ecology & heritage partners

Final Report

Biodiversity Assessment for the proposed Faraday Solar Farm: 3040 Harmony Way, Faraday, Victoria

Prepared for

Tetris Energy

September 2021

Ecology and Heritage Partners Pty Ltd

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DOCUMENT CONTROL

Assessment type	Biodiversity Assessment for the proposed Faraday Solar Farm
Address	3040 Harmony Way, Faraday, Victoria
Project number	14168
Project manager	Cat Stephenson (Senior Bushfire Consultant/Botanist)
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Mapping	Louisa Roy (GIS Officer)
File name	14168_EHP_BA_FaradaySolarFarm_Finalv2_21092021
Client	Tetris Energy
Bioregion	Goldfields
Catchment Management Authority	North Central
Council	Mount Alexander Shire Council

VERSION CONTROL

Report versions	Comments	Comments made by:	Date submitted
Draft	Report sent to the client for review	CS	30/03/2021
Final	No changes. Report sent to the client	CS	19/04/2021
Draft v2	Report updated based on a revised development footprint. Report sent to the client for review.	CS	15/09/2021
Final v2	No changes. Report sent to the client	CS	21/09/2021

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SUMMARY OF CLAUSE 52.17 APPLICATION REQUIREMENTS

Table S1. Application requirements for a permit to remove native vegetation (Victoria Planning Provisions Clause 52.17; DELWP 2017)

No.	Application Requirement	Response
Application requirements under the **Basic** Assessment Pathway		
1	Information about the native vegetation to be removed, including: • The assessment pathway and reason for the assessment pathway; • A description of the native vegetation to be removed; • Maps showing the native vegetation and property in context; and • The offset requirement that will apply if the native vegetation is approved to be removed.	Refer to Section 3.1, Section 3.3 and Appendix 3 (NVR Report)
2	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 1.2 and Figure 1
3	Recent dated photographs of the native vegetation to be removed.	Refer to Section 3.1
4	Details of any other native vegetation that was permitted to be removed on the same property with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before the application to remove native vegetation is lodged.	No vegetation has been removed by the proponent on the property within the past five years
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value.	Refer to Section 5.1
6	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* that applies to the native vegetation to be removed.	Not applicable
7	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	Not applicable as the vegetation clearance is not for defendable space
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8.	Not applicable as the application responds to Clause 52.17
9	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines.	Refer to Section 5.4

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Tetris Energy to undertake a Biodiversity Assessment for the proposed Faraday Solar Farm at 3040 Harmony Way, Faraday, Victoria.

We understand that Tetris Energy is proposing to submit a planning application in order to facilitate future development works for a solar farm, including solar panels, associated infrastructure and an access road from Harmony Way into the development.

The purpose of this assessment was to identify the extent and type of native vegetation present within the study area and to determine the likely presence of significant flora and fauna species and/or ecological communities. This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action.

1.2 Study Area

The study area is located at 3040 Harmony Way, Faraday and is approximately 100 kilometres north-west of Melbourne's CBD (Figure 1). The study area covers approximately 19.2 hectares and is bound by Harmony Way to the south-west and agricultural properties in all other directions.

The study area is also an agricultural property and is currently used for grazing. The study area has some variable topography, but generally slopes gently downwards from the east to the west. Three artificial farm dams were observed on the property.

According to the Department of Environment, Land, Water and Planning (DELWP) NatureKit Map (DELWP 2021a), the study area is located within the Goldfields bioregion, North Central Catchment Management Authority (CMA) and Mount Alexander Shire Council.

2 METHODS

2.1 Relevant State and Commonwealth Legislation

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

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Environmental Effects Act 1978* (EE Act);
- *Flora and Fauna Guarantee Act 1988* (FFG Act);
- *Planning and Environment Act 1987* (P&E Act);
    - Guidelines for the removal, destruction and lopping of native vegetation (DELWP 2017);
- Mount Alexander Planning Scheme; including,
    - Clause 12.01-1S Protection of Biodiversity;
    - Clause 12.01-2S Native Vegetation Management;
    - Clause 52.17 Native Vegetation; and,
    - Clause 53.13 Renewable Energy Facility (Other Than Wind Energy Facility).
- Solar Energy Facilities Design and Development Guidelines (DELWP 2019a);
- *Wildlife Act 1975* (Wildlife Act); and,
- *Catchment and Land Protection Act 1994* (CaLP Act).

