Confluence Ecology and Community

Updated Native Vegetation Impact Assessment

Baddaginnie Solar Farm

For Birdwood Energy

Version 3

July 2024

Contents

Report:	Updated Native Vegetation Impact Assessment – Baddaginnie Solar Farm – Version 3
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1. Introduction

This report has been developed to address the requirements related to ecological and native vegetation impacts associated with the potential construction of a solar farm facility (Baddaginnie Solar Farm). An initial report dated 14 December, 2023 was submitted with permit application documentation. Subsequently the Department of Energy, Environment and Climate Action has provided Request for Further Information (RFI) correspondence dated 20/02/2024. Following receipt of the RFI, a meeting was held between DEECA, Birdwood Energy, Succession Ecology and Confluence Ecology and Community to confirm the best process for meeting the items raised in the correspondence. This updated report now aims to address the items contained within the RFI documentation and subsequent meeting. For ease of identification, updated items are highlighted in yellow.

This report has been developed generally in accordance with site plans produced by Birdwood Energy, BA2-SF-DWG-001 Rev A06, dated 12/05/2024.

The Development Area occurs within the Farming Zone (FZ) of the Benalla Planning Scheme. Renewable energy is permitted within this zone, subject to the provision of information regarding the natural features of the area, the extent of vegetation removal, the potential impacts to flora and fauna and in particular threatened species and communities. It also requires the provision of environmental management and rehabilitation plans for the development.

This Native Vegetation Impact Assessment and Native Vegetation Management Plan is necessary to meet the requirements of Clause 52.17 of the Benalla Planning Scheme and the State Native Vegetation Removal Regulations, and will also seek to address other relevant local, state and national policy and legislation. It is provided in support of a planning permit application for the proposed works.

This report seeks to address the following:

- All requirements of the Victorian native vegetation regulations outlined in clause 52.17 of the Rural City of Benalla's Planning Scheme and the incorporated document, *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a) (referred to herein as the 'Native Vegetation Guidelines').
- The requirements of other local policy pertaining to relevant zoning, overlays or local laws
- Relevant biodiversity legislation at a State and National Level
- Items contained within the RFI documentation and discussion.

1.1 Site Context

The property is approximately 40 hectares in size and located at the corner of the Benalla – Baddaginnie Road and Forshaw Road in Baddaginnie, around 2.5 km east of Baddaginnie and 8.5 km west of Benalla in northern Victoria. It is located within the Victorian Riverina Bioregion and the Goulburn Broken Catchment Management region. Its location is shown in Figure 1).

The property reflects its past agricultural use namely for sheep grazing. It has been largely cleared of trees and shrubs except for some retained large eucalypts, mainly River Red Gums spread across the property and one particular patch in the north-eastern corner. However, it still retains a high cover of native groundstorey vegetation including grasses, sedges, rushes, herbs and lilies.

The proposed solar farm development includes an area of around 6.5ha, which will contain infrastructure for the solar farm, a Battery Energy Storage System (BESS), access and power export. It will primarily involve development within the property but will link to one of the existing power poles

that sits to the north of the property boundary within the road reserve. The development has been allocated predominantly to an area previously cleared of canopy trees, however, native grasses, herbs and sedges are present.

The proposed Development Area occurs on flat terrain, and partly within an ephemeral floodplain of a tributary of the Baddaginnie Creek which is located approximately 200m west of the Development Area boundary. The Baddaginnie Creek itself is located between 800m and 1km west of the Development Area, and one small dam is located immediately adjacent the Development Area boundary.

The whole of the Development Area occurs within the Farming Zone. The entire Development Area also sits within a Designated Bushfire Prone Area, whilst part of the Development Area lies within an Aboriginal Cultural Heritage Sensitivity zone. A Public Conservation and Resource Zone occurs along the western boundary, adjacent to the Development Area and is associated with a tributary of the Baddaginnie Creek. No planning overlays exist over the Development Area.

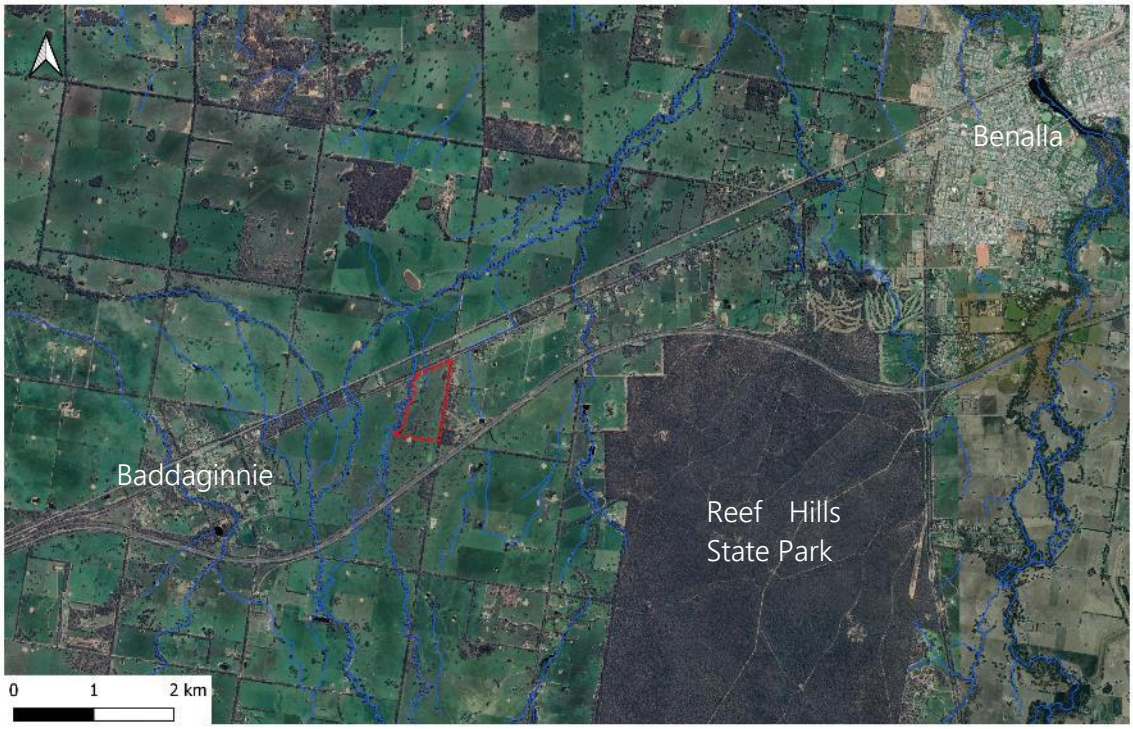


Figure 1. The study site (red outline)

Site geology comprises mainly of the Quaternary-aged Shepparton Formation (Qs), which includes fluvial deposits of silt, sand and minor gravel. More recent Quaternary-aged sediments (Qc) are associated with the floodplain of the Baddaginnie Creek and its tributaries in the western portion of the stie and comprise fluvial or lacustrine sand, clay or sandy clay. This geology is shown to extend partially across the study site but possibly not within the Development Area.

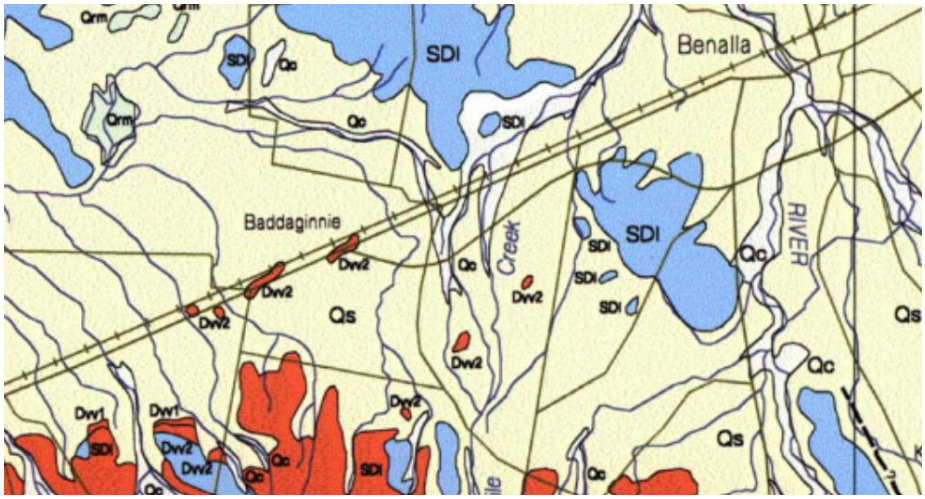


Figure 2. Site geology Source: Wangaratta 1:250,000 map, Geological Survey of Victoria

1.2 Permit Requirements and Exemptions

A range of state and local government regulations may apply to proposals to remove native vegetation in Victoria. Various permit requirements may be triggered based on the land area, land tenure, local planning schemes (including the relevant planning zones, overlays or specific provisions) and permit exemptions.

The summary presented in the tables below provides general guidance on the requirements normally required for a standard suite of works and highlights the particular requirements that are relevant to environmental planning considerations. The proponent may seek further advice over and above this general advice.

Local government planning requirements:

Regulations	Summary description	Relevance to the application
FZ – Farming Zone (entire study site)	Farm Zone provides for a variety of rural uses, aimed at retaining productive agricultural land and encourages appropriate use of the land for these purposes. This includes encouraging uses that include sustainable practices that won't impact on agricultural land.	Renewable energy development, such as a solar farm, is permitted within this zone, subject to adherence to provisions under Clause 53.13 of the Benalla Planning Scheme. This clause includes requirements to provide information on: • The extent of vegetation removal and a rehabilitation plan for the site. • The potential amenity impacts such as noise, glint, light spill, emissions to air, land or water, vibration, smell and electromagnetic interference. • The impact of the proposal on any species listed under the Flora and Fauna Guarantee Act 1988 or Environment Protection and Biodiversity Conservation Act 1999. • An environmental management plan including a construction management plan, any rehabilitation and monitoring.
Area of Cultural Heritage Sensitivity	Areas of 'cultural heritage sensitivity' under the Aboriginal Heritage Regulations 2018, trigger the first part of a two part trigger which require a 'cultural heritage management plan' be prepared where a listed 'high impact activity' is proposed.	The western portion of the study site is indicated as an area of cultural heritage sensitivity; however this does not extend to the Development Area.

State and National requirements:

A summary of the State and National regulations that are considered relevant in context of the proposed development is outlined below.

Level	Regulations	Description	Relevance to the application
Victorian Planning Provisions	Clause 52.17	A permit is triggered for the removal of native vegetation due to land size being greater or equal to 0.4 hectares.	**Applicable**
State Legislation	The Flora and Fauna Guarantee ACT 1988 (FFG Act)	Generally applies to public land. Public authorities must take note of the objectives of the Act.	**Not applicable – study site is private land**
	Wildlife Act 1975	It is an offence to kill, take, control or harm wildlife under the Wildlife Act 1975 and penalties apply. The Department of Land Water and Planning oversees this act and anyone wishing to control wildlife must have an authorisation from DEECA.	**Applicable**
Federal Legislation	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	May apply if a listed species or ecological community is present.	**Deemed to be not applicable based on assessments particularly for ecological communities (Section 4)**

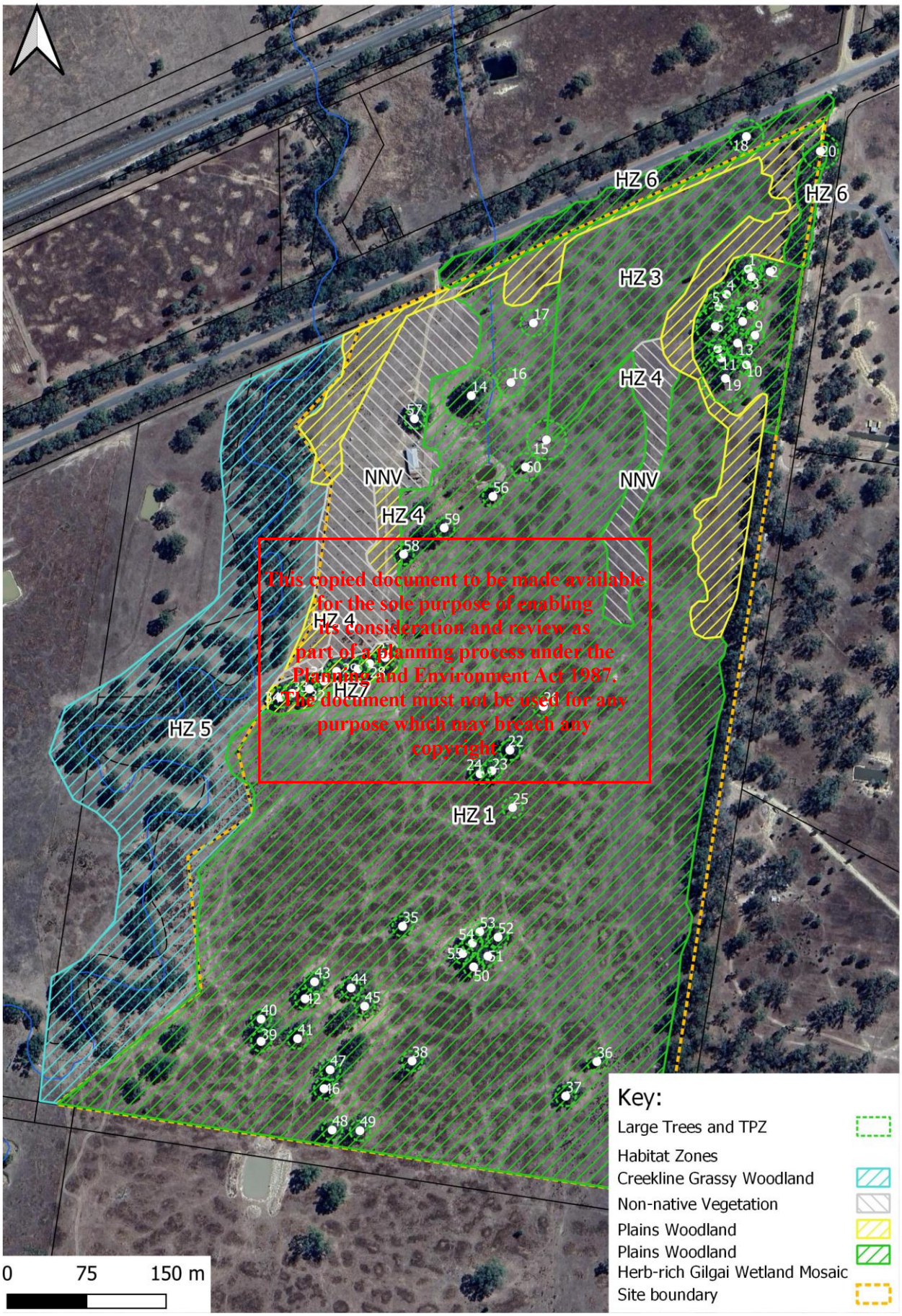
Map 1 illustrates existing native (indigenous) vegetation.

Map 2 shows the development layout and the proposed tree and vegetation removal which includes local indigenous trees and where applicable, planted trees of Victorian or Australian origin.

