garoke-Harrow Road have been assessed, apart from those mapped at the two potential access points (Figure 2b and 2c). We have been instructed by the proponent that all trees along this road reserve are set back a minimum of 1m from the fence line, and that the access track will be 10 m off the boundary to ensure that encroachment on TPZs in the road reserve will be less than 10%. This approach is intended to provide an appropriate balance between ecological conservatism and preserving the current land use within the properties.

5.1 Construction Related Impacts

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

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

The potential construction related impacts on the significant species identified as potentially occurring within the locality are considered to be low to negligible.

5.2 Operational Impacts

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

5.2.1 Birds

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

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

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presence of wind turbines after an extended period of time, and adjust their foraging behaviour to avoid wind turbines (i.e. up to 99% avoidance rates for most species).

In October 2020 Wind Projects Australia Project 1 PTY LTD commissioned an investigation to document flight behaviours of South-eastern Red-tailed Black-Cockatoo near Edenhope, Victoria (Biosis 2020). The results of the survey concluded that the vast majority of Red-tailed Black-Cockatoos flights were observed to be below the rotor-swept height of turbines proposed for the Wombelano wind farm. Following this investigation, the minimum lower tip height was adjusted to be above the height of all RTBC flights observed during the investigation to further mitigate against potential collisions with the species.

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

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5.2.2 Bats

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

To date little scientific data has been published regarding the impact of existing wind farms on Australian bat species. Carcass surveys undertaken as part of the Studland Bay and Bluff Point Wind Farms in Tasmania revealed that the majority of the carcasses were Gould's Wattleed Bat (a high-flying, open-air foraging species) with the remaining being *Vespadelus* spp. (Hull and Cawthen 2012). A carcass survey within the small scale (two turbines) Hepburn Wind Farm detected a single White-Striped Freetail Bat mortality (Bennett 2012).

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

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

- Bat species and abundance in the area;
- Season (i.e. time of year) and weather conditions (e.g. clear, warm nights with low wind). Such factors are likely to influence the level of bat activity and thus mortality at wind power sites (MNR 2007);
- Habitat/landscape features in the area (e.g. migration routes, forested ridges, and hibernacula/swarming sites may be important features). High levels of bat activity have been documented in forested ridge habitats, and areas where the woodland patches have been cleared for wind turbine placement also offer attractive foraging habitat for some species of bats. Edges of

remnant woodlands and scattered remnant trees in paddocks provide favourable foraging areas where bats can easily capture airborne insect prey, creating areas of concentrated bat activity (Lumsden and Bennett 2000, 2005; Kunz *et al.* 2007, Horn *et al.* 2008); and,

- The number of turbines contained within the wind farm.

5.3 Cumulative Biodiversity Impacts

The largest impact to biodiversity in the locality and encompassing bioregion is likely to have stemmed from increased European settlement around the 1940s and the subsequent land clearance for agriculture. Future disturbance associated with human activities in the broader locality is likely to be associated with ongoing agricultural activities and development.

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

In addition to cumulative impacts associated with construction of the wind farm, operational activities have the potential to lead to incremental and cumulative impacts (e.g. barrier effects, changes to bird/bat behaviour etc.).

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

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

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

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6 AVOIDANCE AND MINIMISATION

6.1 Avoid and Minimise Statement

Under the Guidelines (DELWP 2017), the three-step approach (avoid, minimise, offset) is the key policy in relation to the removal of native vegetation to achieve no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. Efforts to avoid the removal of, and minimise the impacts on, native vegetation should be commensurate with the biodiversity and other values of the native vegetation and focused on areas of native vegetation that have the most value. Areas of native vegetation to be retained must be able to maintain the same values in the future and should not be degraded over time by a proposed use or development associated with the removal.

All applications to remove native vegetation must provide an avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value. The statement should include a description of the following:

- Strategic level planning – any regional or landscape scale strategic planning process that the site has been subject to that avoided and minimised impacts on native vegetation across a region or landscape.
- Site level planning – how the proposed use or development has been sited or designed to avoid and minimise impacts on native vegetation.
- That no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

The development has been designed to avoid minimise native vegetation removal as much as possible. The 30-metre clearance width requirement was originally centred around the existing driveway (i.e. 15 metres either side from the centre point of the existing driveway). However, a new access point will now be positioned to the south of the study area in order to avoid impacts to large trees and approximately 10-15 Buloke saplings that would have been incurred through the expansion of the existing access point.

The construction track which follows the perimeter of the property will be 11.1 metres wide during the construction phase to facilitate passage of cranes. During the operation phase, the track will be 4 – 5 metres wide, with passing lanes to six metres where required. The track will be positioned at least 10 metres away from the properties eastern boundary to ensure it adequately avoids soil compaction within the TPZ of remnant trees in the road reserve (Figure 2). The access track along the southern boundary will run parallel to the fence line, and has been adjusted to circumvent Bulokes present near the boundary, thereby preventing impact to two trees previously identified as impacted (Figure 2b). The access track along the western boundary of the study area can be located where most convenient (but not encroaching more than 10% of the TPZ of any tree) along this boundary as there are no native trees within 60 metres of the western boundary.

The 22kV powerlines (Figure 2) which will draw power from the proposed wind turbines are already in place. Any cabling will be positioned to ensure that they do not encroach more than 10% of the TPZ of any tree within the property. The original concept plan showed that the cabling would overlap the modelled current wetlands towards the study area's north-western boundary, however the cabling has been moved from the original position to ensure there is no encroachment within the modelled current wetlands. Further, the proponent

has updated the design of the powerlines so that the newly constructed powerlines back to the Charum Zone Substation will now be placed underground, which further reduces the collision risk for avifauna – most notably Brolga.

The locations of the wind turbines, hardstand areas, lay-down areas and substation have all been located to avoid encroaching on more than 10% of the TPZ of any of the remnant trees within the property and will be positioned at least 10 metres away from the property's eastern boundary.

Overall, the design is highly sensitive to the existing remnant vegetation by avoiding vegetation removal/disturbance where possible. Changes to the positioning and route of the access clearance point and the southern boundary construction track have also been amended to eliminate impacts to hollow-bearing trees and Bulokes (potential nesting and foraging resources for Red-tailed Black Cockatoos). Thus, design changes have been implemented to further reduce impacts to native vegetation, and the development results in the minimum amount native vegetation loss as possible.

6.2 Offset Strategy

According to DELWPs Native Vegetation Offset Register (DELWP 2021g), there are 11 offset sites within the Wimmera Catchment Management Authority (CMA) and the West Wimmera Shire Council municipality that can be used to satisfy the General Habitat Unit offset requirements.

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

6.3 Best Practice Mitigation Measures

Ecology and Heritage Partners Pty Ltd recommends the following measures to mitigate impacts upon terrestrial and aquatic values present within the study area:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed. Similarly, soil disturbance and sedimentation within wetlands should be avoided or kept to a minimum, to avoid, or minimise impacts to fauna habitats;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention;
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs;
- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation, large trees and/or wetlands, and;

DELWP stipulates that:

- Tree Retention Zones (TRZs) should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011b). A TRZ applies to a tree and is a specific area above and below the ground and is defined as a radius that is 12 x the Diameter at Breast Height (DBH). The TPZ is typically a maximum radius of 15 metres, however given that many of the mature eucalypts have a wide canopy of at least 10 to 15 metres and a DBH of between 200 and 250 centimetres, it's

considered likely that the structural roots will extend beyond the tree's canopy. It is recommended that techniques such as Directional drilling, Hydrotrenching or AirTrenching are used during construction if trenching is required in areas within the TPZ of large trees to minimise impacting the root zone of these trees. At a minimum standard a TRZ should consider the following:

- o A TRZ of trees should be a radius no less than two metres or greater than 15 metres;
- o Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TRZ;
- o Where encroachment exceeds 10% of the total area of the TRZ, the tree should be considered as lost and offset accordingly;
- o Directional drilling may be used for works within the TRZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
- o The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained and no offset would be required; and,
- o Where the minimum standard for a TRZ has not been met an offset may be required.

The Environment Protection Authority stipulates that:

- Best practice sedimentation and pollution control measures are undertaken at all times, in accordance with Environment Protection Authority guidelines (EPA 1991; EPA 1996; Victorian Stormwater Committee 1999) to prevent offsite impacts to waterways and wetlands.

6.4 Noise Pollution Effects on Wildlife

Investigations into the impacts to wildlife caused by noise, movement and human disturbance associated with wind turbines are very limited and have not been conducted in Australia. A review of existing literature conducted by Helldin *et al.* (2012) concluded that noise pollution associated with wind farms did not have deleterious effects on wildlife, and habituation occurred rapidly where effects were present. Furthermore, the authors state that the normal range of noise directly under a wind turbine (50-60 dBA) is well below the level where deleterious effects of noise on domestic animals have been observed (Helldin *et al.* 2012).