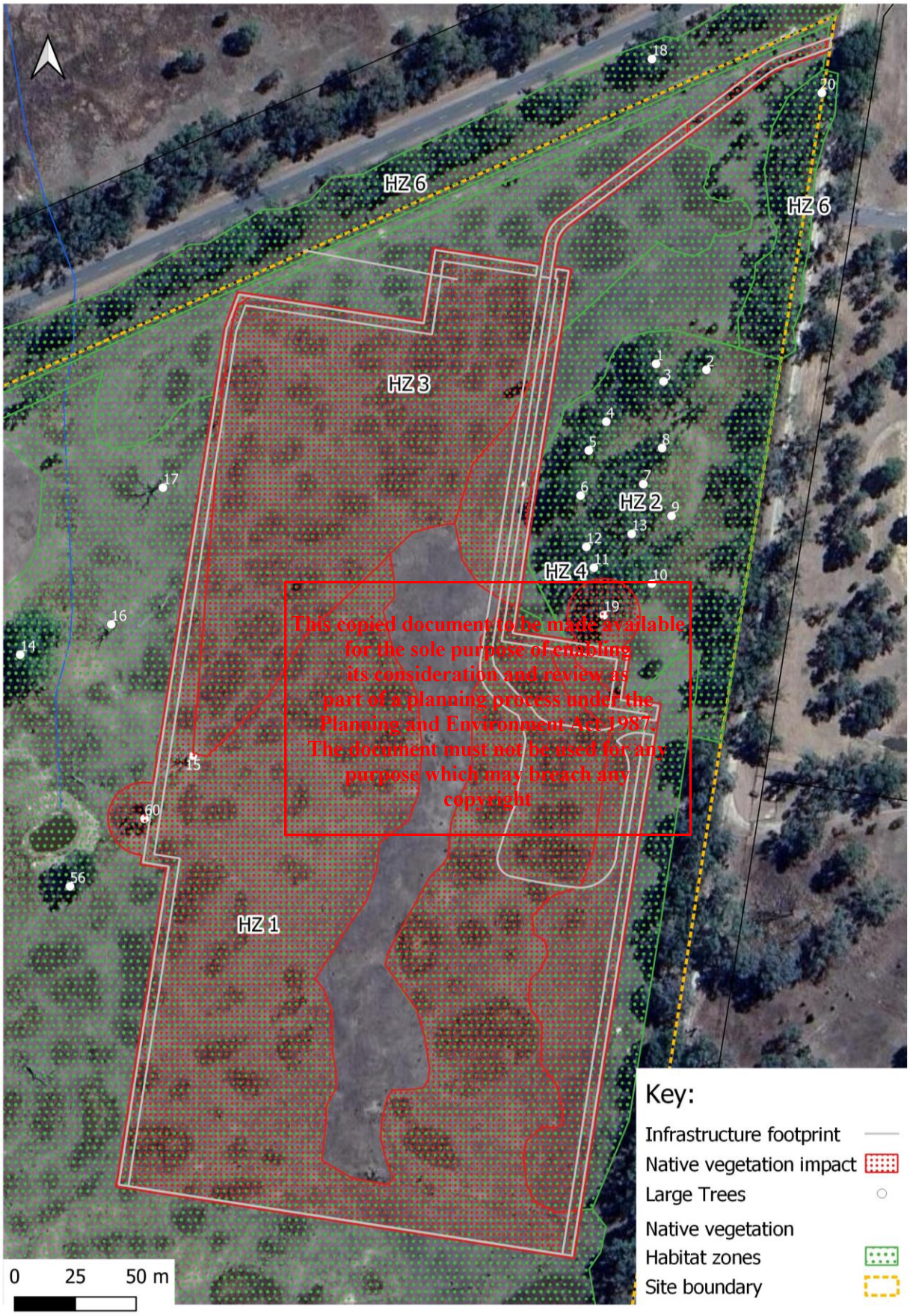
Section 2 outlines the results of the native vegetation assessment.

Sections 3 and 4 outlines the implications of development in accordance with Clause 52.17, the 2017 *Native Vegetation Guidelines* and other relevant biodiversity legislation.

Map 1. **Native Vegetation Extent**



Map 2. Native Vegetation Impact



2. Native Vegetation Assessment

A site investigation was undertaken by Yasmin Kelsall of Confluence Ecology and Community and Doreen Marchesan of Succession Ecology on 13 and 14 December 2022. The site assessment considered the entire property with particular focus on the areas that will be subject to development impact, being the 6.5 hectare area located in the north-eastern portion of the property comprising the footprint of the Solar Facility and the BESS. It also involved focused consideration of an area of road reserve associated with a power pole which is planned to connect to the proposed solar farm development.

2.1 Assessment Criteria

Native vegetation is assessed in accordance with the *Native Vegetation Guidelines*, which defines native vegetation in two main categories:

Native vegetation patch

A patch of native vegetation is either:

- an area of vegetation where at least 25 per cent of the total perennial understory plant cover is native
- any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or
- any mapped wetland included in the current wetlands map, available in DEECA systems and tools.

Scattered tree

A scattered tree is a native canopy tree that does not form part of a Native Vegetation Patch.

Note: A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type.

Vegetation that is neither a native vegetation patch nor a scattered tree is not applicable to the *Native Vegetation Guidelines* e.g. scattered native shrubs, introduced pasture, planted woodlots and cultivated gardens.

For Large Trees identified within 20 m of the access and work zone, trunk size was measured using diameter tape at 1.3m trunk height, i.e. Diameter at Breast Height (DBH) and location documented using a GPS in accordance with the *Assessors Handbook – Applications to remove, destroy or lop native vegetation* (DELWP 2017b). In this case, for Plains Woodland/Herb-rich Gilgai Wetland Mosaic vegetation, Large Trees were any Eucalypts with a DBH greater than 70 cm.

AS 4970-2009 Protection of Trees on Development Sites (AS 4970) was also applied where relevant.

AS 4970 defines a Tree Protection Zone (TPZ) as a radial area 12 x the trunk diameter measured at 1.4 metres above the ground. The Australian Standard considers that where development encroachment is greater than 10%, a tree may be adversely impacted due to potential root damage, compaction stress and reduced water absorption.

Ecological Vegetation Classes

An Ecological Vegetation Class (EVC) is a native vegetation type classified based on its floristic, life form, environmental and ecological characteristics (DEPI 2013). The benchmark for an EVC describes the attributes of the vegetation type in its mature natural state, which reflects pre-settlement conditions.

Modelled EVCs produced by DEECA and accessible via Nature Kit Online, indicate that the predominant Ecological Vegetation Class across the site is EVC 235: Plains Woodland/Herb-rich Gilgai Wetland Mosaic across the majority of the site and also on properties to the east and north.

Note: It is normally the required practice to identify the individual EVC components on the ground, when presented with a mapped EVC mosaic such as this. However, in this case, the nature of the mosaic of Herb-rich Gilgai Wetland within a Plains Woodland matrix was too nuanced and fine grained to effectively map the separate components. This

coupled with the existence of a Benchmark for this EVC, formed the basis for a case that was put to DEECA staff to accept this EVC mosaic as the dominant vegetation across the study site.

Following emails and a phone discussion, DEECA Wangaratta office staff confirmed that Plains Woodland/Herb-rich Gilgai Wetland Mosaic, EVC235 could be used in this case as the most appropriate EVC to apply to the vegetation composition observed onsite.

Site Condition Assessments

Site condition assessments are a key measure of native vegetation impact assessments and offset requirements. Where a native vegetation patch (or habitat zone) is identified, a site condition assessment can be attained by applying one of two methods below:

- The modelled site condition score using the NVIM online tool (basic and intermediate applications only)
- A Habitat Hectare assessment undertaken by an accredited Native Vegetation Assessor

Habitat Hectare assessments apply a defined EVC benchmark as per standardised methodology (DSE 2004). The assessment combines 7 site-based measures and 3 landscape-based measures to generate a site condition score between 0 and 1 that represents vegetation quality as a percentage of the optimum benchmark.

Native vegetation patches are separated where there is clear disconnection between one patch and the next that is caused by a gap in native vegetation or via a barrier that is deemed to be ecologically significant, in that it doesn't allow for reasonable movement and interaction of species.

Within a native vegetation patch, separate habitat zones are identified when there are more than one type of EVC or where there are significant differences in condition within a single EVC.

Large Trees

The Large Tree benchmark applies to trees in an existing or formerly occurring EVC. The Large Tree benchmark for Plains Woodland / Herb-rich Gilgai Wetland Mosaic (EVC 235) and Plains Woodland (EVC 803) is 70cm diameter when measured at breast height (DBH) (1.3m above the ground) for Eucalypt species. Impacts to Large Trees are a key consideration of the *Native Vegetation Removal Guidelines* (DELWP 2017) and are accounted for when using the modelled site condition score and via Habitat Hectare assessments.

2.2 Results

2.2.1 Flora Species

A total of 66 flora species, were identified within the property during the site visit, of which 39 were indigenous and 27 were introduced species or naturalised Australian or Victorian species.

Appendix 1 provides a list of all observed flora species.

Limitations of the Flora Survey

Although the flora survey was undertaken in very late Spring, generally considered a good time to view wildflowers and grasses while they're also flowering and seeding, there were also a small mob of sheep present at the time of survey. It is also likely that the site is visited by Eastern Grey Kangaroos which would contribute to the grazing pressure at the site. Despite this there was still relatively abundant native species diversity in ground-layer and most grasses and herbs were observable at full height.

It is highly likely that more indigenous species would be detected in follow-up surveys, especially if they were to be undertaken in other seasons, however, considering the context of this assessment, it is considered that the field survey provides a reasonable representation of the vegetation quality and plant diversity present at the site.

Rare and Threatened Flora

No nationally listed rare or threatened flora were observed during the site assessment. Section 4 of this report provides a discussion of the likelihood of rare or threatened flora occurring within the site based on habitat condition, species distribution and known locations within 5km.

2.2.2 Native Vegetation Condition

The study site overall retains almost complete cover of native vegetation but this is of variable quality. Some areas that do not meet the Patch definition according to the Guidelines (DELWP 2017), were found in the northern portion of the study site in locations that have been most impacted by stock grazing.

The vegetation was determined to best align with the Plains Woodland / Herb-rich Gilgai Wetland Mosaic (EVC 235) description as, across much of the site, small gilgai wetlands were closely interspersed between slightly elevated ground. As a benchmark is available for this vegetation type and discussion with DEECA staff from the Wangaratta office supported this approach the PW/HRGWM benchmark will be applied to the majority of the vegetation encountered. Other vegetation types encountered at the site include Plains Wetland (EVC 803) and Creekline Herb-rich Woodland (EVC 68) along the waterway to the west of the property.

The Habitat Zones identified for the study site are described below.

Habitat Zone 1

This habitat zone extending across the majority of the property comprises a patch of moderate quality Plains Woodland / Herb-rich Gilgai Wetland Mosaic, EVC 235.

It includes a number of mature River Red Gums *Eucalyptus camaldulensis* present as Large Trees. This area is practically devoid of mid-storey species.

Groundstorey vegetation is high in cover and moderate in diversity. The gilgai (wetland component) present as small and medium patches of wetland associated species include rushes, grasses and herbs dominated by Common Swamp Wallaby-grass *Amphibromus nervosus* and small rushes and sedges such as Nodding Club-sedge *Isolepsis cernua*, Austral Toad Flax *Juncus bufonius*, Common Spike-sedge *Eleocharis acuta*. Other grasses, rushes and sedges included Velvet Wallaby-grass *Rytidosperma pilosum*, Common Bog-sedge *Schoenus apogon,* Knob Sedge *Carex inversa* and Poong'ort *Carex tereticaulis* . Herbs and lilies included Fairies' Aprons *Utricularia dichotoma*, Small St John's Wort *Hypericum gramenium*, Blue Devil *Eringium ovinum*, Slender Goodenia *Goodenia gracilis*, Smooth Willow-herb Epilobium billardiereanum subsp. billardierianum, Woodland Grass-sorrel *Oxalis perennans,* Trailing Speedwell *Veronica plebeia* and Mud Dock *Rumex bidens*.

The groundlayer provides relatively low cover of organic litter and very low levels of logs, confirming that this property has been maintained in a managed state in recent times.

Weed cover is moderate at 50% with key high threat weeds mainly including exotic grasses such as Squirrel-tail Fescue **Vulpia bromoides,* Soft Brome **Bromus hordaceus,* Sweet Vernal **Anthoxanthum odoratum*, Lesser Quaking-grass **Briza minor*, and occasional Subterraneum Clover **Trifolium subterraneum*.

As detailed in Table 1, Habitat Zone 1 receives a habitat score of 0.42 or 42% of the Plains Woodland / Herb-rich Gilgai Wetland Mosaic benchmark based on the field assessment.

Figure 3. Habitat Zone 1 looking south from midway across the study site (13 Dec 2023)

Figure 4. Habitat Zone 1 looking south-west from midway across the study site (13 Dec 2023)

Figure 5. Looking north across HZ1 towards the Baddaginnie-Benalla Road (13 Dec 2023)

Figure 6. Looking west across HZ1 from the boundary with HZ2 (13 Dec 2023)

Habitat Zone 2

Habitat Zone 2 comprises of a relatively intact patch of Plains Woodland / Gilgai Herb-rich Wetland located in the north-eastern corner of the study site. This patch of vegetation is associated with the wettest portion of the site encountered during the site visit. At the time it included a high cover of standing water.

Habitat Zone 2 comprises of a relatively dense stand of mature River Red Gums over a diverse groundstorey dominated by wetland plants. Dominant species included Common Swamp Wallaby-grass, Common Blown-grass *Lachnagrostis filiformis,* Poong'ort and Common Spike-sedge. Species which occurred in the wettest areas at the time of survey included Water Ribbons *Cycnogeton procerum* and Upright Water-milfoil *Myriophyllum crispatum*.

Other species present include Common Bog-sedge, Knob Sedge, Blady Grass *Imperata cylindrica*, Blue Devil, Fairie's Aprons, Juncus spp. and Mud Dock.

A low-moderate cover of weed species was observed at 20% and organic litter was moderate at 30%. Weed species included Toowoomba Canary Grass **Phalaris aquatica*, Spear Thistle **Cirsium vulgare*, Flat Weed **Hypochaeris radicata* and Squirrel-tail Fescue.

As detailed in Table 1, Habitat Zone 2 receives a habitat score of 0.68 or 68% of the Plains Woodland / Gilgai Herb-rich Wetland benchmark based on the field assessment.

Figure 7. Habitat Zone 2 looking south-east (13 Dec 2023)

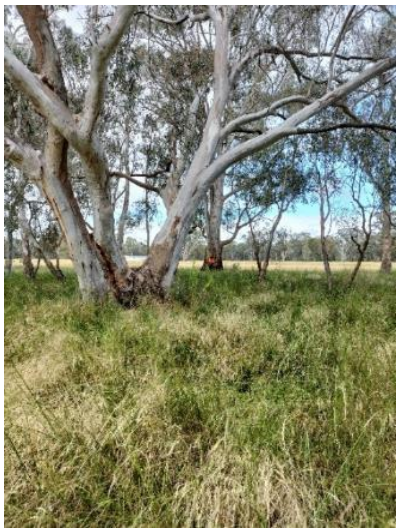


Figure 8. Habitat Zone 2 looking west (14 Dec 2023)

Habitat Zone 3

This habitat zone applies to a patch of lower quality Plains Woodland / Gilgai Herb-rich Wetland vegetation within the northern portion of the site which sits across the Development Area.

This zone contains most of the features of Habitat Zone 1 but with less species diversity and cover. Key species include Common Swamp Wallaby-grass, Velvet Wallaby-grass, Common Spike-sedge, Poong'ort, Juncus spp., Toad Flax, Smooth Willow-herb, Small St John's Wort, Blue Devil and Swamp Isotome *Isotome fluviatilis*.

The groundlayer provides relatively low cover of organic litter and no logs.

Weed cover is moderate at 20% with key high threat weeds mainly comprising of exotic grasses including Sweet Vernal-grass, Lesser Quaking-grass, Toowoomba Canary Grass, Flat Weed and Onion Grass **Romulea rosea*.

As detailed in Table 1, Habitat Zone 3 receives a habitat score of 0.42 or 42% of the Plains Woodland / Gilgai Herb-rich Wetland benchmark.

Figure 9. Habitat Zone 3 looking north (13 Dec 2023)

Figure 10. Habitat Zone 3 looking west (13 Dec 2023)

Habitat Zone 4

This habitat zone comprises a series of patches of low to moderate quality Grassy Woodland (EVC 803) vegetation in the north-eastern edges of the property as well as in the north-western portion on locations that perhaps sit on recent alluvial sediments that are better drained than adjacent heavier clay soils.

The former overstorey from this habitat zone has been cleared but was observed to include a couple of regenerating River Red Gums as well as Grey Box *E. macrocarpa*. Yellow Box *E. melliodora* was also observed.

Midstorey vegetation was again absent other than occasional regenerating eucalypts.

Groundstorey vegetation was relatively diverse, comprising of grasses, rushes and lilies including Velvet Wallaby-grass, Rough Spear-grass *Austrostipa scabra* subsp. *falcata*, Brush Wire-grass *Aristida behriana*, Common Wheat-grass *Anthosachne scabra*, Black-anther Flax-lily *Dianella revoluta*, Wattle Mat-rush *Lomandra filiformis*, Rushes *Juncus* spp., Chocolate Lily *Arthropodium strictum*. Herbs included Raspwort *Gonocarpus tetragynus*, Blue Devil, Small St John's Wort and Smooth Willow-herb. Narrow Rock-fern *Cheilanthes sieberi* subsp. *sieberi* was also observed

The groundlayer provides a low cover of organic litter and no logs were observed.

Weed cover is low at 10% with key high threat weeds that include exotic grasses, Squirrel-tail Fescue, Lesser Quaking-grass, Sweet Vernal and Cats Ear.

As detailed in Table 1, Habitat Zone 4 receives a habitat score of 0.54 or 54% of the Grassy Woodland benchmark based on the field assessment.

Figure 11. Habitat Zone 4 looking north-west (14 Dec 2023)

Figure 12. Habitat Zone 4 looking south-east (14 Dec 2023)

Habitat Zone 5

This habitat zone applies to a patch of lower quality Creekline Grassy Woodland (EVC 68) vegetation associated with a branch of the Baddaginnie Creek that sits along the western boundary of the site.

This zone features a series of large and medium River Red Gums over a depauperate understorey, mainly featuring Poong'ort, Wallaby Grasses, Common Spike-sedge and Juncus spp. Instream species observed include Tall Rush Phragmites australis and Water Ribbons. Other herbs include Smooth Willow-herb, Grassland Wood-sorrel and Mud Dock.

The groundlayer provides a moderate cover of organic litter and moderate numbers of logs.

Weed cover is relatively high at 50% with key high threat weeds including Squirrel-tail Fescue and other exotic grasses.

As detailed in Table 1, Habitat Zone 5 receives a habitat score of 0.52 or 52% of the Creekline Grassy Woodland benchmark.

Figure 13. Waterway and HZ5 looking north from midway up the site (13 Dec 2023)

Figure 14. Waterway and HZ5 further north, looking north (13 Dec 2023)

Habitat Zone 6

This habitat zone applies to a patch of moderate quality Plains Woodland / Gilgai Herb-rich Wetland vegetation that sits within the road reserve to the north and east of the study site. It has been included in the assessment on the basis that it contains the powerline easement and power pole which will require upgrade works to support the proposed development.

This zone leans more towards Plains Woodland for most of its extent with numerous Large Trees of both River Red Gum and Grey Box as well as smaller trees (as they are regenerating). However, it grades to wetter areas along its southern boundary, partially due to an installed drain which now supports wetland vegetation.

Midstorey species include occasional regenerating eucalypts. Groundstorey species across the majority of the habitat zone are dominated by Wallaby Grass with a variety of native grasses and herbs similar to those seen within Habitat Zone 4 included. Along the wetter drainage line area, wetland associated species include Common Swamp Wallaby-grass, Velvet Wallaby-grass, Common Spike-sedge, Poong-ort, Juncus spp., Smooth Willow-herb and Blue Devil.

The groundlayer provides relatively low cover of organic litter and relatively low numbers of logs.

Weed cover is moderate at 20% with key high threat weeds mainly comprising of exotic grasses including Lesser Quaking-grass, Toowoomba Canary Grass, Squirrel-tail Fescue and Flat Weed.

As detailed in Table 1, Habitat Zone 6 receives a habitat score of 0.63 or 63% of the Plains Woodland / Gilgai Herb-rich Wetland benchmark.

Figure 15. Power pole with HZ6 behind looking north east (14 Dec 2023)

Figure 16. Looking east from within study site towards power pole and HZ6 (14 Dec 2023)

Habitat Zone 7

This habitat zone applies to a patch of Plains Woodland vegetation that features eight mature River Red Gum trees.

The groundlayer provides relatively low cover of organic litter and no logs. Weed cover is high at 70% with key high threat weeds mainly comprising of exotic grasses.

As detailed in Table 1, Habitat Zone 7 receives a habitat score of 0.41 or 41% of the Plains Woodland benchmark.

Figure 17. HZ7 looking south east (13 Dec 2023)

Figure 18. HZ7, looking south (13 Dec 2023)

2.2.3 Habitat Hectare Results

Table 1 presents the results of the habitat hectare assessments for Habitat Zones 1 to 7. Each of these habitat zones will be impacted to some extent by the planned works for which the requirements of Clause 52.17 of the Benalla Planning Scheme apply.

Table 1. Habitat Hectare Results

Habitat Zone			1	2	3	4	5	6	7
Benchmark criteria		**Max. Score**	**EVC** PW/HRGWM (EVC 235)	**EVC** PW/HRGWM (EVC 235)	**EVC** PW/HRGWM (EVC 235)	**EVC** PW (EVC 803)	**EVC** CGW (EVC 68)	**EVC** PW/HRGWM (EVC 235)	**EVC** PW (EVC 803)
Site condition	Large Old Trees	10	3	10	0	0	3	10	10
	Canopy cover	5	0	4	0	0	5	3	5
	Understorey	25	10	20	15	20	15	20	5
	Lack of weeds	15	4	7	7	11	4	4	0
	Recruitment	10	1	5	1	1	1	3	0
	Organic litter	5	3	5	3	5	5	3	5
	Logs	5	4	2	0	0	2	3	0
Site Condition Subtotal (multiplier)		(1x)	**25**	**53**	**26**	**37**	**35**	**46**	**25**
Landscape	Patch Size		8	8	8	8	8	8	8
	Neighbourhood		5	3	4	5	5	5	4
	Distance to Core		4	4	4	4	4	4	4
Landscape component score			**17**	**15**	**16**	**17**	**17**	**17**	**16**
Habitat quality score		**100**	**42**	**68**	**42**	**54**	**52**	**63**	**41**
Habitat score as above = #/100			0.42	0.68	0.42	0.54	0.52	0.63	0.41

2.2.4 Tree Assessment

The tree assessment focused on indigenous canopy trees that were located close to or within the planned construction and development zone (impact area). This included trees that were greater than 12m in height (80% of the benchmark height of 15 m) and Eucalypt species, in this case River Red Gum and Grey Box. For the impact area this assessment included identifying the species; measuring the DBH and documenting tree health. For these trees, tree health was determined using the Proportion of Expected Healthy Cover Present, as described in Appendix 4 of the *Vegetation Quality Assessment Manual V1.3* (DSE 2004).). Trees identified within or close to impact areas include Trees 1-20, 56 and 60.

The impact area was taken to be:

- the footprint of the proposed solar and BESS facility plus a buffer area of landscaping (4m in width) which wraps around the proposed solar facility to the north, west and east plus a buffer of 1 metre;
- the access road that will enter from Forshaw Road in the north-eastern corner of the property plus a buffer of 1 metre;

For the remainder of the site the location and presence of Large Trees, either scattered or within patches were documented and in some cases DBH measured. Large Trees outside of Impact areas include Trees 21-55 and 57-59. Large Trees are shown in Map 1.

Trees assessed and the level of projected impact is provided in Table 2.

Table 2. Tree assessment and projected impact

Large Tree	Tree No	*Species*	DBH (cm)	TPZ Radius (m)	TPZ Area (ha)	Impact Area (ha)	% Impact	Lost under the Native Veg. Regs?
LT	1	*E. camaldulensis*	1.1	13.2	0.054	0	0	No
LT	2	*E. camaldulensis*	0.76	9.12	0.026	0	0	No
LT	3	*E. camaldulensis*	0.73	8.76	0.024	0	0	No
LT	4	*E. camaldulensis*	0.95	11.4	0.04	0	0	No
LT	5	*E. camaldulensis*	1.15	13.8	0.059	0	0	No
LT	6	*E. camaldulensis*	1.5	18	0.1	0	0	No
LT	7	*E. camaldulensis*	0.97	11.64	0.042	0	0	No
LT	8	*E. camaldulensis*	0.94	11.28	0.039	0	0	No
LT	9	*E. camaldulensis*	0.7	8.4	0.022	0	0	No
LT	10	*E. camaldulensis*	0.73	8.76	0.024	0	0	No
LT	11	*E. camaldulensis*	0.75	9	0.025	0	0	No
LT	12	*E. camaldulensis*	0.74	8.88	0.024	0	0	No
LT	13	*E. camaldulensis*	1.13	13.56	0.057	0	0	No
LT	14	*E. camaldulensis*	2.29	27.48	0.233	0	0	No
LT	15	Stag	1.55	18.6	0.107	0.1006	94%	Yes
LT	16	Stag	1.11	13.32	0.055	0	0	No
LT	17	Stag	1.04	12.48	0.048	0	0	No
LT	18	*E. microcarpa*	1.33	15.96	0.079	0	0	No
LT	19	*E. camaldulensis*	1.89	22.68	0.159	0.0259	16%	Yes
LT	20	*E. camaldulensis*	1.4	16.8	0.087	0.0015	2%	No
LT	21	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	22	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	23	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	24	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	25	Stag	0.8	9.6	0.028	0	0	No
LT	26	Stag	0.8	9.6	0.028	0	0	No
LT	27	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	28	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	29	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	30	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	31	*E. camaldulensis*	0.8	9.6	0.028	0	0	No

Large Tree	Tree No	*Species*	DBH (cm)	TPZ Radius (m)	TPZ Area (ha)	Impact Area (ha)	% Impact	Lost under the Native Veg. Regs?
LT	32	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	33	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	34	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	35	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	36	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	37	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	38	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	39	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	40	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	41	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	42	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	43	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	44	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	45	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	46	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	47	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	48	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	49	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	50	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	51	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	52	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	53	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	54	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	55	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	56	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	57	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	58	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	59	*E. camaldulensis*	0.8	9.6	0.028	0	0	No
LT	60	*E. camaldulensis*	1.09	13.08	0.053	0.023	46%	Yes

Figure 19. Trees 60 and 15 shown in the foreground. Looking east across Habitat Zone 1. (13 Dec, 2023)

Figure 20. Closer view of Tree 60 (left) and Tree 15 (right) (13 Dec, 2023)

Figure 21. Tree 19 (13 Dec, 2023)

2.2.5 Fauna Habitat

Based on a visual assessment of fauna habitat, remnant vegetation within the study site provides very good habitat for a wide range of fauna species.

There are many mature eucalypts which are located throughout the property and particularly around the property boundary, including along the waterway. These include primarily River Red Gum but also Grey Box and Yellow Box *Eucalyptus melliodora*, some of which were observed to include hollows, potentially supporting hollow-dependent fauna such as Laughing Kookaburra *Dacelo novaeguineae*, Gang Gang Cockatoo *Callocephalon fimbriatum*, Eastern Rosella *Platycercus eximius*, Musk Lorikeet *Glossopsitta concinna*, Brown Treecreeper *Climacteris picumnus*, Lace Monitor *Varanus varius* and Sugar Glider *Petaurus breviceps*.

The mixed open, grassy and wetland habitat mixed with scattered large trees appears to support a variety of 'open country' species or adaptable species which either need open spaces to hunt, like raptors or feed on grasses or insects or are able to utilise open spaces, retiring to more wooded areas as needed. Species observed onsite and nearby include White-winged Choughs *Corcorax melanorhamphos*, Sulphur-crested Cockatoos *Cacatua galerita*, Australian Magpie *Gymnorhina tibicen*, Galah *Eolophus roseicapilla*, Crested Pigeon *Ocyphaps lophotes*, Black-faced Cuckoo-shrike *Coracina novaehollandiae*, Nankeen Kestrel *Falco cenchroides* and Whistling Kite *Haliastur sphenurus*.

Although there is a reduced cover of midstorey vegetation which is largely restricted to the edges of the property, various 'scrub birds' are likely to make use of this shrubby remnant and regenerating vegetation such as the Grey Fantail *Rhipidura albiscapa*, Restless Flycatcher *Myiagra inquieta*, Eastern Yellow Robin *Eopsaltria australis,* Rufous Whistler *Pachycephala rufiventris*, Yellow-rumped Thornbill *Acanthiza chrysorrhoa,* White-throated Treecreeper *Cormobates leucophaea* and Superb Fairy-wren *Malurus cyaneus.*

Groundstorey vegetation includes a diverse cover of grasses, rushes, sedges, lilies, herbs, and organic litter as well as occasional logs. These conditions are suitable for a range of ground mammals such as Yellow-footed Antechinus *Antechinus flavipes,* and Short-beaked Echidna *Tachyglossus aculeatus* and a wide variety of invertebrates and reptiles such as Geckos, Skinks or Common Blue-tongue Lizard *Tiliqua scincoides*. Also a variety of birds will favour some of the more open grassy areas for eating seeds and insects as will birds of prey such as owls for hunting.

Additionally, the wet portions of the site, associated with the numerous gilgai wetlands as well as the dams and the waterway along the western border have the potential to provide habitat for a variety of water-associated fauna including frogs such as Southern Bullfrog or Pobblebonk *Limnodynastes dumerilii*, fish, reptiles and invertebrates.

Overall, remnant vegetation provides very good habitat due to its variety, continuity and connectivity with large areas of higher quality remnant vegetation across the broader landscape such as Reef Hills State Park and via waterways.

Section 4 provides further information for threatened fauna that may potentially utilise the site.

3. Implications of the Native Vegetation Removal Guidelines

Clause 52.17 is the principal clause under the Victorian Planning Provisions and municipal planning schemes that regulate native vegetation protection and permitted removal. The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017a) (referred to as the *Native Vegetation Guidelines)* is the primary reference document under this clause. Native Vegetation is regulated under all Victorian Planning Schemes and is defined in Clause 72 as:

'Plants that are indigenous to Victoria, including trees shrubs, herbs and grasses'.

Clause 52.17 regulates clearing of native vegetation by achieving no net loss to Victoria's biodiversity. This is achieved through the following approaches:

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

3.2 Native Vegetation Impact

Portions of Habitat Zones 1, 2, 3, 4 and 6 will be impacted by the construction of the solar farm and its supporting infrastructure. This is shown in Map 2. The vegetation that will be impacted includes 6.153 hectares of Plains Woodland / Herb-rich Gilgai Wetland Mosaic vegetation of varying condition and a small amount of Plains Woodand.

Three Large Trees will be 'lost' in accordance with the Native Vegetation Regulations (DELWP 2017a) as more than 10% of their TPZ will be impacted by construction related activity. Two of these trees will be retained in-situ during and after the construction phase (Trees 19 and 60). One Large Tree will be physically removed (Tree 15, a Dead Stag).

A description of the areas of native vegetation impact are as follows:

The proposed solar farm development comprises of an area of around 6.5ha, which will contain infrastructure for the solar farm, a Battery Energy Storage System (BESS), water tank and CFA requirements, access and power export.

The Concept Layout Plan is provided as Attachment 1.

The main development area will be encircled by a perimeter fence beyond which an area of screening planting is provided along the north, east and west sides. Figure 22 shows a typical cross-section for the screening planting and the arrangement of the solar panel infrastructure, showing that across much of the site, extant native vegetation will remain in place, although it will be accounted for as 'lost' under the Native Vegetation Removal Guidelines (DELWP, 2017).

Within the footprint of the solar farm infrastructure, BESS and access roads the native vegetation present will be considered 100% lost. This will include all areas within the perimeter fence plus for the driveway access road, a 1m buffer.

In addition to this three Large Trees are deemed to be 'lost' as greater than 10% of their TPZ sits within the proposed development impact area. These are Trees 15, 19 and 60. Tree 15, a dead stag will be physically removed as it sits within the footprint of the perimeter road. Trees 19 and 60 both River Red Gums will remain in place, outside the perimeter fence. Tree 19 has been added to the trees considered 'lost' since the previous version of this report as DEECA confirmed that the landscaping works should be considered to be 100% impact. Additionally the 1m buffer increases the encroachment upon trees 19 and 60. To confirm, there are no Scattered Trees that will be subject to any impacts associated with this development. All trees and shrubs on the site were found to occur within 'patches'. Site plans (Attachment 1) have been updated to ensure consistency with the terminology and process utilised by the Native Vegetation Removal Guidelines (DELWP, 2017).

In addition to a short driveway from the north-eastern corner of the property at Forshaw Road, a second access point is planned for, which will only be utilized should there be a fire emergency. For the second access point, there will not be any alteration of the ground surface nor modification of the vegetation. As there is an existing gate in the boundary fence to Forshaw Road at this location, there will be no need for any additional ground disturbance for installation. Therefore there is no additional losses of native vegetation accounted for.