While it is difficult to ascertain the exact effects of the proposed development on local fauna, no significant impacts are expected given the distance of the wind turbines to the adjacent habitat located east of the study area. Some behavioural changes may occur (e.g. shift to higher-frequency vocalisations in avian species) in order to combat the masking effect of turbine noise, however these adaptations mirrors changes observed in fauna exposed to traffic and urban noise (Szymanski *et al.* 2017; Brumm 2004; Halfwerk and Slabbekoorn 2009). Habituation is expected to occur due to the constant, regular sound of the blades and lack of association with danger or threat (Helldin *et al.* 2012). This is in contrast to sudden and unexpected sounds, which are more likely to trigger an anti-predator response from prey fauna and may be associated with elevated stress levels (Lopucki *et al.* 2018). The mechanical noise of operating turbines could in itself cause a startle response due to its unpredictable nature (Lopucki *et al.* 2018), however if such effects are present in this context, they are expected to occur only in close proximity to the turbines.

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7 FURTHER REQUIREMENTS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 7.

Table 7. Further requirements associated with development of the study area

Relevant Legislation	Implications	Further Action
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	In January 2021 Wind Projects Australia Project 1 PTY LTD submitted a referral under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (EPBC 2020/8857) associated with the construction and operation of a wind farm (Wind Projects Australia Project 1 Pty Ltd 2021). The project was considered to have the potential to impact 'Listed threatened species and communities (Section 18 and 18A)', specifically South-eastern Red-tailed Black Cockatoo and White-throated Needletail. On 22 January 2021, a 'Not a Controlled Action' decision was made by a delegate for the Department of Agriculture, Water and Environment (DAWE) for the project under Section 75 of the EPBC Act.	Approval under the EPBC Act has already been provided for the project, therefore no further action is required.
<i>Flora and Fauna Guarantee Act 1988</i>	One Buloke sapling would be impacted by the trenching of the underground power supply route at the intersection of Charam-Wombelano Road and Goroke-Harrow Road to the Charam Zone Substation (Figure 2d) (Plate 4). Buloke is listed under the FFG Act and thus will require a permit to remove it given that it is on public land.	A permit will likely be required to remove native vegetation from within the road reserve.
<i>Planning and Environment Act 1987</i>	The study area is within Location 2, with 0.127 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Intermediate assessment pathway. The offset requirement for native vegetation removal is 0.044 General Habitat Units. A Planning Permit from the Responsible Authority is required to remove, destroy or lop any native vegetation under Clause 52.17.	Prepare and submit a Planning Permit application.
<i>Catchment and Land Protection Act 1994</i>	An isolated patch of Spear Thistle is recorded within the study area and is listed under the CaLP Act. To meet requirements under the CaLP Act, listed noxious weeds should be appropriately controlled throughout the study area.	Manage weeds in accordance with the CaLP Act.

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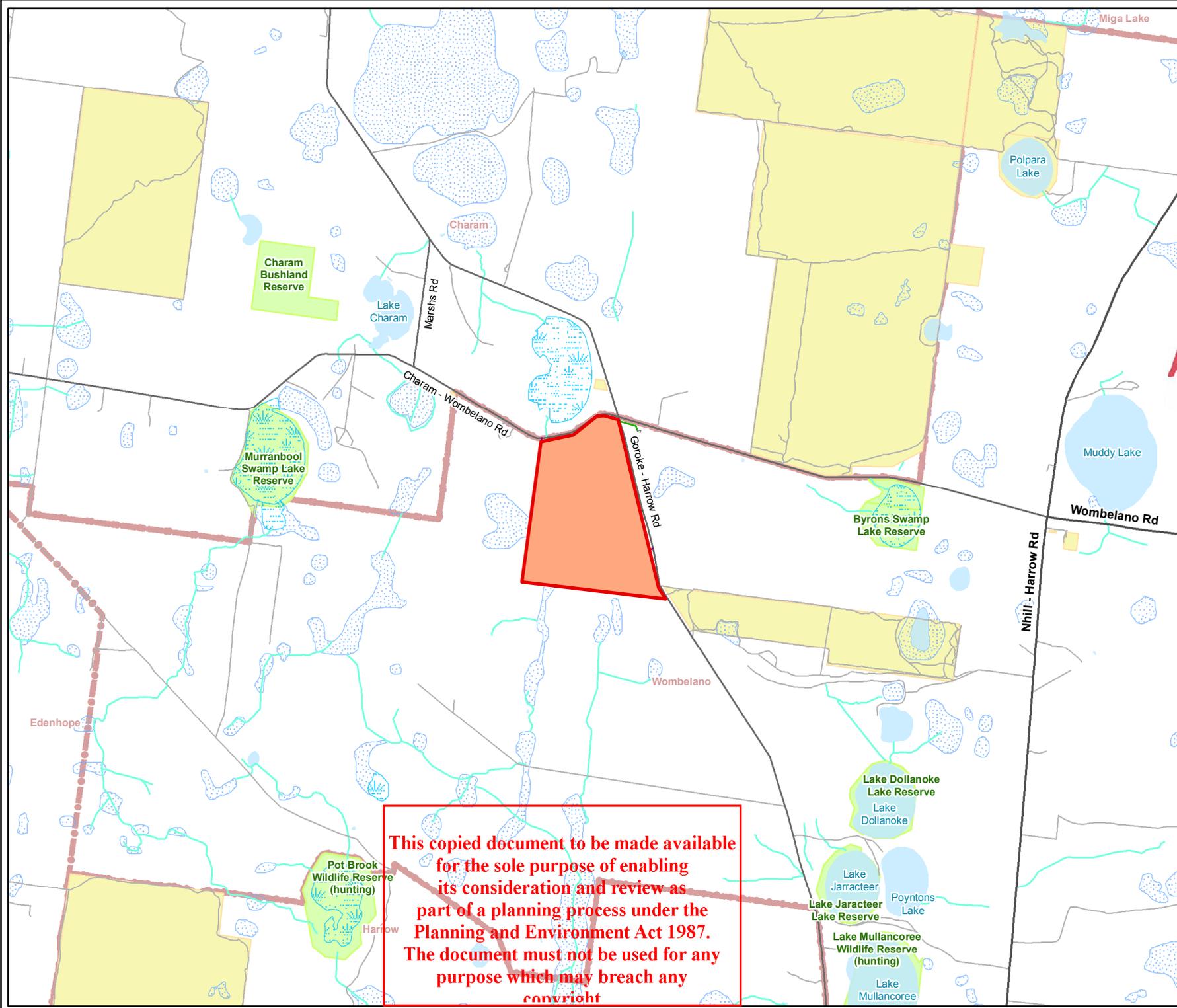
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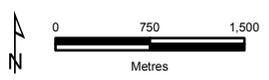


- Legend**
- Study Area
 - Major Road
 - Collector Road
 - Minor Road
 - Minor Watercourse
 - Permanent Waterbody
 - Land Subject to Inundation
 - Wetland/Swamp
 - Parks and Reserves
 - Crown Land
 - Localities

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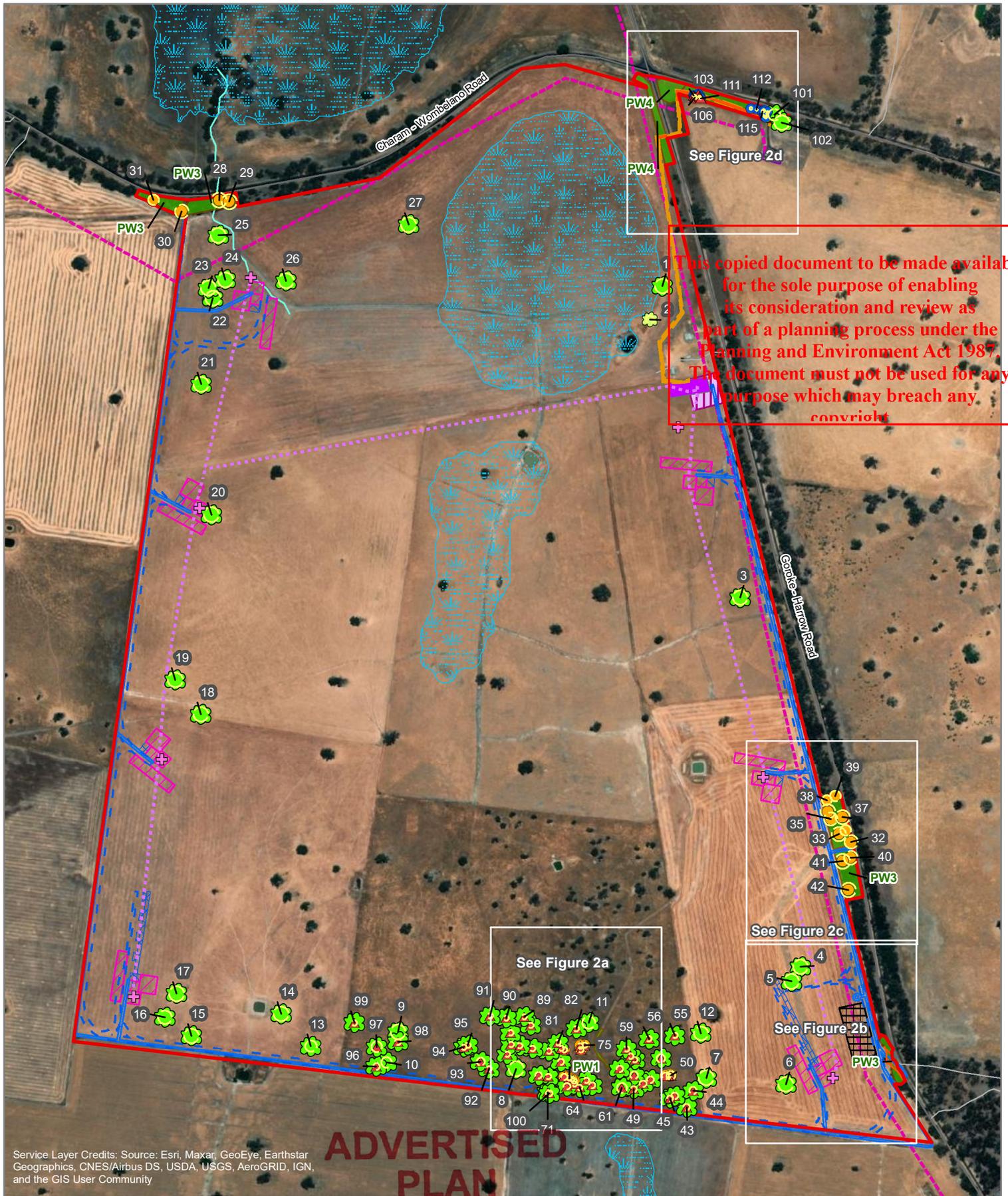


Figure 1
Location of the study area
Biodiversity Assessment for Wombelano West Wimmera Wind Farm



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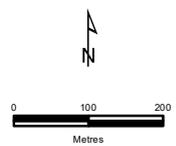
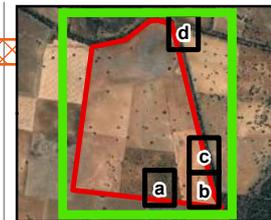
Figure 2 Overview

Ecological values

Biodiversity Assessment for Wombelano West Wimmera Wind Farm

Legend

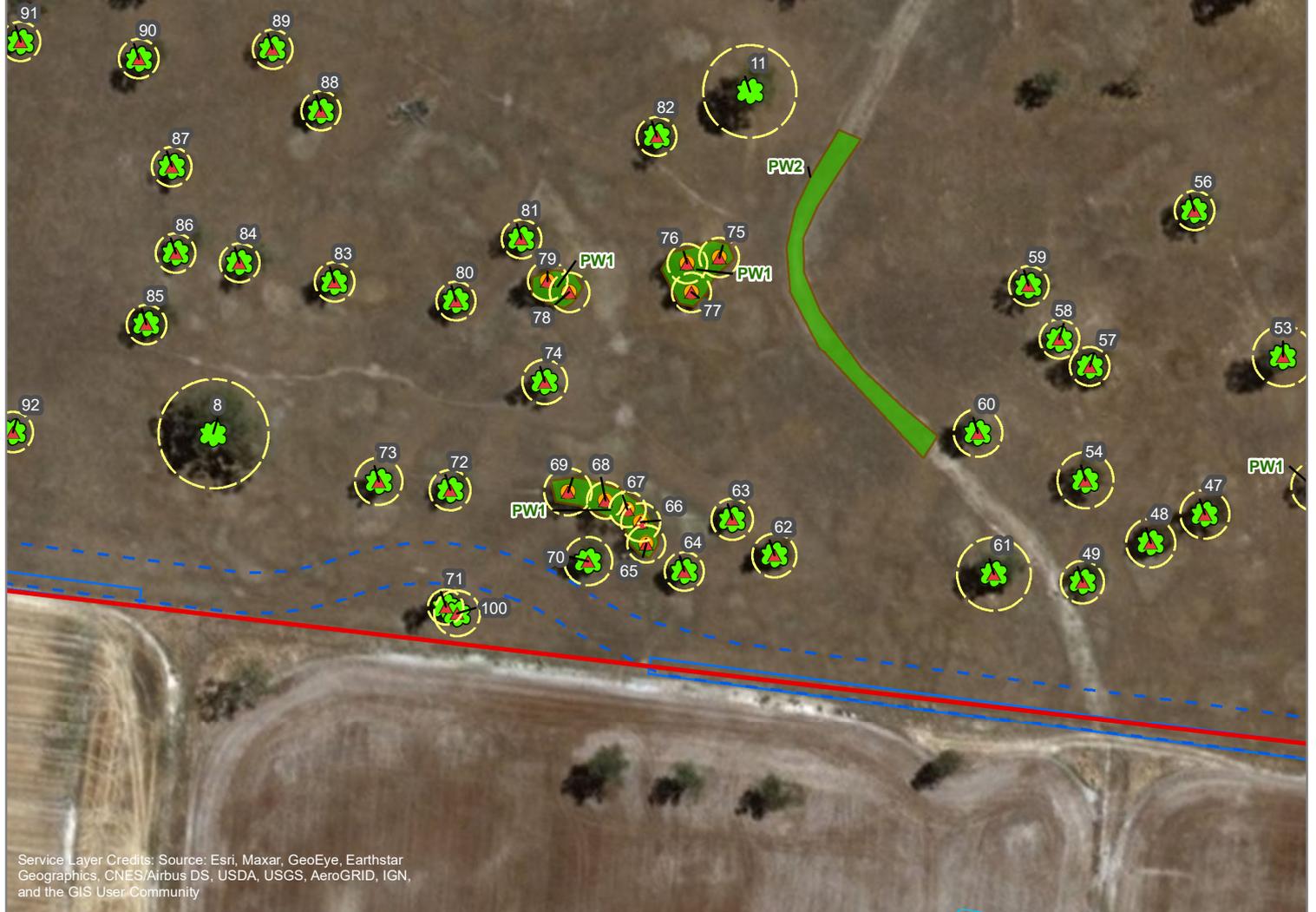
- Study Area
- + Turbines
- 22kV
- Cabling
- Construction tracks
- Wind farm tracks
- Connection route footprint
- Power supply
- Hardstand areas
- Crane boom laydown
- Batching plant
- Lay-down areas
- Substation area
- Current Wetlands
- + Scattered Large Tree
- + Scattered Small Tree
- Large Tree within a Patch
- Tree in patch
- ▲ Buloke
- Plains Woodland (EVC 803)



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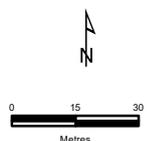
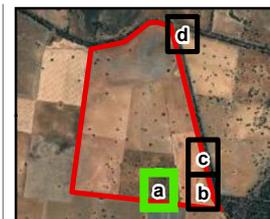
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Figure 2a
Ecological values
Biodiversity Assessment for Wombelano West Wimmera Wind Farm

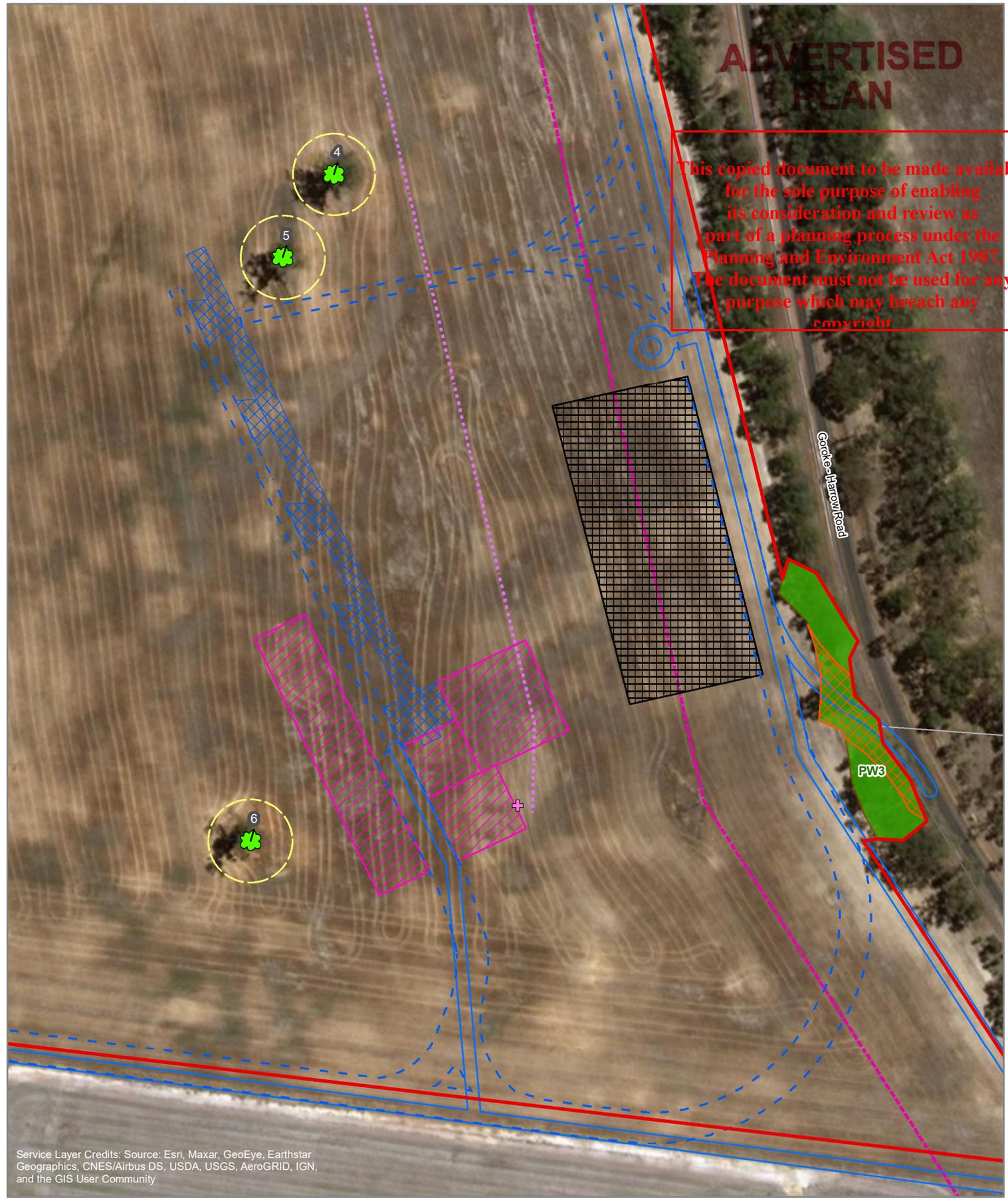
- Legend**
- Study Area
 - Construction tracks
 - Wind farm tracks
 - Current Wetlands
 - Scattered Large Tree
 - Large Tree within a Patch
 - ▲ Buloke
 - Plains Woodland (EVC 803)