Beyond the perimeter fence to the north, east and west a 4 metre landscaping zone will be provided for 'screening' plantings of medium shrubs. This screening planting is provided to reduce the visibility of the infrastructure for road users and nearby residents. Also to reduce the potential for glare to residents. The landscaping work will involve planting a single row of Hedge Wattle *Acacia paradoxa*, a locally native species and retaining the existing vegetation beneath. The native vegetation within this Landscaping Zone will be considered 100% lost.

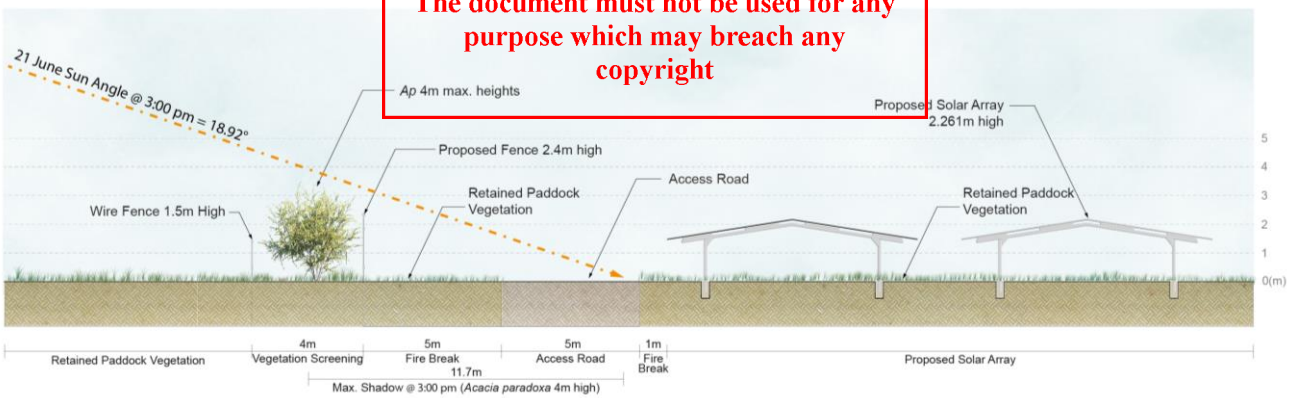


Figure 22. Typical perimeter section drawing, prepared by Geoscene Australia (March, 2024)

All native vegetation impacts will be limited to within the property boundary. There will be an above-ground power link that will be established with an existing power pole that sits to the north of the property boundary within the road reserve. On this basis, no impacts on any native vegetation beyond the property boundary will be required.

3.3 Assessment Category

The assessment category of an application is determined in accordance with Table 3. The location category is a biodiversity mapping unit that has been determined across Victoria and is represented in three classes:

Location 3 – includes locations where the removal of less than 0.5 hectares of native vegetation could have a significant impact on habitat for a rare or threatened species.

Location 2 – includes locations that are mapped as endangered EVCs and/or sensitive wetlands and coastal areas are not included in Location 3

Location 1 – includes all remaining locations in Victoria.

Table 3. Determining the assessment category

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

Source: Table 3, *Guidelines for the removal, destruction or lopping of native vegetation* (DEPI 2017a)

As the proposed development area is mapped largely as 'Location 2' and the proposed amount of clearing is more than 0.5 hectares and involves impacts on Large Trees, the application will follow the 'Detailed' assessment pathway.

3.4 Impact and Offset Requirements

A Native Vegetation Removal (NVR) Report was generated by DEECA with provision of spatial data from the site assessment. The report verifies the results of the impact assessment and is provided in Appendix 2.

The NVR documents the area of impact being 0.133 hectares and the offset requirements for the proposed removal native vegetation as outlined below.

Offset Type	General Offset
Offset Amount	3.862 general habitat units
Minimum Strategic Biodiversity Value	0.721
Large Trees	3
Vicinity	Goulburn Broken Catchment Management Region or Benalla Rural City Council Area

3.5 Offset Strategy

A native vegetation offset works on the principle of providing an ecological gain equivalent to the value of native vegetation loss. There are two ways in which an offset can be secured:

- Via a first-party offset, through legal protection, conservation management and forfeit of rights to the use the land (e.g. grazing and firewood collection) on the same property, providing sufficient land is available or,
- Purchase of a third-party native vegetation offset. This is typically purchased through an accredited broker trading under the State's Native Vegetation Credit Register

In this case the client will seek to meet their offset obligations via a third-party, offsite offset.

Appendix 3 provides a summary of Native Vegetation Credits available (as of 3 July 2024) to meet the offset as a third-party arrangement.

3.6 Avoid and Minimise Statement

An avoid and minimise statement is provided below to demonstrate how the application has reduced impacts on biodiversity and other values of native vegetation.

Site level planning

- As the property itself was almost entirely covered in native vegetation and considering the nature of the solar development it was difficult to avoid native vegetation impact entirely.

- Additionally there was a requirement to locate any infrastructure outside the 150m buffer required for a tributary of the Baddaginnie Creek that sits along the western boundary. Therefore meaning that the siting needed to be in the eastern portion of the property.

- Although complete avoidance is not possible within the site, the development proposal has sought to minimize its impact as much as possible. An Avoid and Minimise Report prepared by the proponent, Birdwood Energy (Attachment 2) provides more detail on the efforts that they have made to reduce impacts on the site.

- This includes:

    - Preliminary planning work that aimed to avoid groups of trees (shown in Image 1 of Birdwood's Avoid and Minimise Report (Attachment 2)).
    - Locating the infrastructure within the northern portion of the site, a location that is closer to both Forshaw Road, the Baddaginnie-Benalla Road and the existing power line that runs along the northern boundary. This proximity to existing infrastructure means that only a short driveway is required and that there is no need for any extra infrastructure to access the local power network.
    - Siting the planned infrastructure within the region of the property which was identified to have higher existing impacts from stock grazing. This includes native vegetation of lower condition and also an area that does not meet the threshold for a native vegetation 'patch'.
    - Reducing the size of the original infrastructure footprint significantly via the choice of better technology. An image of an earlier iteration of the planned infrastructure is provided in Image 1 in Attachment 2.
    - Choosing the Solar Mounting System (SMS) which ultimately reduced the requirement to scrape (level) the soil surface and thereafter maintain vegetation suppression. The SMS, due to its considerably higher ground clearance allows light to reach the ground under the PV array, helping to maintain existing vegetation. Additionally the system is able to be installed with little ground preparation apart from auger holes for concrete piers, minimising the impact on existing vegetation. While this system will ultimately reduce the impact on native vegetation, 100% impact has still been applied for calculating losses for offsetting.

Figure 23. Image from Birdwood Energy showing the SMS system installed.

- Re-adjusting the design following the ecological site assessment to avoid the high number of Large Trees associated with Habitat Zone 2.
- Reducing the landscaped buffer area from 6 m down to 4 m in width and retaining vegetation beneath.
- Significantly reducing the extent of a perimeter road that initially was deemed to be required to encircle the entire development. Following discussion with the CFA, this has now been reduced to just the eastern edge.

- Although a 4 metre landscaping zone will be provided for 'screening' purposes to the north, east and west in addition to the main solar farm infrastructure, this will aim to involve low impact methods. Nevertheless for this area, losses of 100% have been applied. Methods include revegetation of medium shrubs, in combination with the natural regeneration of ground-storey vegetation. In planting the shrub component, local species like Hedge Wattle *Acacia paradoxa* will feature and minimum impact site preparation and planting methods utilized.

- During site works, impact mitigation will be utilized such as silt barriers to reduce the chance of construction impacts to local stormwater and waterways.

Strategic Level Planning

The study site has not been subject to regional or landscape scale strategic planning in recent years. The property parcel in its current form has existed for over 20 years, before Victorian native vegetation policy was integrated into the Planning Scheme.

3.7 Additional Information Requirements

Item	Application requirements	Assessment Pathway: Detailed Response
1	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate.	Refer to Section 1.1, Site Context and Figure 1, Study Site Location for this information.
2	Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five-year period before the application for a permit is lodged.	Not applicable
3	A copy of any property vegetation plan that applies to the site.	Not applicable
4	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	Not applicable
5	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan	Not applicable
6	Information about impacts on rare or threatened species habitat, including: ▪ The relevant section of the Habitat importance map for each rare or threatened species requiring a species offset. ▪ For each rare or threatened species that the native vegetation to be removed is habitat for, according to the Habitat importance maps ▪ the species' conservation status ▪ the proportional impact of the removal of native vegetation on the total habitat for that species ▪ whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat. ▪ Note: A report from DEECA systems and tools contains information required to address this application requirement.	▪ Refer to Section 4.1 for a detailed assessment of the presence or likelihood of occurrence of threatened flora and fauna at the site. ▪ The proposed development does not require the provision of species offsets. ▪ Modelled Habitat Importance mapping indicates that the proposed impact area provides dispersed habitat for 48 species and no species with highly localised habitat. Of these, 12 species are indicated to have 0.0001% of their habitat value affected. Of the remaining 36 species, 31 have 0.0010% - 0.0002% of their habitat value affected. The remaining five species and their percentage modelled habitat affected are: Euroa Guinea-flower *Hibbertia humifusa* subsp. *erigens* 0.0033%; Mugga *Eucalyptus sideroxylon* subsp. *sideroxylon* 0.0022%; Western Silver Wattle *Acacia decora* 0.0018%; Narrow Goodenia *Goodenia macbarronii* 0.0010% and Dwarf Cassinia *Cassinia diminuta* 0.0010%. None of these species were observed onsite during site surveys.

4. Additional Considerations under Relevant Biodiversity Legislation

This section provides an overview of other biodiversity legislation at local, state and national level.

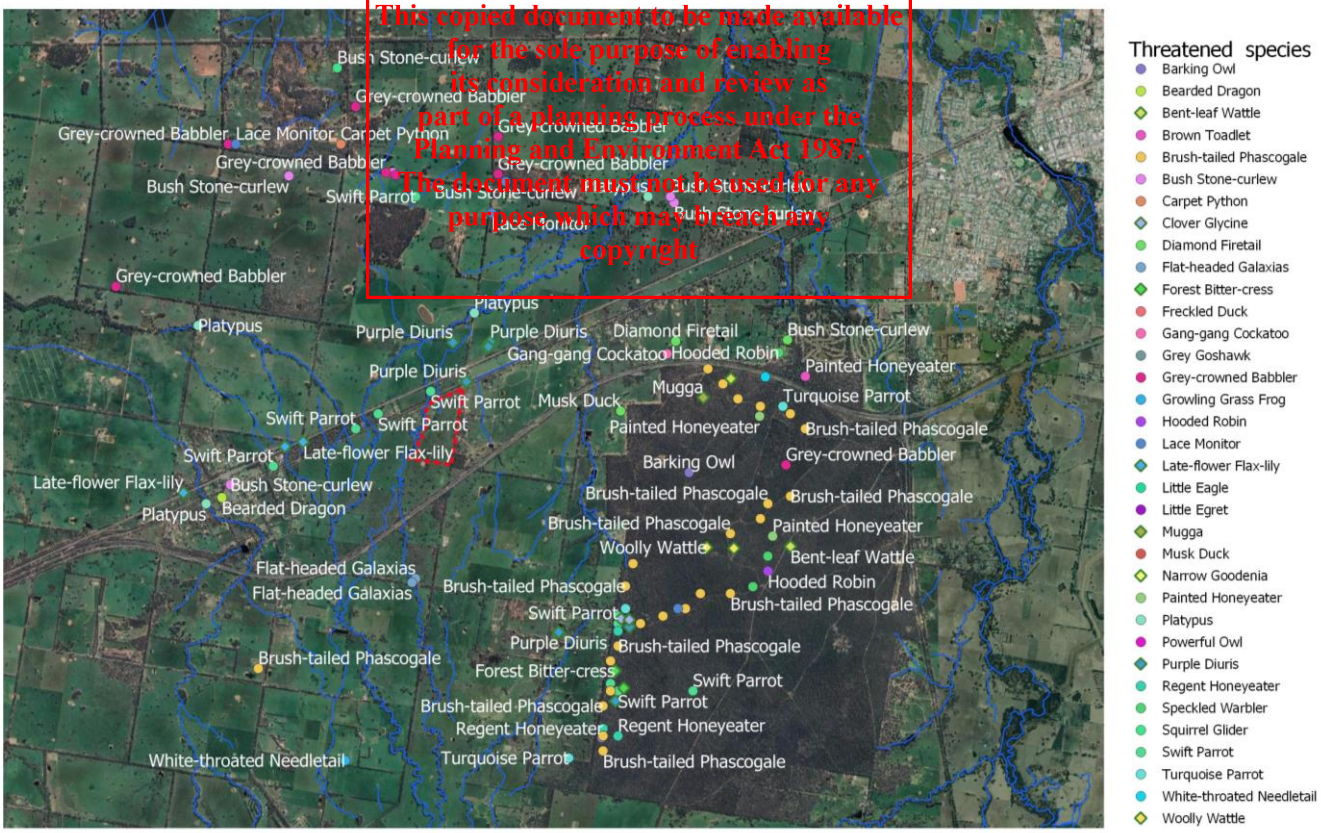
4.1 Potentially Occurring Rare and Threatened Species

Two listings apply for rare or threatened flora and fauna in Victoria. These are the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). The *Native Vegetation Guidelines* (DELWP 2017a) also provide a level of protection for species listed under the FFG Act.

4.1.1 Threatened Species Mapping and Databases

The Victorian Biodiversity Atlas (VBA) is a state-wide database managed by DEECA that documents flora and fauna survey records throughout Victoria. The VBA was queried within 5km of the study area to access location records for rare and threatened species. VBA records and a site-based habitat assessment were considered in determining likelihood of occurrence of threatened species in the study area.

Figure 24. Occurrence records from the VBA for threatened flora and fauna within 5 km of the study site



The Department of Climate Change, Environment, Energy and Water (DCCEEW) supports an Australian Database for Matters of National Environmental Significance (MNES) under the EPBC Act, 1999. This database was queried for MNES within 5km from the study site and for those which were 'known' or 'likely' to occur within this buffer

area were considered for their likelihood of occurrence within the site. If there were known records as indicated by a VBA record, the species was included in the 'Occurrence of Likelihood' Table.

4.1.2 Occurrence likelihood of Threatened Flora and Fauna

Table 4 provides the likelihood of occurrence assessment for all rare and threatened flora and fauna listed in the VBA (as at 24 February 2023) previously recorded within 5km of the study area.

Table 4. Potentially Occurring Rare and Threatened Flora and Fauna within 5km

Conservation Status						
	EPBC Act				FFG Act	
	EX: Extinct CR: Critically endangered EN: Endangered VU: Vulnerable				x: Presumed Extinct in Victoria cr: Critically endangered in Victoria en: Endangered in Victoria vu: Vulnerable in Victoria	
Cons. status	Scientific name	Common name	Last Record	No. recs	Likelihood occurrence	Likelihood Reasoning
	Fauna					
en	Accipiter novaehollandiae	Grey Goshawk	1977	1	Low	Some habitat present onsite but not within primary range of species. Single, older record.
CR cr	Anthochaera phrygia	Regent Honeyeater	1992	7	Moderate	Habitat present onsite. Some local records.
VU	Aphelocephala leucopsis	Southern Whiteface	1992	7	Low-moderate	Some local records but limited habitat present onsite.
vu	Biziura lobata	Musk Duck	1988	4	Low-moderate	Onsite habitat is restricted to deeper parts of the creek bordering the property and the farm dams.
cr	Burhinus grallarius	Bush Stone-curlew	2013	18	Moderate	Little habitat onsite although there are quite a few local records.
EN	Callocephalon fimbriatum	Gang-gang Cockatoo	2006	12	Moderate	Habitat present. Some local records.
VU	Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	2020	51	High	Habitat present, and numerous local records.
EN en	Crinia sloanei	Sloane's Froglet	1992	1	Low	Some habitat present but few local records.
en	Egretta garzetta	Little Egret	1979	2	Low-moderate	Some habitat present although few local records.
CR vu	Galaxias rostratus	Flat-headed Galaxias	1990	2	Low	May make occasional use of the waterway at the edge of the study site.
VU vu	Grantiella picta	Painted Honeyeater	2019	3	Low-moderate.	Some habitat present onsite. Although few local records.
vu	Hieraaetus morphnoides	Little Eagle	1981	16	Moderate	Some habitat present for perching and possibly roosting. Some local records.
VU vu	Hirundapus caudacutus	White-throated Needletail	2020	10	Low - moderate	As this is a largely aerial species the species may forage above the site. Some local records.
CR cr	Lathamus discolor	Swift Parrot	1998	10	Moderate	There is some foraging and roosting habitat present onsite, some local records.
vu	Melanodryas cucullata	Hooded Robin	2003	11	Moderate	There is some habitat present onsite, some local records.
en	Morelia spilota metcalfei	Carpet Python	1997	1	Low	Limited suitable habitat onsite. Only a single local record.
VU	Neophema chrysostoma	Blue-winged Parrot	1979	2	Low-moderate	Although there is suitable habitat present, there are low numbers of recent records.
vu	Neophema pulchella	Turquoise Parrot	2018	6	Moderate	There is some habitat present onsite, some local records.

Cons. status	Scientific name	Common name	Last Record	No. recs	Likelihood occurrence	Likelihood Reasoning
cr	Ninox connivens connivens	Barking Owl	1979	1	Low	Little suitable habitat onsite and only a single, older record.
vu	Ninox strenua	Powerful Owl	1978	1	Low-moderate	Some habitat onsite but only a single, older record.
vu	Ornithorhynchus anatinus	Platypus	1991	1	Moderate	Onsite habitat is restricted to deeper parts of the creek bordering the property.
vu	Petaurus norfolcensis	Squirrel Glider	2007	8	Moderate	Some habitat present onsite. Some local records.
vu	Phascogale tapoatafa	Brush-tailed Phascogale	2008	267	High	Although there are not consistent tree cover across the site, the high numbers of local records suggest this species may utilise the study site.
vu	Pogona barbata	Bearded Dragon	2001	1	Low	Little suitable habitat onsite and only a single, record.
vu	Pomatostomus temporalis temporalis	Grey-crowned Babbler	2013	13	Moderate	Some habitat present onsite. Some local records.
en	Pseudophryne bibronii	Brown Toadlet	1992	1	Moderate	Some habitat present onsite. Some local records.
en	Pyrrholaemus sagittatus	Speckled Warbler	2019	8	Moderate	Some habitat present onsite. Some local records.
vu	Stagonopleura guttata	Diamond Firetail	1992	19	Moderate	Some habitat present onsite. Some local records.
en	Stictonetta naevosa	Freckled Duck	1980	1	Low	Little suitable habitat onsite and only a single, older record.
en	Varanus varius	Lace Monitor	2015	4	Low-moderate	Limited suitable habitat onsite. Only a few local records.
	Flora					
cr	Dianella tarda	Late-flower Flax-lily	2020	4	Moderate	Suitable habitat, some recent, local records
en	Acacia flexifolia	Bent-leaf Wattle	1994	2	Low-moderate	Little suitable habitat onsite, some local records from Reef Hills State Park
vu	Acacia lanigera var. lanigera	Woolly Wattle	2001	2	Low-moderate	Little suitable habitat onsite, some local records from Reef Hills State Park
en	Cardamine papillata	Forest Bitter-cress	1994	3	Low-moderate	Little suitable habitat onsite, some local records from Reef Hills State Park
en	Diuris punctata	Purple Diuris	2008	12	High	Suitable habitat onsite and many local records, some of which are within 100m of the site.
en	Eucalyptus sideroxylon subsp. sideroxylon	Mugga Ironbark	1997	1	Low	Little suitable habitat onsite, single local record is located in the Reef Hills State Park
VU vu	Glycine latrobeana	Clover Glycine	2002	2	Low - moderate	Suitable habitat though minimal local records, both located in Reef Hils State Park.
en	Goodenia macbarronii	Narrow Goodenia	1988	1	Low	Some suitable habitat onsite as mostly heavier soils. Single local record in Reef Hills State Park

Occurrence likelihood of Threatened Fauna

Thirty species of terrestrial fauna listed as threatened under either the EPBC Act or the FFG Act have been recorded within 5km of the study site.

Ten of these are listed under the EPBC Act and of these, four species: the Regent Honeyeater; Gang-gang Cockatoo; Brown Treecreeper and Swift Parrot are considered to have a high or moderate likelihood of occurring at the site while the remaining six EPBC-listed fauna species are considered to have either a low or low-moderate likelihood of occurring at the site. The Regent Honeyeater, Gang Gang Cockatoo; Brown Treecreeper (south-eastern) and Swift Parrot are considered in further detail below.

In addition to the EPBC-listed species, of the 20 fauna species listed under the FFG Act, they are considered to have the following 'likelihood of occurrence':

- High, one species: Brush-tailed Phascogale
- Moderate, ten species: Bush-stone Curlew, Little Eagle, Hooded Robin, Turquoise Parrot, Platypus, Squirrel Glider, Grey-crowned Babbler, Brown Toadlet, Speckled Warbler and Diamond Firetail
- Low-Moderate, four species: Musk Duck, Little Egret, Powerful Owl and Lace Monitor
- Low, five species: Grey Goshawk, Carpet Python, Barking Owl, Bearded Dragon and Freckled Duck

Further information for the Brush-tailed Phascogale is provided below.

Additionally, the site provides habitat for a range of other fauna and it should be noted that as all native wildlife is protected in Victoria, under the *Wildlife Act*, 1975 it is an offence to kill, take, control or harm wildlife and on this basis, measures to meet the obligations of the Wildlife Act should be undertaken for these species prior to construction.

Consideration of threatened species that have a high likelihood of occurrence at the study site

Regent Honeyeater

Information summarised from the Conservation Advice for *Anthochaera phrygia* Regent Honeyeater (DEECA 2023):

The Regent honeyeater is endemic to mainland south-eastern Australia. It has a patchy distribution which extends from south-east Queensland, through New South Wales (NSW) and the Australian Capital Territory (ACT), to central Victoria. Records are widely distributed across its range, but it is only found regularly at a few localities in NSW and Victoria where most of the sightings have been recorded. There are four known key breeding areas: three in NSW and one in Victoria (Garnett et al., 2011; Higgins et al., 2001; Ingwersen et al., 2013; Webster and Menkhorst, 1992).

The species mostly inhabits inland slopes of the Great Dividing Range, in areas of low to moderate relief with moist, fertile soils. It is most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation such as sheoak (*Casuarina* spp) where it feeds on needle-leaved mistletoe and sometimes breeds (Franklin et al., 1989; Higgins et al., 2001; Oliver et al., 1998; Webster and Menkhorst, 1992). It also uses a range of other habitats including remnant patches in farmland and urban areas, roadside reserves and travelling stock routes (Franklin et al., 1989; Higgins et al., 2001; Oliver and Lollback, 2010). The Regent honeyeater's diet primarily consists of nectar, but also includes invertebrates (mostly insects) and their exudates (e.g. lerps and honeydew), and occasionally fruit. The species' movement

patterns are thought to be governed by the flowering of select eucalypt species. It is nomadic and partly migratory, with some predictable seasonal movements observed. The species is highly mobile and capable of travelling large distances, however the regularity and extent of long-distance movements are unknown (Higgins et al., 2001; Ingwersen
et al., 2013; Oliver and Lollback, 2010; Webster and Menkhorst, 1992). Aggregations historically occurred at nectar sources, mostly during autumn and winter (Franklin et al., 1989; Webster and Menkhorst, 1992), but these events are now rare. The species roosts communally in small groups or large flocks, in trees with dense foliage. Foraging trees are rarely used as roosting sites (Higgins et al., 2001).

While this species has been sighted in the region and may occasionally forage and possibly nest within larger canopy trees, especially those that are present around the edges of the property, as the proposed development will only involve the physical removal of one Large Tree located centrally within the site, it is unlikely that it will have a significant impact on this species.

Gang Gang Cockatoo

Gang-gang Cockatoos pair for life. They nest in deep hollows in trees and pairs will usually return to the same tree every year. They begin breeding at four years old and breed between October and January. Females lay up to three eggs and both parents incubate and rear the young. Gang-gangs are social birds and several pairs will often nest close together. The young often congregate while the parents are out foraging for food. Gang-gang Cockatoos migrate seasonally, spending winter in drier lowland areas, such as open eucalypt forests and woodlands, moving to higher areas in summer, generally tall mountain forests and woodlands. They are sometimes also seen in urban areas in the winter. They feed primarily on seeds, preferably of eucalypts and wattles, but will also eat insects, fruit and berries (Museums Victoria 2022).

While there are many hollow-bearing trees located within the study site, the proposed development will only require the physical removal of one Large Tree. Therefore the impact upon this species is expected to be very small.

Brown Treecreeper (south-eastern)

Information summarised from *Climacteris picumnus victoriae* (brown treecreeper (south-eastern)) Conservation Advice *(DCCEEW 2023):*

The Brown Treecreeper (south-eastern) mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, with an open grassy understorey, sometimes with one or more shrub species. (Loyn et al. 2002, 2019). The subspecies is not usually found in woodlands with a dense shrub layer, and it is absent from heavily degraded woodlands and steep rocky hills (Noske 1982).

The subspecies forages both on the ground and in mature live and dead trees (Bounds 2019), feeding on a variety of invertebrate prey (Higgins & Peter 2002). Nectar from mugga ironbark (Eucalyptus sideroxylon) and paperbarks, and sap from unidentified eucalypt species are also eaten, along with lizards (Higgins & Peter 2002).

Terrestrial and arboreal in about equal proportions, they are described as active, noisy and conspicuous while foraging on trunks and branches of trees and amongst fallen timber. They are described as sedentary, with birds occupying permanent territories.

Brown treecreepers (south-eastern) nest and roost in naturally occurring tree cavities in a variety of eucalypt species (Noske 1982b). Hollows in standing dead or live trees and tree stumps are essential for nesting. Typically, birds breed cooperatively with the breeding group consisting of a breeding pair and a few subordinate males. Breeding takes place from July to February across its range. Females typically lay 2–3 eggs (Higgins & Peter 2002). Pairs often have two broods during each breeding season. Immature females disperse (Cooper & Walters 2002b) but are reluctant to cross large tracts of open land (Cooper & Walters 2002a; Doerr & Doerr 2007).

There are numerous records for the Brown Treecreeper locally and it is highly likely that they occur within the site. It is noted that their most important habitat is associated with rough-barked trees for foraging and trees with hollows for roosting nesting in combination with open spaces in which to also forage. As the proposed development will not disturb the majority of the canopy trees within or around the edges of the site, it is unlikely that it will have a significant impact on this species.

Swift Parrot

The Swift Parrot is a non-breeding winter migrant to the mainland from Tasmania. It has a restricted breeding area in the east of Tasmania, arriving on the mainland in autumn to spend the winter period in foraging groups inhabiting forests and woodlands in south-east Australia.

In Victoria, the over-wintering habitat of the Swift Parrot is eucalypt forests and woodlands consisting primarily of the winter-flowering Grey Box, Red Ironbark (*Eucalyptus tricarpa*), Mugga Ironbark *(Eucalyptus sideroxylon)* (far north-east Victoria), Yellow Gum (*Eucalyptus leucoxylon*) and White Box (*Eucalyptus albens*) (Brown 1989; Emison et al. 1987, C. Tzaros pers. comm.). They feed in gregarious flocks on nectar where eucalypts are in blossom or where lerps/psyllids are common. Blakers et al. (1985) describes Swift Parrots feeding on lerp psyllids amongst Red Gum (*Eucalyptus camaldulensis*) as well as the aforementioned species.

Birds appear most years in north-east Victoria along the Hume Highway corridor, associated with Grey Box and Blakely's Red Gum (*Eucalyptus blakleyi*) in April/May then dispersing into box-ironbark habitats. In some years, Swift Parrots remain throughout winter whilst, in other years, their numbers are high in autumn, low in winter and high again in early spring (I. Davidson pers. comm.), most probably coinciding with more northerly movements into the western slopes of New South Wales (DSE 2003).

This species has been sighted within the region of the study site and is known to forage on species that are present especially around the edges of the property. It is known to visit north-eastern Victoria whilst on the mainland in autumn and winter each year and may sometimes utilise the study site for feeding. It is less likely that it would seek to roost within the site, possibly around the edges. On the basis that the proposed development is unlikely to disturb larger canopy trees, especially those around the edges of the site, it is unlikely that it will have a significant impact on this species.

Brush-tailed Phascogale

The Brush-tailed Phascogale is a shy, cryptic species that occurs in low densities and forages over a very large home range (female 20–70 ha, males 100 ha) which means only small populations can exist in quite large areas of habitat. It inhabits open dry foothill forest with little ground cover, typically associated with box, ironbark and stringybark eucalyptus.

In Victoria, the Brush-tailed Phascogale now has a fragmented distribution, to the east and north-east of Melbourne, central Victoria around Ballarat, Heathcote and Bendigo; north-eastern Victoria from Broadford to Wodonga; the Brisbane Ranges north-east of Geelong; and far western Victoria from Mt Eccles to Apsley.

Brush-tailed Phascogales are primarily arboreal, and forage for large insects, spiders and centipedes, on the trunks and major branches of rough-barked eucalypt trees, fallen logs and amongst litter on the forest floor. Eucalypt nectar may be taken when ironbarks or boxes are flowering. Hollows in dead or live trees provide preferred den sites, although nests constructed under flaking bark, or in tree stumps are sometimes used but provide a less secure substitute against predators in areas where hollows are scarce. Mating occurs in late autumn - early winter and males die after the breeding season at an age of about one year old (SWIFFT 2023).

There are many Brush-tailed Phascogale sightings locally, with the majority of these concentrated within Reef Hills State Park. This is not to say that they are not located onsite, particularly linked with larger Canopy Trees which are present in denser numbers around the perimeter of the property. As the proposed development will involve the removal of only one Large Tree - a dead stag - it is unlikely that it will significantly impact this species.

Occurrence likelihood of Threatened Flora

The VBA shows that there is one flora species listed under the EPBC Act listed within 5km of the study site, this being Clover Glycine. However this species is considered to have a low – moderate likelihood of occurring at the study site largely due to the fact that while there is some habitat present, it is compromised by the grazing history of the property, supported by the fact that the local records within 5km are located within Reef Hills State Park, an area that has different geology and has not sustained the same level of disturbance.

The remaining seven threatened flora species listed within 5km are FFG-listed. They are considered to have the following 'likelihood of occurrence' at the site:

- High - One species: Purple Diuris
- Moderate - One species: Late-flower Flax-lily
- Low – moderate – Three species: Bent-leaf Wattle, Wooly Wattle and Forest Bitter-cress
- Low - Two species: Mugga and Narrow Goodenia.

During the site visit each of these species, especially those with a moderate or high likelihood of occurrence at the site were given a particular focus during the survey, especially within and close to the proposed impact areas. In each case, there were no individuals of any of these species identified during the survey.

On the basis of the onsite survey it is unlikely that the development will impact any flora species listed under the FFG Act or the EPBC Act.

4.2 Wildlife Act 1975 and Wildlife Regulations 2013

The Wildlife Act 1975 provides for the protection and conservation of native wildlife within Victoria. It also provides the basis for the majority of wildlife permit/licensing requirements within the state. Under the Act a person must not hunt, take or destroy endangered, notable or protected wildlife; this includes all native vertebrate animals, all kinds of deer, non-indigenous quail, pheasants, and partridges, and all terrestrial invertebrate animals listed under the Flora and Fauna Guarantee Act 1988.

The Wildlife Regulations 2013 provide further detail relating to the act, including prohibition of damage, disturbance or removal of any wildlife habitat (S42), although this does not apply if the person is authorised to do so under any other Act such as the Planning and Environment Act 1987.

The planned works should take note of the Wildlife Act and should take measures to minimise the potential for any wildlife to be killed, injured or displaced during any permitted vegetation removal or construction activity.

4.3 Flora and Fauna Guarantee Act (1988)

The *Flora and Fauna Guarantee* (FFG) *Act* is the primary Victorian biodiversity legislation governing management of publicly owned land and water bodies. The FFG Act identifies and protects threatened native plants, animals and ecological communities in Victoria and identifies threatening processes that impact on biodiversity.

Relevance to the development proposal

FFG-listed fauna:

- In addition to species that are listed under both the EPBC Act and the FFG Act, there is one fauna species listed only under the FFG Act that was identified as having a high likelihood of occurring at the site, the Brush-tailed Phascogale.