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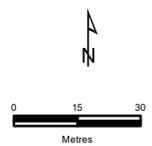
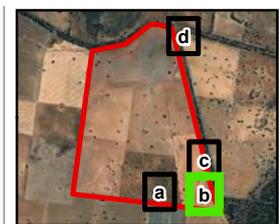
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Figure 2b
Ecological values
Biodiversity Assessment for Wombelano West Wimmera Wind Farm

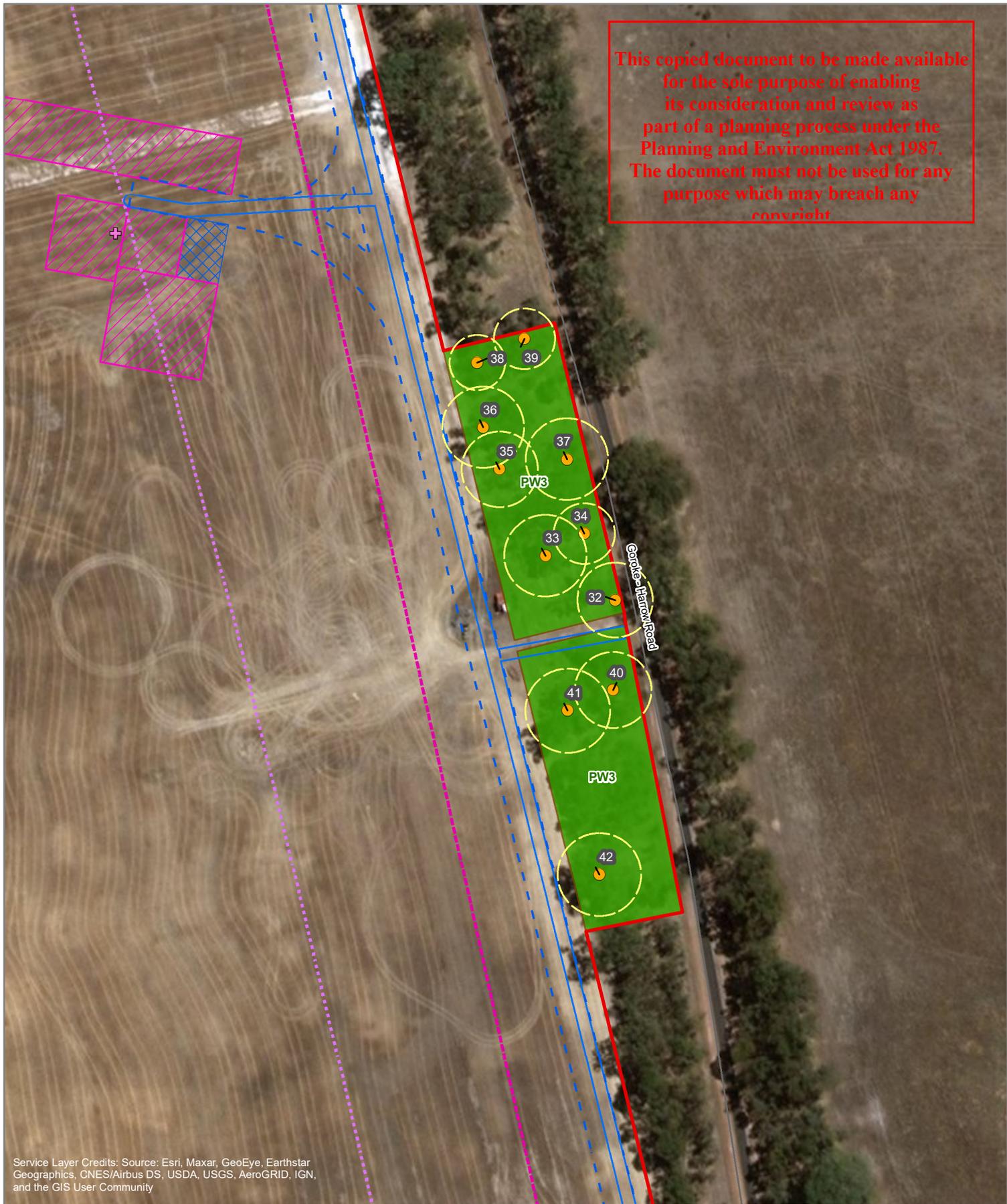
- | | |
|--|---|
| Legend | Ecological Vegetation Class |
| Study Area | Plains Woodland (EVC 803) |
| + Turbines | Impacted vegetation |
| 22kV | |
| Cabling | |
| Construction tracks | |
| Wind farm tracks | |
| Hardstand areas | |
| Crane boom laydown | |
| Batching plant | |
| ✻ Scattered Large Tree | |



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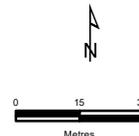
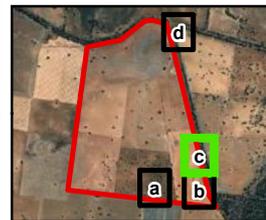


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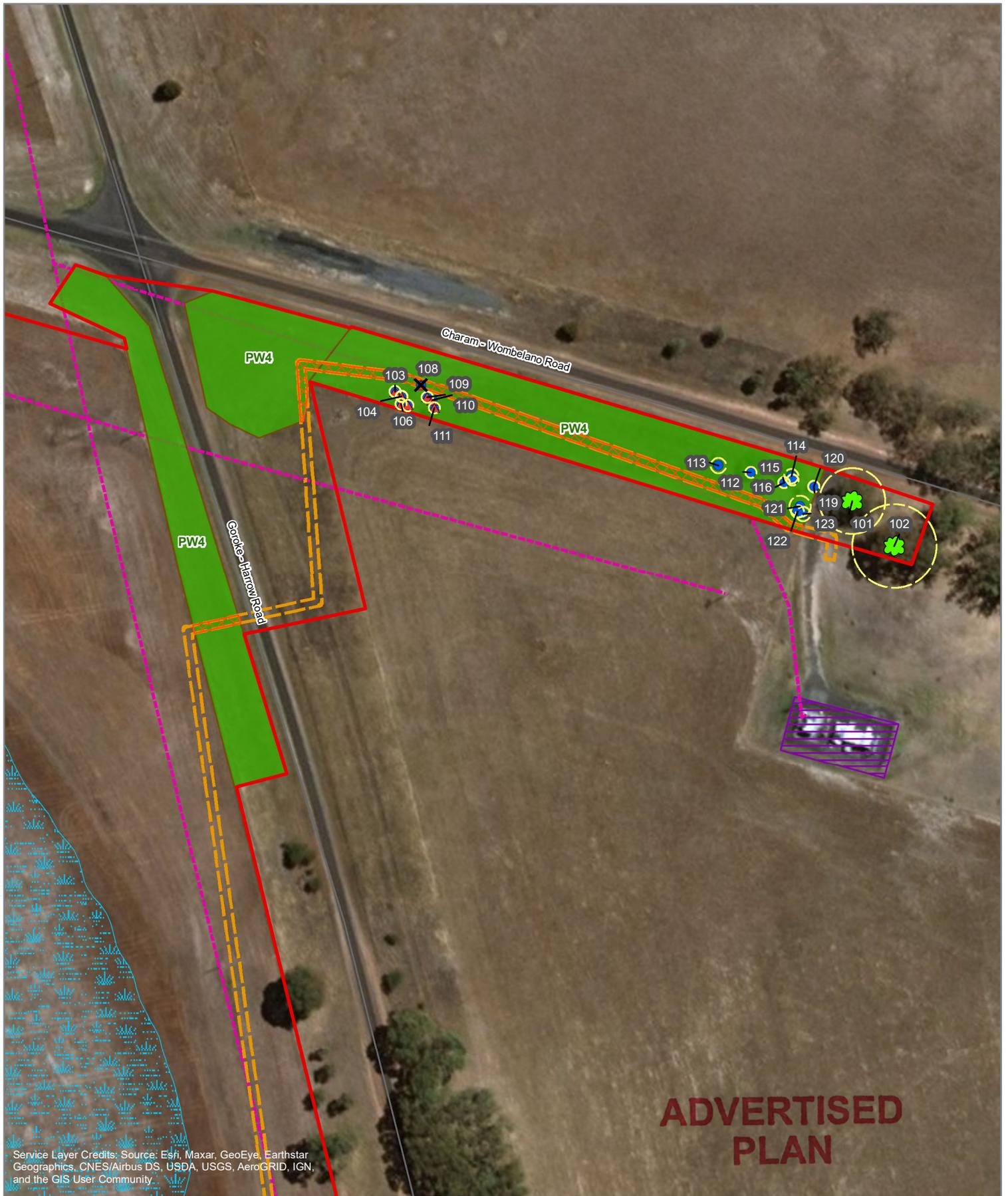
Figure 2c
Ecological values
Biodiversity Assessment for Wombelano West Wimmera Wind Farm

- Legend**
- Study Area
 - + Turbines
 - 22kV
 - Cabling
 - Construction tracks
 - Wind farm tracks
 - Hardstand areas
 - Large Tree within a Patch
- Ecological Vegetation Class**
- Plains Woodland (EVC 803)

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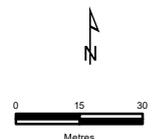
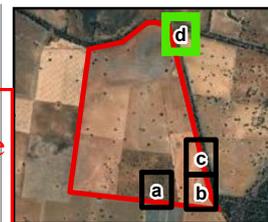


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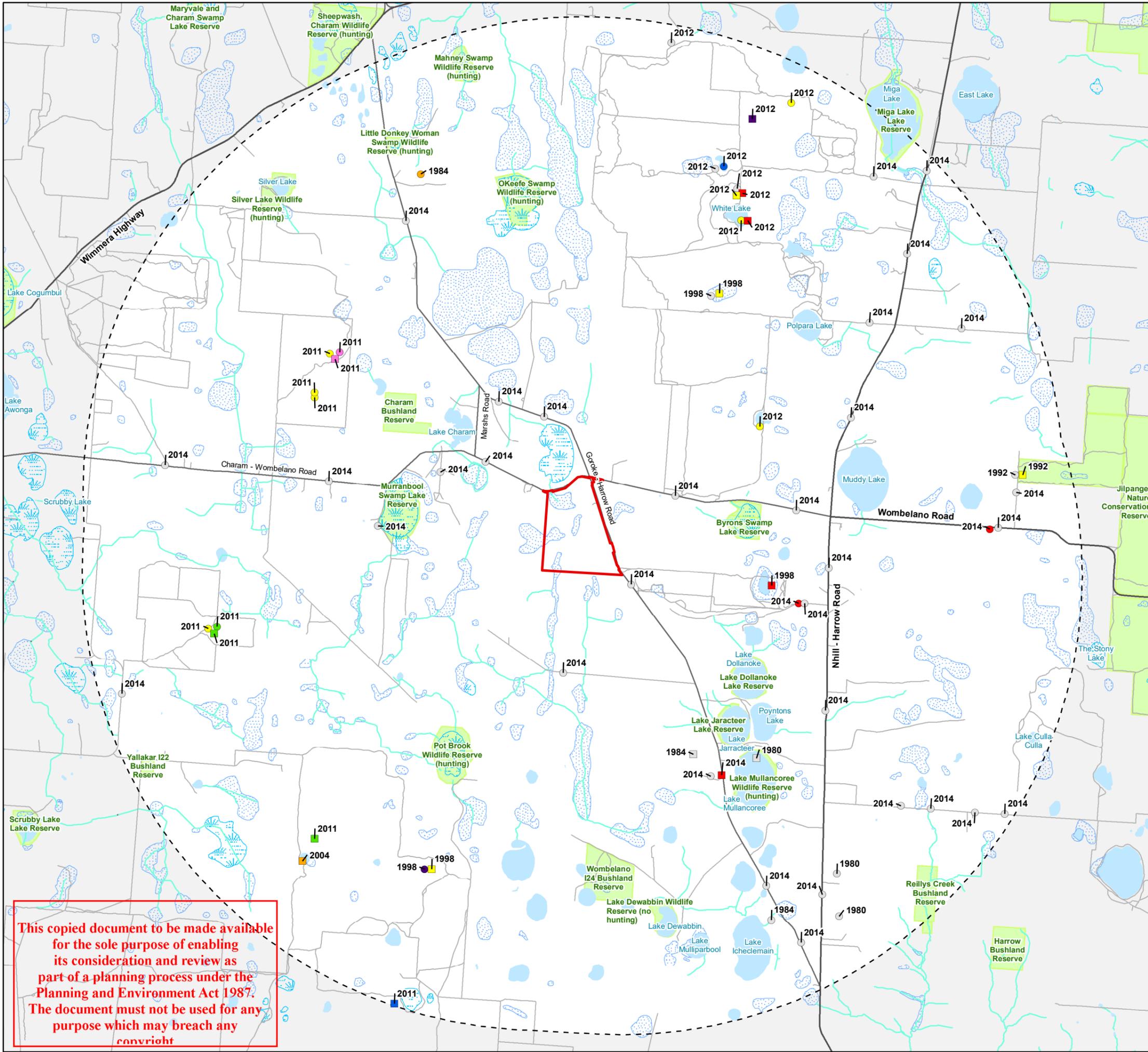
Figure 2d
Ecological values
 Biodiversity Assessment
 for Wombelano West
 Wimmera Wind Farm

- | | |
|----------------------------|------------------------------------|
| Legend | Ecological Vegetation Class |
| Study Area | Plains Woodland (EVC 803) |
| 22kV | Impacted vegetation |
| Connection route footprint | |
| Power supply | |
| Current Wetlands | |
| Scattered Large Tree | |
| Tree in patch | |
| Buloke | |
| Tree impacted | |

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Legend

Study Area

Significant flora

- Buloke
- Buloke Mistletoe
- Button Rush
- Common Beard-heath
- Dwarf Boronia
- Fuzzy New Holland Daisy
- Hoary Rapier-sedge
- Purple Blown-grass
- Salt Lawrencia
- Salt Paperbark
- Slender Club-sedge
- Small Milkwort
- Small-flower Mat-rush
- Spurred Helmet-orchid
- Studley Park Gum
- Tufted Grass-tree

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Figure 3
 Previously documented significant flora within 10km of the study area
Biodiversity Assessment for Wombelano West Wimmera Wind Farm



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APPENDIX 1: FLORA

Legend:

- * Listed as a noxious weed under the CaLP Act;
- w Weed of National Significance; and,
- Not applicable

Table A1.1. Flora recorded within the study area

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Scientific Name	Common Name	Comments
INDIGENOUS SPECIES		
<i>Acaena echinata</i>	Sheep's Burr	-
<i>Allocasuarina luehmannii</i>	Buloke	-
<i>Eleocharis palustris</i>	Common Spike-rush	-
<i>Eucalyptus camaldulensis</i>	River Red-gum	-
<i>Juncus subsecundus</i>	Finger Rush	-
<i>Pultenaea prostrata</i>	Silky Bush-pea	-
<i>Rumex brownii</i>	Slender Dock	-
NON-INDIGENOUS OR INTRODUCED SPECIES		
<i>Acetosella vulgaris</i>	Sheep Sorrel	-
<i>Aira elegantissima</i>	Delicate Hairgrass	-
<i>Arctotheca calendula</i>	Cape Weed	-
<i>Avena fatua</i>	Wild Oat	-
<i>Briza minor</i>	Lesser Quaking-Grass	-
<i>Cirsium vulgare</i>	Spear Thistle	*
<i>Dactylis glomerata</i>	Cocksfoot	-
<i>Hordeum glaucum</i>	Barley	-
<i>Hypochaeris radicata</i>	Cat's Ear	-
<i>Malva parviflora</i>	Small-Flowered Mallow	-
<i>Phalaris aquatica</i>	Toowoomba Canary-Grass	-
<i>Plantago coronopus</i>	Buck's Horn Plantain	-
<i>Plantago lanceolata</i>	Ribwort	-
<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	-
<i>Sonchus oleraceus</i>	Common Sow-Thistle	-
<i>Sparaxis bulbifera</i>	Harlequin Flower	-
<i>Trifolium repens</i>	White Clover	-
<i>Triticum aestivum</i>	Wheat	-
<i>Urtica dioica</i>	Stinging Nettle	-

Appendix 1.1 Significant Flora Species

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

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

EPBC (<i>Environment Protection and Biodiversity Conservation Act 1999</i>):		FFG (<i>Flora and Fauna Guarantee Act 1988</i>):	
EX	Extinct	EX	Extinct
CR	Critically endangered	CR	Critically endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
#	Listed on the Protected Matters Search Tool		

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

1	Known Occurrence	<ul style="list-style-type: none"> Recorded within the study area recently (i.e. within ten years).
2	High Likelihood	<ul style="list-style-type: none"> Previous records of the species in the local vicinity; and/or, The study area contains areas of high-quality habitat.
3	Moderate Likelihood	<ul style="list-style-type: none"> Limited previous records of the species in the local vicinity; and/or The study area contains poor or limited habitat.
4	Low Likelihood	<ul style="list-style-type: none"> Poor or limited habitat for the species, however other evidence (such as lack of records or environmental factors) indicates there is a very low likelihood of presence.
5	Unlikely	<ul style="list-style-type: none"> No suitable habitat and/or outside the species range.