- Additionally there are ten FFG-listed fauna species with a moderate likelihood of occurring at the site. These include: the Bush-stone Curlew, Little Eagle, Hooded Robin, Turquoise Parrot, Platypus, Squirrel Glider, Grey-crowned Babbler, Brown Toadlet, Speckled Warbler and Diamond Firetail.

In the case of the Brush-tailed Phascogale, as mentioned earlier, considering the majority of the local records are in the vicinity of the Reef Hills State Park and the fact that this species relies on trees for foraging and hollows. In addition to the removal of groundstorey vegetation, the proposed development will involve only the physical removal of one Large Tree – a dead stag - it is determined that the proposed development is unlikely to have a significant impact on this species.

Similarly for most of the species that have a moderate likelihood of occurring at the study site, they are also most dependent on larger trees or shrubs for their habitat requirements. Therefore as it has been noted for other species with similar requirements the proposed development be unlikely to have a significant impact on these species.

However, the Bush Stone Curlew, Platypus and Brown Toadlet, are three species which need to be considered separately as they do not share the same habitat requirements. In regard to the Platypus, there will be no impact on its primary waterway habitat along the western boundary of the property.

However for the Bush Stone Curlew and the Brown Toadlet, the proposed development will impact areas of grassy and wetland habitat that include features which may support the presence of each of these species at the site.

FFG-listed flora:

There is one flora species listed under the FFG Act that is identified to have a high likelihood of occurring at the site, the Purple Diuris. Additionally, there is one species with a moderate likelihood of occurring at the site, Late-flower Flax-lily. While there were no individuals of these species identified in the vicinity of the proposed development site, the assessment was undertaken at a time when both species had passed their peak flowering time. Nevertheless, in the case of the Late-flower Flax-lily no fruiting stalks nor leaves were identified.

FFG-listed communities:

There is one FFG-listed community that the field assessment suggests is likely to be present at the study site, the *Victorian Temperate Woodland Bird Community*. This community has been defined as a suite of bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began.

Relevance of the FFG Act to the proposed development:

Under the FFG Act, public authorities must give proper consideration to the Act's objectives, so far as is consistent with the proper exercising of their functions. However, the FFG Act does not generally apply to private land unless the proposal impacts on critical habitat for a species or listed community. This site has not been designated as a location providing critical habitat.

4.4 Environment Protection and Biodiversity Conservation Act (1999)

The Environment Protection and Biodiversity Conservation Act (EPBC Act) is Commonwealth legislation that identifies and protects 'Matters of National environmental significance' including places of National or World Heritage, Wetlands of International Importance, listed ecological communities and the Commonwealth Marine Environment.

Potential *Matters of National Environmental Significance* (MNES) were attained from a database query within 5km of the subject site using the EPBC 'Protected Matters Search Tool'.

Threatened flora and fauna which have records within 5 kilometres of the site were considered for their likelihood to utilise habitat within the site. As a result, there were four fauna species the Regent Honeyeater; Gang-gang Cockatoo; Brown Treecreeper and Swift Parrot and no flora species, identified as having either a high or moderate likelihood of occurring at the site.

Each of these species has been considered in more detail earlier in Section 4.1.

In the case of each of these four bird species there will be only one Large Tree physically removed as well as a few shrubs. This is considered to be a very small impact to the habitat requirements for these species. All other trees on the property will be retained.

EPBC-listed communities:

Based on the 5 km search of the Protected Matters Search Tool, there are two EPBC-listed communities that are considered to be likely to occur at the site. These being *White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Critically Endangered) and *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* (Endangered).

Based on the field assessment, Table 5 includes an assessment of onsite against the requirements for each of the 'likely' listed communities.

In order to be protected as a matter of national environmental significance areas of the ecological community must meet both:

- the key diagnostic characteristics AND
- at least the minimum condition thresholds.

Table 5. Assessment of 'likely' EPBC-listed ecological communities

Community Name	Key diagnostic characteristics or condition thresholds	Assessment
White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland	**Key diagnostic characteristics:** 1. The ecological community occurs in the following bioregions (IBRA, DoE 2012): Brigalow Belt South, Murray Darling Depression, Nandewar, New England Tableland, NSW North Coast, NSW South Western Slopes, Riverina, South Eastern Queensland, South East Corner, South East Coastal Plain, South Eastern Highlands, Southern Volcanic Plain, Sydney Basin and Victorian Midlands (TSSC 2006; DECCW 2011; DCCEEW 2022). 2. It has, or previously had, an overstorey dominated or co-dominated, by:	1. The study site is located in the Riverina Bioregion. 2. Yellow Box is present at the site but there was only one observed remaining on the property. On this basis it would not be described as dominating or co-dominating the canopy. 3. The groundlayer is predominantly native. 4. Tussock grasses dominate although not the species listed. However some of the listed species are present.

Community Name	Key diagnostic characteristics or condition thresholds	Assessment
	• Eucalyptus albens (white box) and/or E. melliodora (yellow box) and/or E. blakelyi (Blakely's red gum) (applicable across the entire range of the ecological community); or, • in the Nandewar bioregion (IBRA, DoE 2012), any of the above three species and/or E. microcarpa (western grey box) and/or E. moluccana (grey box, coastal grey box); 3. It has a predominantly native ground layer, i.e. at least 50% of the perennial vegetation cover in the ground layer is made up of native species. 4. Tussock grasses are conspicuous in the ground layer (except in some situations, such as under dense groves of shrubs or regenerating trees), usually with several native species from some the following genera: Austrostipa, Bothriochloa, Chloris, Cymbopogon, Dichanthium, Microlaena, Poa, Themeda, Rytidosperma or Sorghum. 5. Amongst the grass tussocks and sometimes in swathes, a range of broad-leaved forbs and petaloid monocots (e.g. lilies sens. lat.) may be a major component of the plant diversity. 6. While shrubs may be dominant locally within areas of the ecological community, areas of native vegetation with a more continuous shrub layer, in which the average shrub cover of the whole patch is greater than 30%, is considered to be a shrubby woodland and so is not part of the listed ecological community. In assessing this, the effects of disturbance need to be considered, for example where heavy grazing may result in high densities of shrubs during a recovery phase (see section 2.2)	5. A range of broad-leaved forbs and petaloid monocots are present. 6. Shrubs were not present in high cover, rather they were almost absent. ***The vegetation does not meet all of the Key Diagnostic Criteria as the site is not dominated (nor seemingly in the past) dominated by a characteristic overstorey species.***
	Condition Thresholds: **Class B - Good quality understorey present. Characteristic trees may be absent.** • 0.1 ha (1,000 m 2) or larger • The ground layer is predominantly native (at least 50%) and • The understorey contains at least 12 native, non-grass species (such as forbs, shrubs, ferns and sedges) and • At least one of the understorey species should be a species recognised as 'important' (e.g. grazing-sensitive, regionally significant, listed threatened or uncommon species) (see 'Important' column in plant species list at Appendix A – Species lists)	The vegetation present within the proposed development area ***meets the Condition Thresholds associated with Class B as detailed on page 19 and 20 of the Conservation Advice for this ecological community and presented in the previous column.***
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	**Key diagnostic characteristics:** 1. The ecological community occurs on low slopes and plains from central NSW, through northern and central Victoria into South Australia. Disjunct occurrences are known from near Melbourne and in the Flinders-Lofty Block Bioregion of South Australia. 2. The vegetation structure of the ecological community is typically a woodland to open forest. 3. The tree canopy is dominated (≥ 50% canopy crown cover) by Eucalyptus macrocarpa (Grey Box). Other tree species may be present in the canopy and, in certain circumstances, may be co-dominant with Grey Box but are never dominant on their own. These associated species are listed in Appendix A.	1. The study site is located within the range provided for this community. 2. The vegetation structure would be described as woodland. 3. Grey Box is present at the site but it is not high in cover. Rather the dominant Eucalypt species is River Red Gum. On this basis it would not be described as dominating or co-dominating the canopy. 4. The mid layer is largely absent and while there has been significant disturbance

Community Name	Key diagnostic characteristics or condition thresholds	Assessment
	4. The mid layer comprises shrubs of variable composition and cover, from absent to moderately dense. The mid layer usually has a crown cover of less than 30% with local patches up to 40% crown cover. 5. The ground layer also is highly variable in development and composition, ranging from almost absent to mostly grassy to forb-rich. Ground layer flora commonly present include one or more of the graminoid genera: Austrodanthonia, Austrostipa, Elymus, Enteropogon, Dianella and Lomandra; and one or more of the chenopod genera: Atriplex, Chenopodium, Einadia, Enchylaena, Maireana, Salsola and Sclerolaena. 6. Derived grasslands are a special state of the ecological community, whereby the canopy and mid layers have been mostly removed to <10% crown cover but the native ground layer remains largely intact, with 50% or more of the total vegetation cover being native.	to the site, it definitely is less than 30% in crown cover. 5. The ground layer is dominated by moisture-associated grasses, sedges, rushes and forbs. Some of the listed graminoids are present but there are no chenopod species. 6. The study site has been disturbed and significant clearing of mid and canopy vegetation has occurred. This may result in <10% crown cover. The native ground layer remains with more than 50% cover. ***The vegetation does not meet all of the Key Diagnostic Criteria as the site is not dominated (nor seemingly in the past) dominated by Grey Box, nor does it contain any chenopod vegetation.***
	Condition Thresholds: **1. General Condition Thresholds** 1a. The minimum patch size is 0.5 hectare; AND 1b. The canopy layer contains Grey Box (E. microcarpa) as the dominant or co-dominant tree species; AND 1c. The vegetative cover of non-grass weed species in the ground layer is less than 30% at any time of the year. **5. Relevant Additional Condition Thresholds – Derived Grasslands** 5a. Woodland density does not meet criteria 3a or 4a, or is a derived grassland with clear evidence that the site formerly was a woodland with a tree canopy dominated or co-dominated by E. microcarpa; AND 5b. At least 50% of the vegetative cover in the ground layer is made up of perennial native species at any time of the year; AND 5c. 12 or more native species are present in the ground layer at any time of the year.	The vegetation present within the proposed development area ***does not meet the General Condition Thresholds, nor the relevant Additional Conditional Thresholds as detailed on page 9 of the Listing Advice for this ecological community and presented in the previous column, mainly as the canopy is not dominated by Grey Box.***

As documented in Table 5, above it has been determined that the vegetation onsite does not meet the Key Diagnostic Conditions for the two most likely EPBC-listed ecological communities. Therefore it is concluded that no EPBC-listed communities will be impacted by the proposed development area.

On this basis it is considered that the planned works do not trigger permit requirements relevant to the EPBC Act.

5.1 Vegetation management during the construction phase

The following items are recommended to minimise the impacts of the project and to protect retained vegetation and local ecosystems.

Construction measures

The following recommendations should be implemented during the planned works in order to minimise potential impacts to nearby trees, native understorey and local waterways:

- Native vegetation removal activities and ground disturbance should be timed to avoid dominant flora and fauna breeding times in Spring. Additionally, as the site is known to include wet, boggy ground and is prone to overland flooding, to also reduce the risk of boggy conditions and the movement of soil or seed from the site from rain events any ground disturbance activity should aim to be timed for drier times of the year such as Summer and early Autumn.
- Silt barriers are to be installed downslope of the construction area, especially in the lead up to any forecasted rain.
- No soil is to be stockpiled on site unless within the permitted work zone and appropriately contained with silt prevention fencing.
- No activity is to be undertaken beyond the permitted work zone including but not limited to vehicle and equipment, storage or storage of any other materials or items.

Designated site access for construction machinery and site storage is to be planned prior to construction works or vegetation removal.

Suitably located 'site compounds' or storage areas are to be pre-determined prior to works commencing. These should be located within the permitted work zone. Site compounds are to accommodate all works requirements including though not limited to:

- Parking and/or storage of vehicles, machinery and equipment
- Containers or designated bins for all forms of waste and,

Designated re-fuelling areas, as per AS 1940:2017 for The storage and handling of flammable and combustible liquids, (Australian Standards 2017).

Tree and Vegetation Protection Zones

Trees and native vegetation that will remain and are close to the permitted work zone are vulnerable to inadvertent impacts including:

- Works within the Tree Protection Zone (TPZ) of trees to be retained
- Inappropriate machinery access or stockpiling that has an impact on vegetation or a designated TPZ
- Damage to tree trunks from machinery such as excavators and bobcats
- Spills of fuels or chemicals within areas of vegetation or near waterways or wetlands. This includes stormwater drains

Prior to any approved construction works, Tree and Vegetation Protection Zones should be to be established in the following manner:

- Retention of trees and other native vegetation is to be secured by the installation of high visibility vegetation protection fencing set at the edge of the permitted work zone. This may include fluorescent para-webbing, flags on rope or temporary fencing. These areas should be identified with clear signage that states 'No Go Zone', for clear communication.
- Tree and vegetation protection zones should include the Tree Protection Zones of any trees that are to be retained to avoid any machinery movement, storage of chemicals or other activities potentially impacting these trees.
- No construction activity is to be undertaken beyond the designated construction zone including but not limited to excavation, vehicle and equipment, storage, and stockpiling.
- Work areas should include appropriate signage of protection zones that provide clear direction for construction personnel.

Access roadways

Construction of access roads should aim to avoid soil disturbance as much as is possible, aiming for this infrastructure to be built at or above current surface level where possible. Porous surface material should also be utilised and compaction kept to a minimum.

Fauna Monitoring, Salvage and Relocation

Mature trees provide nesting resources for numerous species of bird and arboreal mammals that are susceptible to injury and displacement during tree removal works. Prior to the removal of the trees and vegetation, a suitably qualified zoologist should be engaged to conduct a pre-clearance survey within the proposed impact areas. This may then be followed up by the implementation of an appropriate salvage and translocation plan.

6. Conclusion and Recommendations

The proposed removal or impact to native vegetation as defined in the *Native Vegetation Guidelines* (DELWP 2017a) amounts to the loss of 6.153 hectares of Plains Woodland / Herb-rich Gilgai Wetland Mosaic and Plains Woodland vegetation and three Large Trees.

The remaining vegetation is either avoided or subject to minimal impacts.

This assessment has considered local, state and federal regulations relevant to the proposed loss of native vegetation. A summary of implications is provided below.

6.1 Native Vegetation Offset Requirements

The loss of native vegetation associated with the proposed development generates the following offset requirement:

Offset Type	General Offset
Offset Amount	3.862 general habitat units
Minimum Strategic Biodiversity Value	0.721
Large Trees	3
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Benalla Rural City Council

6.2 Vegetation protection, removal and management

Vegetation and site management impacts will be managed during the construction phase and beyond.

Construction will be undertaken in accordance with the recommendations provided in Section 5.1.

Tree and vegetation protection zones will be established and managed as per the information provided in Section 5.1.

Prior to the removal of the trees and vegetation, a suitably qualified zoologist should be engaged to conduct a pre-clearance survey within the proposed impact areas. This may then be followed up by the implementation of an appropriate salvage and translocation plan.

6.3 Implications of the EPBC Act

Based on site condition, habitat assessments and analysis of local flora and fauna databases, the planned works are unlikely to trigger permit requirements relevant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). No EPBC listed flora, fauna or ecological communities were found during the site assessment.

EPBC-listed threatened flora and fauna which have records within 5 kilometres of the site were considered for their likelihood to utilise habitat within the site. As a result, there were four fauna species the Regent Honeyeater; Gang-gang Cockatoo; Brown Treecreeper and Swift Parrot and no flora species, identified as having either a high or moderate likelihood of occurring at the site. However, in each case it was determined that it is unlikely that the proposed development will significantly impact these species (Section 4).

In the case of each of these four bird species there will be only one Large Tree physically removed as well as a few shrubs. This is considered to be a very small impact to the habitat requirements for these species. All other trees on the property will be retained.

Based on the 5 km search of the Protected Matters Search Tool, there were two EPBC-listed communities considered 'likely' to occur at the site. These being *White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Critically Endangered) and *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* (Endangered). Subsequent comparison of the features of remnant native vegetation onsite with the Key Diagnostic Characteristics and Condition Thresholds for each community showed that the onsite vegetation did not align with the thresholds for either of these communities, namely as the remnant vegetation did not include characteristic eucalypts as dominant or co-dominant canopy species.

On this basis it is considered that the planned works do not trigger any requirements associated with the EPBC Act.

6.4 Implications of the FFG Act

There were no FFG-listed flora or fauna species identified within the site during the site assessment.

Threatened flora and fauna which have records within 5 kilometres of the site were considered for their likelihood to utilise habitat within the site (Section 4). Of these:

- there is one fauna species listed only under the FFG Act that was identified as having a high likelihood of occurring at the site, the Brush-tailed Phascogale; and
- there are ten FFG-listed fauna species with a moderate likelihood of occurring at the site: the Bush-stone Curlew, Little Eagle, Hooded Robin, Turquoise Parrot, Platypus, Squirrel Glider, Grey-crowned Babbler, Brown Toadlet, Speckled Warbler and Diamond Firetail.

In the case of most of the above listed species it was determined that due to their primary habitat requirements involving the presence of larger trees it is unlikely that the proposed development will have a significant impact on these species.

However, the Bush Stone Curlew, Platypus and Brown Toadlet, do not share the same habitat requirements. In regard to the Platypus, there will be no impact on its primary waterway habitat along the western boundary of the property.

However for the Bush Stone Curlew and the Brown Toadlet, the proposed development will impact areas of grassy and wetland habitat that include features which may support the presence of each of these species at the site.

There is one flora species listed under the FFG Act that is identified to have a high likelihood of occurring at the site, the Purple Diuris. Additionally, there is one species with a moderate likelihood of occurring at the site, Late-flower Flax-lily. While there were no individuals of these species identified in the vicinity of the proposed development site, the assessment was undertaken at a time when both species had passed their peak flowering time. Nevertheless, in the case of the Late-flower Flax-lily no fruiting stalks nor leaves were identified.

There is one FFG-listed community that the field assessment suggests is likely to be present at the study site, the *Victorian Temperate Woodland Bird Community*. This community has been defined as a suite of bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began.

Under the FFG Act, public authorities must give proper consideration to the Act's objectives, so far as is consistent with the proper exercising of their functions. However, the FFG Act does not generally apply to private land unless the proposal impacts on critical habitat for a species or listed community. This site has not been designated as a location providing critical habitat.

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Appendix 1. Flora Observations

Flora Species Status
* Introduced species
Victorian species occurring outside their natural range

Origin, Cons. Status	Scientific Name	Common Name
*	*Acetosella vulgaris*	Sheep Sorrell
	Amphibromus nervosus	Common Swamp Wallaby-grass
	Amyema spp.	Mistletoe
	Anthosachne scabra s.l.	Common Wheat-grass
*	*Anthoxanthum odoratum*	Sweet Vernal-grass
*	*Arctotheca calendula*	Cape Weed
	Aristida behriana	Brush Wire-grass
	Arthropodium strictum s.l.	Chocolate Lily
	Austrostipa scabra subsp. *falcata*	Rough Spear-grass
*	*Avena fatua*	Wild Oat
*	*Briza maxima*	Large Quaking-grass
*	*Briza minor*	Lesser Quaking-grass
*	*Bromus hordeaceus*	Soft Brome
	Carex inversa	Knob Sedge
	Carex tereticaulis	Poong'ort
	Cheilanthes sieberi subsp. *sieberi*	Narrow Rock-fern
*	*Cirsium vulgare*	Spear Thistle
	Cycnogeton procerum	Water Ribbons
*	*Cyperus eragrostis*	Drain Flat-sedge
	Deyeuxia quadriseta	Reed Bent-grass
	Dianella revoluta s.l.	Black-anther Flax-lily
	Eleocharis acuta	Common Spike-sedge
	Epilobium billardiereanum subsp. *billardierianum*	Smooth Willow-herb
	Eragrostis brownii	Common Love-grass
	Eryngium ovinum	Blue Devil
	Eucalyptus camaldulensis	River Red-gum
	Eucalyptus microcarpa	Grey Box
	Eucalyptus melliodora	Yellow Box
	Gonocarpus tetragynus	Common Raspwort
	Goodenia gracilis	Slender Goodenia
*	*Holcus lanatus*	Yorkshire Fog
*	*Hordeum leporinum*	Barley Grass
	Hypericum gramineum	Small St John's Wort
*	*Hypericum perforatum* subsp. *veronense*	St John's Wort
*	*Hypochaeris radicata*	Flatweed
	Imperata cylindrica	Blady Grass
	Isachne globosa	Swamp Millett

Origin, Cons. Status	Scientific Name	Common Name
	Isolepis cernua var. *cernua*	Nodding Club-sedge
*	*Isolepis hystrix*	Awned Club-sedge
*	*Isolepis levynsiana*	Tiny Flat-sedge
	Isotoma fluviatilis subsp. *australis*	Swamp Isotome
#	*Juncus bufonius*	Toad Rush
	Juncus holoschoenus	Joint-leaf Rush
	Juncus spp.	Rush
	Lachnagrostis filiformis s.l.	Common Blown-grass
*	*Leontodon taraxacoides*	Dandelion
*	*Lolium rigidum*	Wimmera Rye-grass
	Lomandra filiformis	Wattle Mat-rush
*	*Mentha pulegium*	Pennyroyal
	Myriophyllum crispatum	Upright Water-milfoil
	Oxalis perennans	Grassland Wood-sorrel
*	*Panicum* spp	Millet
	Pentapogon quadrifidus var. *quadrifidus*	Five-awned Spear-grass
*	*Phalaris aquatica*	Toowoomba Canary-grass
*	*Romulea rosea*	Onion Grass
	Rumex bidens	Mud Dock
*	*Rumex crispus*	Curled Dock
	Rytidosperma pilosum	Velvet Wallaby-grass
	Schoenus apogon	Common Bog-sedge
	Schoenus tesquorum	Soft Bog-sedge
*	*Sonchus asper* s.l.	Rough Sow-thistle
*	*Sonchus oleraceus*	Common Sow-thistle
*	*Trifolium subterraneum*	Subterranean Clover
	Utricularia dichotoma s.l.	Fairies' Aprons
*	*Vulpia bromoides*	Squirrel-tail Fescue
	Veronica plebeia	Trailing Speedwell

Appendix 2. Native Vegetation Removal Report

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 03/07/2024
Time of issue: 1:21 pm

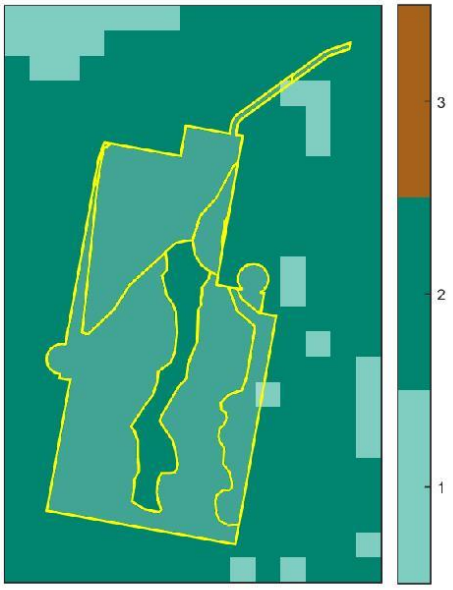
Report ID: CEC_2024_002

Project ID	Impact_1m_Buffer_Baddaginnie_V3

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	6.153 ha
Extent of past removal	0.000 ha
Extent of proposed removal	6.153 ha
No. Large trees proposed to be removed	3
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



Offset requirements if a permit is granted

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

General offset amount[1]	3.862 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Benalla Rural City Council
Minimum strategic biodiversity value score[2]	0.721
Large trees	3 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

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

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

Species habitat units = extent x condition x species landscape factor x 2, where the species landscape factor = 0.5 + (habitat importance score/2)

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
2-A	Patch	vriv0235	Endangered	0	no	0.680	0.102	0.102	0.900		0.099	General
3-A	Patch	vriv0235	Endangered	1	no	0.420	1.653	1.653	0.860		0.968	General
1-A	Patch	vriv0235	Endangered	2	no	0.420	3.579	3.579	0.922		2.167	General
4-C	Patch	vriv0803	Endangered	0	no	0.540	0.552	0.552	0.900		0.424	General
4-A	Patch	vriv0803	Endangered	0	no	0.540	0.037	0.037	0.820		0.028	General
4-B	Patch	vriv0803	Endangered	0	no	0.540	0.211	0.211	0.876		0.160	General
2-B	Patch	vriv0235	Endangered	0	no	0.680	0.006	0.006	0.876		0.006	General
4-D	Patch	vriv0803	Endangered	0	no	0.540	0.013	0.013	0.830		0.010	General

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

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Euroa Guinea-flower	*Hibbertia humifusa subsp. erigens*	505083	Vulnerable	Dispersed	Habitat importance map	0.0035
Mugga	*Eucalyptus sideroxylon subsp. sideroxylon*	504493	Rare	Dispersed	Habitat importance map	0.0023
Western Silver Wattle	*Acacia decora*	500027	Vulnerable	Dispersed	Habitat importance map	0.0019
Narrow Goodenia	*Goodenia macbarronii*	501513	Vulnerable	Dispersed	Habitat importance map	0.0011
Dwarf Cassinia	*Cassinia diminuta*	507664	Rare	Dispersed	Habitat importance map	0.0011
Northern Sandalwood	*Santalum lanceolatum*	503005	Endangered	Dispersed	Habitat importance map	0.0010
Veiled Fringe-sedge	*Fimbristylis velata*	501369	Rare	Dispersed	Habitat importance map	0.0008
Pepper Grass	*Panicum laevinode*	504808	Vulnerable	Dispersed	Habitat importance map	0.0008
Bent-leaf Wattle	*Acacia flexifolia*	500035	Rare	Dispersed	Habitat importance map	0.0008
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0008
Dookie Daisy	*Brachyscome gracilis*	505494	Vulnerable	Dispersed	Habitat importance map	0.0008
Ausfeld's Wattle	*Acacia ausfeldii*	500013	Vulnerable	Dispersed	Habitat importance map	0.0006
Kamarooka Mallee	*Eucalyptus froggattii*	501279	Rare	Dispersed	Habitat importance map	0.0006
Umbrella Grass	*Digitaria divaricatissima var. divaricatissima*	501045	Vulnerable	Dispersed	Habitat importance map	0.0006
Small-leaf Bush-pea	*Pultenaea foliolosa*	502848	Rare	Dispersed	Habitat importance map	0.0005
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0005
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0005
Broom Bitter-pea	*Daviesia genistifolia s.s.*	503813	Rare	Dispersed	Habitat importance map	0.0005
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0004

Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0004
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0004
Long Eryngium	*Eryngium paludosum*	501238	Vulnerable	Dispersed	Habitat importance map	0.0004
Delicate Crane's-bill	*Geranium sp. 6*	505347	Vulnerable	Dispersed	Habitat importance map	0.0004
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0004
Rosemary Grevillea	*Grevillea rosmarinifolia subsp. rosmarinifolia*	504066	Rare	Dispersed	Habitat importance map	0.0003
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0003
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	507229	Endangered	Dispersed	Habitat importance map	0.0003
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0003
Slender Club-sedge	*Isolepis congrua*	501773	Vulnerable	Dispersed	Habitat importance map	0.0003
Fuzzy New Holland Daisy	*Vittadinia cuneata var. morrisii*	505060	Rare	Dispersed	Habitat importance map	0.0003
Squirrel Glider	*Petaurus norfolcensis*	11137	Endangered	Dispersed	Habitat importance map	0.0002
Lewin's Rail	*Lewinia pectoralis pectoralis*	10045	Vulnerable	Dispersed	Habitat importance map	0.0002
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0002
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0002
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0002
Lanky Buttons	*Leptorhynchos elongatus*	501941	Endangered	Dispersed	Habitat importance map	0.0002
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0002
Regent Honeyeater	*Anthochaera phrygia*	10603	Critically endangered	Dispersed	Habitat importance map	0.0001
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0001
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0001
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0001
Small Scurf-pea	*Cullen parvum*	502773	Endangered	Dispersed	Habitat importance map	0.0001

Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0001
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	503104	Rare	Dispersed	Habitat importance map	0.0001
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0001
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0001
Swift Parrot	*Lathamus discolor*	10309	Endangered	Dispersed	Habitat importance map	0.0001
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0001
Speckled Warbler	*Chthonicola sagittatus*	10504	Vulnerable	Dispersed	Habitat importance map	0.0000
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	*Rostratula australis*	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	10498	Vulnerable	Dispersed	Habitat importance map	0.0000
Baillon's Crake	*Porzana pusilla palustris*	10050	Vulnerable	Dispersed	Habitat importance map	0.0000
Hardhead	*Aythya australis*	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	*Anas rhynchotis*	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Silky Umbrella-grass	*Digitaria ammophila*	501041	Vulnerable	Dispersed	Habitat importance map	0.0000
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	504823	Endangered	Dispersed	Habitat importance map	0.0000
Southern Swainson-pea	*Swainsona behriana*	504944	Rare	Dispersed	Habitat importance map	0.0000
Brown Toadlet	*Pseudophryne bibronii*	13117	Endangered	Dispersed	Habitat importance map	0.0000
Square-tailed Kite	*Lophoictinia isura*	10230	Vulnerable	Dispersed	Habitat importance map	0.0000
White-throated Needletail	*Hirundapus caudacutus*	10334	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

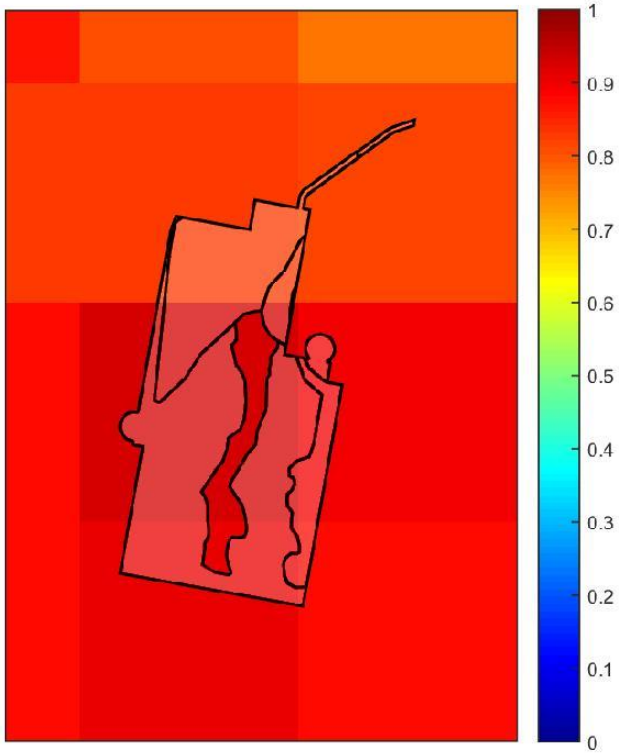
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

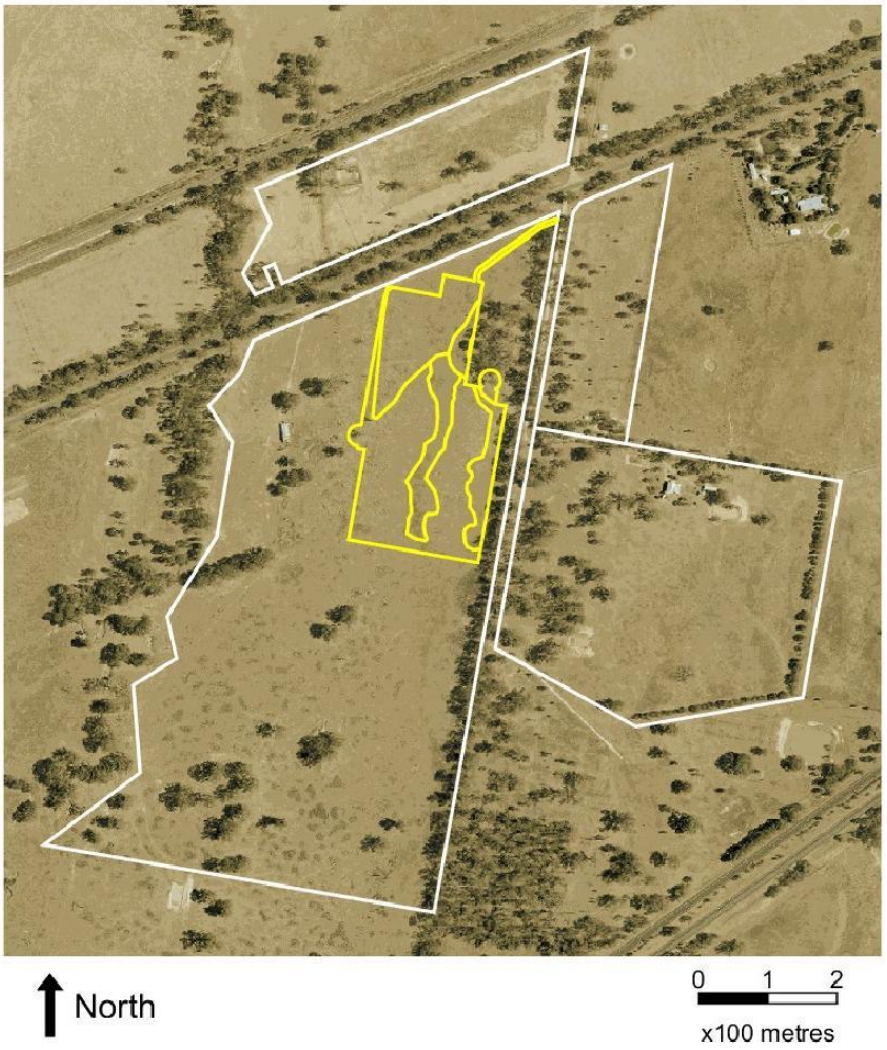
Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

Appendix 3.Available Native Vegetation Credits

The following report lists native vegetation credits available to purchase through the Native Vegetation Credit Register based on the minimum offset requirements for the proposed development.