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

Scientific name	Common name	Last documented record	Total # of documented records	EPBC	FFG	Likely occurrence in study area
NATIONAL SIGNIFICANCE						
<i>Amphibromus fluitans</i> #	River Swamp Wallaby-grass	-	-	VU	-	4
<i>Dianella amoena</i> #	Matted Flax-lily	-	-	EN	cr	4
<i>Diuris fragrantissima</i> #	Sunshine Diuris	-	-	EN	cr	4
<i>Dodonaea procumbens</i> #	Trailing Hop-bush	-	-	VU	-	4
<i>Glycine latrobeana</i> #	Clover Glycine	-	-	VU	vu	4
<i>Lachnagrostis adamsonii</i> #	Adamson's Blown-grass	-	-	EN	en	4
<i>Lepidium hyssopifolium</i> #	Basalt Pepper-cress	-	-	EN	en	4
<i>Leucochrysum albicans</i> subsp. <i>tricolor</i> #	Hoary Sunray	-	-	EN	en	4
<i>Pimelea spinescens</i> subsp. <i>spinescens</i> #	Plains Rice-flower	-	-	CR	cr	4
<i>Pomaderris vacciniifolia</i> #	Round-leaf Pomaderris	-	-	CR	cr	4
<i>Prasophyllum frenchii</i> #	Maroon Leek-orchid	-	-	EN	en	4
<i>Pterostylis chlorogramma</i> #	Green-striped Greenhood	-	-	VU	en	4
<i>Pterostylis cucullata</i> #	Leafy Greenhood	-	-	VU	-	4
<i>Rutidosis leptorhynchooides</i> #	Button Wrinklewort	-	-	EN	en	4
<i>Senecio macrocarpus</i> #	Large-fruit Fireweed	-	-	VU	cr	4
<i>Senecio psilocarpus</i> #	Swamp Fireweed	-	-	VU	-	4
<i>Xerochrysum palustre</i> #	Swamp Everlasting	-	-	VU	cr	4
STATE SIGNIFICANCE						
<i>Allocasuarina luehmannii</i>	Buloke	2014	40	-	vu	1
<i>Amyema linophylla</i> subsp. <i>orientalis</i>	Buloke Mistletoe	2014	2	-	cr	2

Scientific name	Common name	Last documented record	Total # of documented records	EPBC	FFG	Likely occurrence in study area
<i>Boronia nana</i> var. <i>pubescens</i>	Dwarf Boronia	2011	1	-	en	2
<i>Comesperma polygaloides</i>	Small Milkwort	2012	4	-	cr	3
<i>Correa aemula</i>	Hairy Correa	1836	1	-	en	5
<i>Corybas aconitiflorus</i>	Spurred Helmet-orchid	2011	1	-	en	2
<i>Cyperus leptocarpus</i>	Button Rush	1984	1	-	en	3
<i>Eucalyptus X studleyensis</i>	Studley Park Gum	2011	1	-	cr	3
<i>Isolepis congrua</i>	Slender Club-sedge	2004	1	-	en	2
<i>Lachnagrostis semibarbata</i> var. <i>semibarbata</i>	Purple Blown-grass	1998	1	-	en	2
<i>Lawrenzia spicata</i>	Salt Lawrenzia	1984	2	-	en	3
<i>Lepidosperma canescens</i>	Hoary Rapier-sedge	2011	1	-	en	2
<i>Leucopogon virgatus</i> var. <i>brevifolius</i>	Common Beard-heath	2012	7	-	en	2
<i>Lomandra micrantha</i> subsp. <i>tuberculata</i>	Small-flower Mat-rush	2011	2	-	vu	2
<i>Melaleuca halmaturorum</i>	Salt Paperbark	2014	4	-	en	2
<i>Philothea angustifolia</i> subsp. <i>montana</i>	Narrow-leaf Wax-flower	1836	1	-	vu	5
<i>Vittadinia cuneata</i> var. <i>morrisii</i>	Fuzzy New Holland Daisy	2012	1	-	en	2
<i>Xanthorrhoea caespitosa</i>	Tufted Grass-tree	2012	1	-	vu	2

8 **Data source:** Victorian Biodiversity Atlas (DELWP 2021d); Protected Matters Search Tool (DAWE 2021).

9 **Taxonomic order:** Alphabetical.

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Table A1.3. Habitat Hectares results for remnant vegetation recorded within the study area.

Vegetation Zone		PG1	PG2	PG3
Bioregion		Wimmera	Wimmera	Wimmera
EVC / Tree		Plains Woodland	Plains Woodland	Plains Woodland
EVC Number		803	803	803
EVC Conservation Status		Endangered	Endangered	Endangered
Patch Condition	Large Old Trees /10	9	0	9
	Canopy Cover /5	5	0	5
	Under storey /25	0	5	5
	Lack of Weeds /15	0	4	0
	Recruitment /10	0	0	3
	Organic Matter /5	0	0	5
	Logs /5	4	0	4
	Treeless EVC Multiplier	1.00	1.00	1.00
	Subtotal =	18.00	9.00	31.00
	Landscape Value /25	3	3	3
Habitat Points /100	21	12	34	
Habitat Score	0.21	0.12	0.34	

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Table A1.4. Tree measurement data

Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
1	<i>Eucalyptus camaldulensis</i>	River Red-gum	160	15	-
2	<i>Eucalyptus camaldulensis</i>	River Red-gum	66	7.92	-
3	<i>Eucalyptus camaldulensis</i>	River Red-gum	140	15	-
4	<i>Eucalyptus camaldulensis</i>	River Red-gum	122	14.64	-
5	<i>Eucalyptus camaldulensis</i>	River Red-gum	135	15	-
6	<i>Eucalyptus camaldulensis</i>	River Red-gum	158	15	-
7	<i>Eucalyptus camaldulensis</i>	River Red-gum	159	15	-
8	<i>Eucalyptus camaldulensis</i>	River Red-gum	162	15	-
9	<i>Eucalyptus camaldulensis</i>	River Red-gum	156	15	-
10	<i>Eucalyptus camaldulensis</i>	River Red-gum	89	10.68	-
11	<i>Eucalyptus camaldulensis</i>	River Red-gum	106	12.72	-
12	<i>Eucalyptus camaldulensis</i>	River Red-gum	118	14.16	-
13	<i>Eucalyptus camaldulensis</i>	River Red-gum	95	11.4	-
14	<i>Eucalyptus camaldulensis</i>	River Red-gum	135	15	-
15	<i>Eucalyptus camaldulensis</i>	River Red-gum	160	15	-
16	<i>Eucalyptus camaldulensis</i>	River Red-gum	116	13.92	-
17	<i>Eucalyptus camaldulensis</i>	River Red-gum	132	15	-
18	<i>Eucalyptus camaldulensis</i>	River Red-gum	250	15	-
19	<i>Eucalyptus camaldulensis</i>	River Red-gum	239	15	-
20	<i>Eucalyptus camaldulensis</i>	River Red-gum	144	15	-
21	<i>Eucalyptus camaldulensis</i>	River Red-gum	169	15	-
22	<i>Eucalyptus camaldulensis</i>	River Red-gum	240	15	-

Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
23	<i>Eucalyptus camaldulensis</i>	River Red-gum	195	15	-
24	<i>Eucalyptus camaldulensis</i>	River Red-gum	225	15	-
25	<i>Eucalyptus camaldulensis</i>	River Red-gum	189	15	-
26	<i>Eucalyptus camaldulensis</i>	River Red-gum	255	15	-
27	<i>Eucalyptus camaldulensis</i>	River Red-gum	262	15	-
28	<i>Eucalyptus camaldulensis</i>	River Red-gum	167	15	-
29	<i>Eucalyptus camaldulensis</i>	River Red-gum	142	15	-
30	<i>Eucalyptus camaldulensis</i>	River Red-gum	113	13.56	-
31	<i>Eucalyptus camaldulensis</i>	River Red-gum	89	10.68	-
32	<i>Eucalyptus camaldulensis</i>	River Red-gum	111	13.32	-
33	<i>Eucalyptus camaldulensis</i>	River Red-gum	121	14.52	-
34	<i>Eucalyptus camaldulensis</i>	River Red-gum	90	10.8	-
35	<i>Eucalyptus camaldulensis</i>	River Red-gum	112	13.44	-
36	<i>Eucalyptus camaldulensis</i>	River Red-gum	121	14.52	-
37	<i>Eucalyptus camaldulensis</i>	River Red-gum	121	14.52	-
38	<i>Eucalyptus camaldulensis</i>	River Red-gum	82	9.84	-
39	<i>Eucalyptus camaldulensis</i>	River Red-gum	90	10.8	-
40	<i>Eucalyptus camaldulensis</i>	River Red-gum	113	13.56	-
41	<i>Eucalyptus camaldulensis</i>	River Red-gum	134	15	-
42	<i>Eucalyptus camaldulensis</i>	River Red-gum	123	14.76	-
43	<i>Allocasuarina luehmannii</i>	Buloke	52	6.24	-
44	<i>Allocasuarina luehmannii</i>	Buloke	61	7.32	-
45	<i>Allocasuarina luehmannii</i>	Buloke	53	6.36	-

Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
46	<i>Allocasuarina luehmannii</i>	Buloke	57	6.84	-
47	<i>Allocasuarina luehmannii</i>	Buloke	56	6.72	-
48	<i>Allocasuarina luehmannii</i>	Buloke	56	6.72	-
49	<i>Allocasuarina luehmannii</i>	Buloke	49	5.88	-
50	<i>Allocasuarina luehmannii</i>	Buloke	72	8.64	-
51	<i>Allocasuarina luehmannii</i>	Buloke	41	4.92	-
52	<i>Allocasuarina luehmannii</i>	Buloke	58	6.96	-
53	<i>Allocasuarina luehmannii</i>	Buloke	69	8.28	-
54	<i>Allocasuarina luehmannii</i>	Buloke	64	7.68	-
55*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
56*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
57*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
58*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
59*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
60	<i>Allocasuarina luehmannii</i>	Buloke	55	6.6	-
61	<i>Allocasuarina luehmannii</i>	Buloke	84	10.08	-
62	<i>Allocasuarina luehmannii</i>	Buloke	50	6	-
63	<i>Allocasuarina luehmannii</i>	Buloke	47	5.64	-
64	<i>Allocasuarina luehmannii</i>	Buloke	44	5.28	-
65	<i>Allocasuarina luehmannii</i>	Buloke	43	5.16	-
66	<i>Allocasuarina luehmannii</i>	Buloke	44	5.28	-
67	<i>Allocasuarina luehmannii</i>	Buloke	41	4.92	-
68	<i>Allocasuarina luehmannii</i>	Buloke	42	5.04	-

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Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
69	<i>Allocasuarina luehmannii</i>	Buloke	54	6.48	-
70	<i>Allocasuarina luehmannii</i>	Buloke	55	6.6	-
71	<i>Allocasuarina luehmannii</i>	Buloke	40	4.8	-
72	<i>Allocasuarina luehmannii</i>	Buloke	46	5.52	-
73	<i>Allocasuarina luehmannii</i>	Buloke	54	6.48	-
74	<i>Allocasuarina luehmannii</i>	Buloke	51	6.12	-
75*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
76*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
77*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
78*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
79*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
80*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
81*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
82*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
83*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
84*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
85*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
86*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
87*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
88*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
89*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
90*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
91*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-

Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
92	<i>Allocasuarina luehmannii</i>	Buloke	46	5.52	-
93	<i>Allocasuarina luehmannii</i>	Buloke	71	8.52	-
94*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
95*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
96	<i>Allocasuarina luehmannii</i>	Buloke	56	6.72	-
97	<i>Allocasuarina luehmannii</i>	Buloke	88	10.56	-
98	<i>Allocasuarina luehmannii</i>	Buloke	50	6	-
99*	<i>Allocasuarina luehmannii</i>	Buloke	45	5.4	-
100	<i>Allocasuarina luehmannii</i>	Buloke	52	6.24	-
101	<i>Eucalyptus camaldulensis</i>	River Red-gum	98	11.76	-
102	<i>Eucalyptus camaldulensis</i>	River Red-gum	133	15	-
103	<i>Allocasuarina luehmannii</i>	Buloke	13	2	Tree in patch
104	<i>Allocasuarina luehmannii</i>	Buloke	5	2	Tree in patch
105	<i>Allocasuarina luehmannii</i>	Buloke	5	2	Tree in patch
106	<i>Allocasuarina luehmannii</i>	Buloke	12	2	Tree in patch
107	<i>Allocasuarina luehmannii</i>	Buloke	5	2	Tree in patch
108	<i>Allocasuarina luehmannii</i> x 3	Buloke	-	-	Tree in patch
109	<i>Allocasuarina luehmannii</i>	Buloke	5	2	Tree in patch
110	<i>Allocasuarina luehmannii</i>	Buloke	-	-	Tree in patch
111	<i>Allocasuarina luehmannii</i>	Buloke	14	2	Tree in patch
112	<i>Acacia mearnsii</i>	Black Wattle	12	2	Tree in patch
113	<i>Eucalyptus camaldulensis</i>	River Red-gum	23	2.76	Tree in patch
114	<i>Acacia mearnsii</i>	Black Wattle	21	2.52	Tree in patch

Tree ID	Scientific Name	Common Name	DBH (cm)	TPZ (m)	Comment
115	<i>Eucalyptus camaldulensis</i>	River Red-gum	5	2	Tree in patch
116	<i>Eucalyptus camaldulensis</i>	River Red-gum	5	2	Tree in patch
117	<i>Eucalyptus camaldulensis</i>	River Red-gum	5	2	Tree in patch
118	<i>Eucalyptus camaldulensis</i>	River Red-gum	5	2	Tree in patch
119	<i>Eucalyptus camaldulensis</i>	River Red-gum	8	2	Tree in patch
120	<i>Eucalyptus camaldulensis</i>	River Red-gum	4	2	Tree in patch
121	<i>Eucalyptus camaldulensis</i>	River Red-gum	32	3.84	Tree in patch
122	<i>Eucalyptus camaldulensis</i>	River Red-gum	19	2.28	Tree in patch
123	<i>Eucalyptus camaldulensis</i>	River Red-gum	21	2.52	Tree in patch

*Actual DBH not measured

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APPENDIX 2: FAUNA

Appendix 2.1 Significant Flora Species

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

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

EPBC (<i>Environment Protection and Biodiversity Conservation Act 1999</i>):		FFG (<i>Flora and Fauna Guarantee Act 1988</i>):	
EX	Extinct	EX	Extinct
CR	Critically endangered	CR	Critically endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
#	Listed on the Protected Matters Search Tool		

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

1	Known Occurrence	<ul style="list-style-type: none"> Recorded within the study area recently (i.e. within ten years).
2	High Likelihood	<ul style="list-style-type: none"> Previous records of the species in the local vicinity; and/or, The study area contains areas of high-quality habitat.
3	Moderate Likelihood	<ul style="list-style-type: none"> Limited previous records of the species in the local vicinity; and/or The study area contains poor or limited habitat.
4	Low Likelihood	<ul style="list-style-type: none"> Poor or limited habitat for the species, however other evidence (such as lack of records or environmental factors) indicates there is a very low likelihood of presence.

5	Unlikely	<ul style="list-style-type: none"> No suitable habitat and/or outside the species range.
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Table A2.1. Significant fauna within 10 kilometres of the study area.

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

1	High Likelihood	<ul style="list-style-type: none"> Known resident in the study area based on site observations, database records, or expert advice; and/or, Recent records (i.e. within five years) of the species in the local area (VBA 2011); and/or, The study area contains the species' preferred habitat.
2	Moderate Likelihood	<ul style="list-style-type: none"> The species is likely to visit the study area regularly (i.e. at least seasonally); and/or, Previous records of the species in the local area (DSE 2011b); and/or, The study area contains some characteristics of the species' preferred habitat.
3	Low Likelihood	<ul style="list-style-type: none"> The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or, There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or, The study area contains few or no characteristics of the species' preferred habitat.
4	Unlikely	<ul style="list-style-type: none"> No previous records of the species in the local area; and/or, The species may fly over the study area when moving between areas of more suitable habitat; and/or, Out of the species' range; and/or, No suitable habitat present.