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: 03/07/2024 08:24 **Report ID: 25157**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)
3.862	0.721	3	CMA Goulburn Broken or LGA Benalla Rural City

Details of available native vegetation credits on 03 July 2024 08:24

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-2355_03	8.795	87	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
VC_CFL-3075_01	9.467	80	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

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

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3747_01	6.571	150	Goulburn Broken	Mansfield 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.

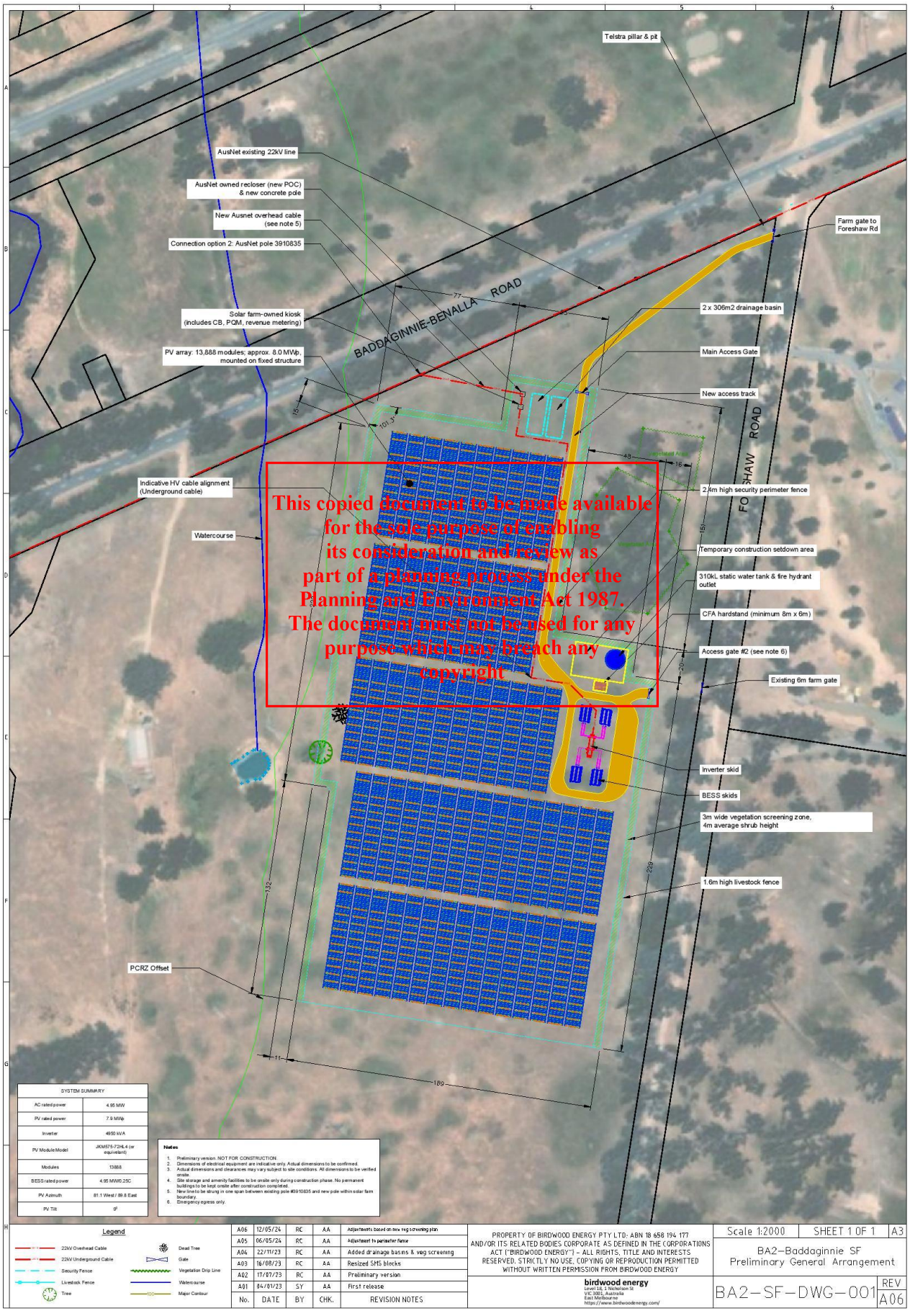
Broker contact details

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 avaliable
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

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

ADVERTISED PLAN

Attachment 1. Concept layout plan



SYSTEM SUMMARY	
AC rated power	4.95 MW
PV rated power	7.9 MWp
Inverter	4950 kVA
PV Module Model	JKM575-72HL4 (or equivalent)
Modules	13888
BESS rated power	4.95 MW/0.25C
PV Azimuth	81.1 West / 98.8 East
PV Tilt	9°

Notes
1. Preliminary version. NOT FOR CONSTRUCTION.
2. Dimensions of electrical equipment are indicative only. Actual dimensions to be confirmed.
3. Actual dimensions and clearances may vary subject to site conditions. All dimensions to be verified onsite.
4. Site storage and amenity facilities to be onsite only during construction phase. No permanent buildings to be kept onsite after construction completed.
5. New line to be strung in one span between existing pole #3910835 and new pole within solar farm boundary.
6. Emergency egress only.

Legend
- 22kV Overhead Cable
- 22kV Underground Cable
- Security Fence
- Livestock Fence
- Tree
- Dead Tree
- Gate
- Vegetation Drip Line
- Watercourse
- Major Contour

No.	DATE	BY	CHK.	REVISION NOTES
A06	12/05/24	RC	AA	Adjustments based on new veg screening plan
A05	06/05/24	RC	AA	Adjustment to perimeter fence
A04	22/11/23	RC	AA	Added drainage basins & veg screening
A03	16/08/23	RC	AA	Resized SMS blocks
A02	17/07/23	RC	AA	Preliminary version
A01	04/07/23	SY	AA	First release

birdwood energy
Level 16, 1 Nicholson St
VIC 3001, Australia
East Melbourne
https://www.birdwoodenergy.com/

Scale 1:2000 | SHEET 1 OF 1 | A3

BA2–Baddaginnie SF
Preliminary General Arrangement

BA2–SF–DWG–001 | REV A06

Attachment 2. Avoid and minimise report – Birdwood Energy

birdwood energy

Baddaginnie Solar Farm

Avoid and Minimise Biodiversity Impact Statement

Version

Version	Author	Checker	Comment
A-01	RC 12-06-2024	SY 12-06-2024	First release

Executive Summary

This document and appendices present Birdwood Energy's methodology and design measures employed to minimise biodiversity impact of the Baddaginnie Solar Farm development.

Contents

1 Introduction

The goal of avoidance and minimisation of biodiversity impact has played a significant part in the design of Baddaginnie Solar Farm. Beginning with the initial design stages, the PV array was arranged to avoid densely treed areas, as well as maintaining maximum setback from the natural waterway to the west of the solar farm.

The initial concept design of Baddaginnie SF was for a single axis tracking (SAT) system.

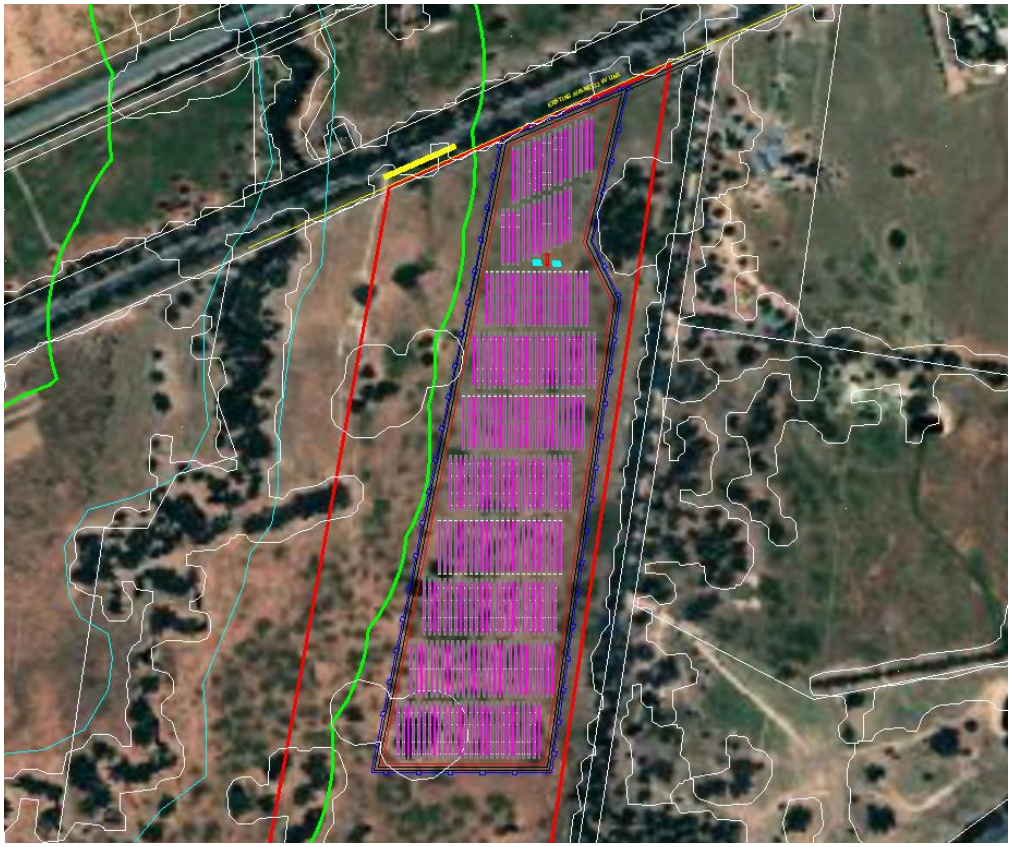


Image 1: Initial concept design for Baddaginnie Solar Farm, showing densely treed areas avoided where possible.

2 Design Footprint

A single axis tracking system increases the energy yield of a PV system by following the sun's azimuth throughout the day. A drawback of a SAT system is that the rows of panels must be spaced apart to avoid inter-shading between the rows, therefor the PV array will take up a significantly larger area than a fixed tilt system for the equivalent number of PV modules. It was observed that the SAT concept design would result in a high amount tree and vegetation impact. Therefor it was concluded that a system with a smaller footprint area should be explored.

The most compact ground mounted PV system is a fixed-tilt, east-west orientated system, where each adjacent row faces 180 degrees azimuth from each other (typically 90 degrees east and 90 degrees west). This prevents inter-shading and allows rows to abut each other with little to no spacing. Due to this, it was decided to explore mounting systems employing an east-west orientation and eventually shortlisted to 3 systems being PEG Jurchen Technology, 5B and SMS (Solar Mounting Systems).

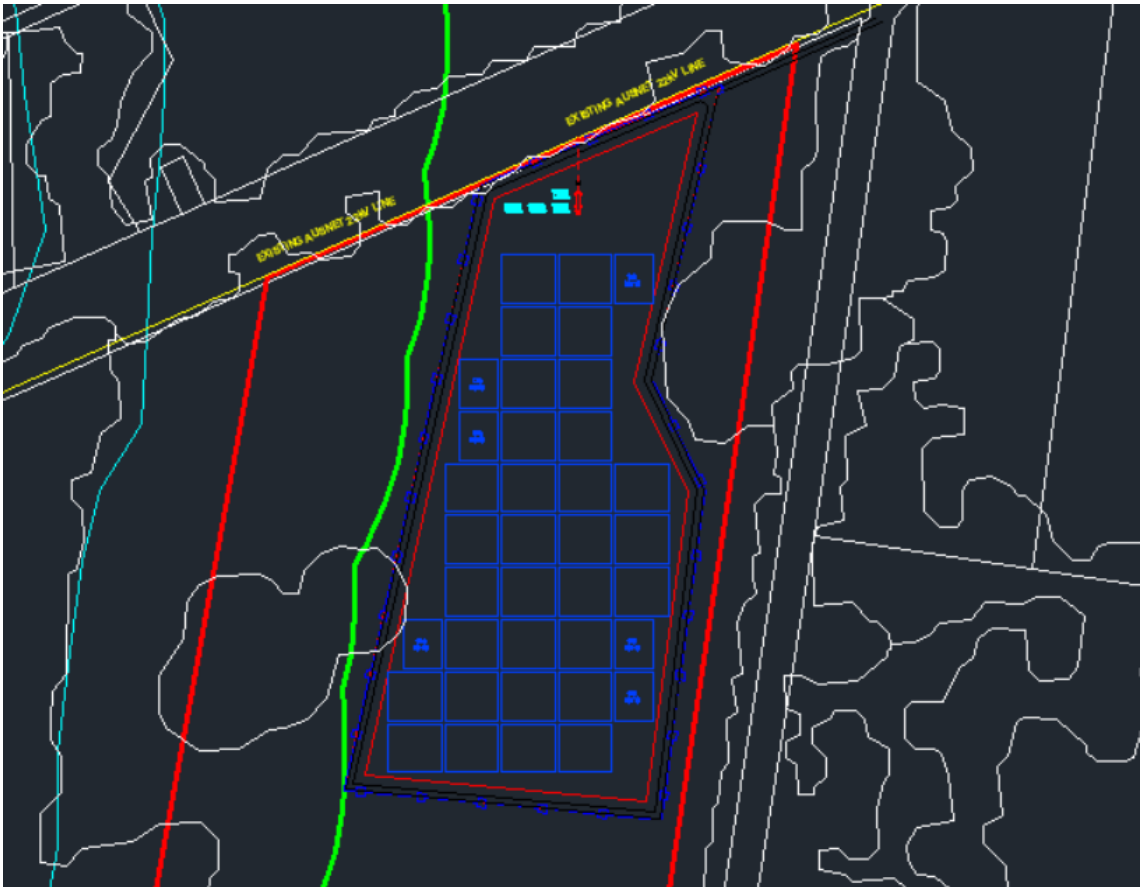


Image 2: Initial east-west concept design with reduced footprint area.

3 Mounting System Selection

Although PEG and 5B were both found to be generally suitable and cost effective, it was determined that the due to the low ground clearance and the foundation of these systems, the PV area would require a ground scrape and weed mat. This is to ensure that the ground is level before installation and that vegetation cannot grow below the PV modules where access is restrictive for maintenance.

Images 3 & 4: The PEG and 5B Maverick have low ground clearance and require harsher vegetation management than the SMS system.

The SMS system, however, has a considerably higher ground clearance and employs a more sturdy and adjustable foundation. This allows the system to be installed with little ground preparation apart from auger holes for concrete piers, minimising the impact on existing vegetation. The higher ground clearance also

allows light to reach the ground under the PV array, helping to maintain existing vegetation as well as the continuation of livestock grazing in the PV array area. Due to these considerations, the decision was made to implement the SMS mounting system.

Image 5: Existing design footprint of the PV array using the SMS east-west system.

Image 6: A recently constructed PV array using the SMS east-west system.