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

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

DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013); Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009)

NAP National Action Plan (Cogger et al 1993; Duncan et al. 1999; Garnet and Crowley 2000; Lee 1995; Maxwell et al. 1996; Sands and New 2002; Tyler 1997)

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

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Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
NATIONAL SIGNIFICANCE							
Australasian Bittern	<i>Botaurus poiciloptilus</i>	#	1	EN	L	EN	4
Australian Painted Snipe	<i>Rostratula australis</i>	#	1	VU	L	CR	4
Curlew Sandpiper	<i>Calidris ferruginea</i>	#	2	CR	-	EN	4
Dwarf Galaxias	<i>Galaxiella pusilla</i>	#	1	VU	L	EN	4
Eastern Curlew	<i>Numenius madagascariensis</i>	#	2	CR	-	VU	4
Golden Sun Moth	<i>Synemon plana</i>	#	1	CR	L	CR	4
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	#	1	VU	L	VU	4
Growing Grass Frog	<i>Litoria raniformis</i>	1982	3	VU	L	EN	4
Malleefowl	<i>Leipoa ocellata</i>	#	1	VU	L	EN	4
Night Parrot	<i>Pezoporus occidentalis</i>	#	1	EN	-	RX	4
Painted Honeyeater	<i>Grantiella picta</i>	#	1	VU	L	VU	4
Plains-wanderer	<i>Pedionomus torquatus</i>	#	1	CR	L	CR	4
Red-tailed Black Cockatoo	<i>Calyptorhynchus banksii graptogyne</i>	2014	89	EN	L	EN	2
Southern Brown Bandicoot	<i>Isodon obesulus obesulus</i>	#	1	EN	L	NT	4
Striped Legless Lizard	<i>Delma impar</i>	#	1	VU	L	EN	4
Swift Parrot	<i>Lathamus discolor</i>	#	1	CR	L	EN	4
STATE SIGNIFICANCE							
Australasian Shoveler	<i>Anas rhynchos</i>	2001	32	-	-	VU	3
Bearded Dragon	<i>Pogona barbata</i>	1996	2	-	-	VU	3
Black Falcon	<i>Falco subniger</i>	1978	1	-	-	VU	4
Blue-billed Duck	<i>Oxyura australis</i>	1987	8	-	L	EN	4
Brolga	<i>Grus rubicunda</i>	1995	39	-	L	VU	3
Brown Treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>	1999	12	-	-	NT	3
Common Greenshank	<i>Tringa nebularia</i>	1977	4	-	-	VU	4
Common Sandpiper	<i>Actitis hypoleucos</i>	#	1	-	-	VU	4
Diamond Firetail	<i>Stagonopleura guttata</i>	1979	2	-	L	NT	4

Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	Likelihood
Eastern Great Egret	<i>Ardea modesta</i>	1974	2	-	L	VU	4
Freckled Duck	<i>Stictonetta naevosa</i>	1991	2	-	L	EN	3
Hardhead	<i>Aythya australis</i>	1999	17	-	-	VU	3
Hooded Robin	<i>Melanodryas cucullata cucullata</i>	1978	1	-	L	NT	3
Musk Duck	<i>Biziura lobata</i>	1993	23	-	-	VU	3
Speckled Warbler	<i>Chthonicola sagittatus</i>	1978	1	-	L	VU	4
White-throated Needletail	<i>Hirundapus caudacutus</i>	1980	2	-	-	VU	4
REGIONAL SIGNIFICANCE							
Emu	<i>Dromaius novaehollandiae</i>	1999	13	-	-	NT	3
Glossy Ibis	<i>Plegadis falcinellus</i>	1992	2	-	-	NT	3
Latham's Snipe	<i>Gallinago hardwickii</i>	1989	2	-	-	NT	3
Nankeen Night Heron	<i>Nycticorax caledonicus hillii</i>	2001	3	-	-	NT	2
Pectoral Sandpiper	<i>Calidris melanotos</i>	#	1	-	-	NT	4
Royal Spoonbill	<i>Platalea regia</i>	1979	3	-	-	NT	4

Data source: Victorian Biodiversity Atlas (DELWP 2021); Victorian Fauna Database (Viridans 2011b); Protected Matters Search Tool (DoE 2021).

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

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APPENDIX 3: NATIVE VEGETATION REMOVAL REPORT

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Scenario test – native vegetation removal

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

Date of issue: 31/08/2021
 Time of issue: 2:31 pm

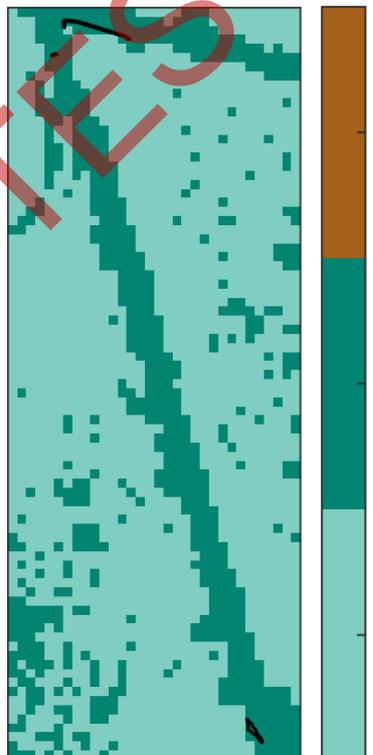
Report ID: Scenario Testing

Project ID	EHP15062_Wombelano_VG94v2
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Assessment pathway

Assessment pathway	Intermediate Assessment Pathway
Extent including past and proposed	0.127 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.127 ha
No. Large trees proposed to be removed	0
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.

1. Location map



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Scenario test – native vegetation removal

Offset requirements if a permit is granted

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

General offset amount¹	0.044 general habitat units
Vicinity	Wimmera Catchment Management Authority (CMA) or West Wimmera Shire Council
Minimum strategic biodiversity value score ²	0.466
Large trees	0 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

SCENARIO TESTING

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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

Scenario test – native vegetation removal

Next steps

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

This report DOES NOT support an application to remove, destroy or lop native vegetation under Clause 52.16 or 52.17 of planning schemes in Victoria.

If you wish to remove the mapped native vegetation you must submit the related shapefiles to the Department of Environment, Land, Water and Planning (DELWP) for processing, by email to ensymnvrtool.support@delwp.vic.gov.au. DELWP will provide a *Native vegetation removal report* that is required to meet the permit application requirements in accordance with *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines).

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Appendix 1: Description of native vegetation to be removed

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Patch	wim_0803	Endangered	0	no	0.340	0.060	0.060	0.780		0.027	General
3-B	Patch	wim_0803	Endangered	0	no	0.240	0.005	0.005	0.580		0.001	General
4-B	Patch	wim_0803	Endangered	0	no	0.240	0.062	0.062	0.388		0.015	General

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

This is not applicable in the Intermediate Assessment Pathway.

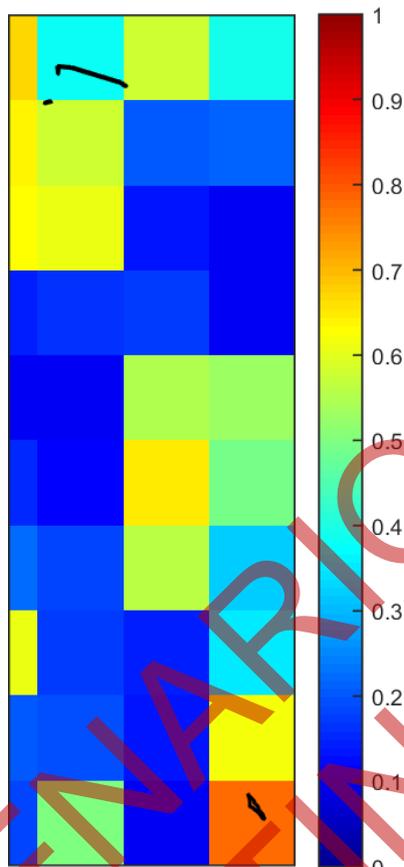
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Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



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APPENDIX 4: 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: 31/08/2021 11:34

Report ID: 10683

What was searched for?

General offset

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General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.047	0.472	0	CMA	Wimmera
			or LGA	West Wimmera Shire

Details of available native vegetation credits on 31 August 2021 11:34

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-2854	0.127	20	Wimmera	Horsham Rural City	Yes	Yes	No	VegLink
BBA-3001	4.819	0	Wimmera	Hindmarsh Shire	Yes	Yes	No	VegLink
BBA-3001	0.197	0	Wimmera	Hindmarsh Shire	Yes	Yes	Yes	VegLink
BBA-3002	7.630	0	Wimmera	Northern Grampians Shire	Yes	Yes	No	Bio Offsets, VegLink
BBA-3018	1.098	1	Wimmera	Northern Grampians Shire	Yes	Yes	No	VegLink
TFN-C1864	0.344	0	Wimmera	Ararat Rural City	Yes	Yes	No	VegLink
TFN-C2031	18.655	177	Wimmera	Northern Grampians Shire	Yes	Yes	No	Ecocentric, VegLink
VC_CFL-3064_01	60.279	1203	Wimmera	West Wimmera Shire	Yes	Yes	No	Abezco, Bio Offsets, Ethos
VC_CFL-3732_01	9.909	27	Wimmera	Horsham Rural City	Yes	Yes	No	Contact NVOR
VC_CFL-3737_01	3.185	145	Wimmera	Ararat Rural City	Yes	Yes	No	VegLink
VC_TFN-C2019_01	0.553	204	Wimmera	Northern Grampians Shire	Yes	Yes	No	Ecocentric

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.

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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-3723_01	64.397	1858	Wimmera	West Wimmera Shire	Yes	Yes	No	VegLink

LT - Large Trees

CMA - Catchment Management Authority

LGA - Municipal District or Local Government Authority

Next steps

If applying for approval to remove native vegetation

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

If you have approval to remove native vegetation

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

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not 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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This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that the credits shown will be available in the Native Vegetation Credit Register either now or at a later time when a purchase of native vegetation credits is planned.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes

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