2.2 Desktop Assessment

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

- The DELWP NatureKit Map (DELWP 2021a) and Native Vegetation Information Management (NVIM) Tool (DELWP 2021b) for:
    - Modelled data for location risk, native vegetation patches, scattered trees and habitat for rare or threatened species; and,
    - The extent of historic and current Ecological Vegetation Classes (EVCs).
- EVC benchmarks (DELWP 2021c) for descriptions of EVCs within the relevant bioregion;
- The Victorian Biodiversity Atlas (VBA) for previously documented flora and fauna records within the project locality (DELWP 2020);

- The Illustrated Flora Information System of Victoria (IFLISV) (Gullan 2017) and Atlas of Living Australia (ALA) (ALA 2021) for assistance with the distribution and identification of flora species;
- The Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DAWE 2021a);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DELWP 2021d) and Protected (DELWP 2019b) Lists;
- Lists of declared noxious weeds (Agriculture Victoria 2017) and pest animals under the Victorian *Catchment and Land Protection Act 1994* (CaLP Act) (Agriculture Victoria 1994) and Commonwealth Weeds of National Significance (WoNS) (DAWE 2021b);
- The online VicPlan Map (DELWP 2021e) to ascertain current zoning and environmental overlays in the study area; and
- Aerial photography of the study area.

2.3 Field Assessment

A field assessment was undertaken on 7 December 2021 to obtain information on flora and fauna values within the study area. The study area was walked, with all commonly observed vascular flora and fauna species recorded, significant records mapped and the overall condition of vegetation and habitats noted. Ecological Vegetation Classes (EVCs) were determined with reference to DELWP pre-1750 and extant EVC mapping (DELWP 2021a) and their published descriptions (DELWP 2021c).

Where native vegetation was identified a habitat hectare assessment was undertaken following methodology described in the Vegetation Quality Assessment Manual (Department of Sustainability and Environment (DSE) 2004).

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

Under the *Planning and Environment Act 1987,* Clause 52.17 of the Mount Alexander Planning Scheme requires a planning permit to remove, destroy or lop native vegetation. The assessment process for the clearing of vegetation follows the '*Guidelines for the removal, destruction or lopping of native vegetation*' (the Guidelines) (DELWP 2017). The '*Assessor's handbook: Applications to remove, destroy or lop native vegetation*' (Assessor's handbook) (DELWP 2018) provides clarification regarding the application of the Guidelines (DELWP 2017).

2.4.1 Assessment Pathway

The Guidelines manage the impacts on biodiversity from native vegetation removal using an assessment-based approach. Two factors – extent risk and location category – are used to determine the risk associated with an application for a permit to remove native vegetation. The location category (1, 2 or 3) has been determined

for all areas in Victoria and is available on DELWP's NVIM Tool (DELWP 2021b). Determination of assessment pathway is summarised in Table 1.

Table 1. Assessment pathways for applications to remove, destroy or lop native vegetation (DELWP 2017).

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

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

2.4.2 Vegetation Assessment

Native vegetation (as defined in Table 2) is assessed using two key parameters: extent (in hectares) and condition. For the purposes of this assessment, both condition and extent were determined as part of the habitat hectare assessment.

Table 2. Determination of a patch of native vegetation (DELWP 2017).

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

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

2.4.3 *Impact Avoidance and Minimisation*

All applications to remove native vegetation must demonstrate the three-step approach of avoid, minimise and offset. This is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to what is reasonably necessary, and that biodiversity is appropriately compensated for any native vegetation removal that is approved.

2.4.4 *Offsets*

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

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

2.5 Assessment Qualifications and Limitations

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

The 'snapshot' nature of a standard biodiversity assessment meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. In addition, annual or cryptic flora species such as those that persist via underground tubers may also be absent.

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

Ecological values identified within the study area were recorded using a hand-held GPS or tablet with an accuracy of +/-3 metres. This level of accuracy is considered to provide an accurate assessment of the ecological values present within the study area; however, this data should not be used for detailed surveying purposes.

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

3 RESULTS

3.1 Vegetation Condition

Several patches of native vegetation and scattered native trees were recorded within the study area. The remainder of the study area comprised introduced pasture grass, planted eucalypts and ornamental gardens.

A list of all flora species recorded during the field assessment are provided in Appendix 1.1.

3.1.1 Patches of Native Vegetation

Low Rises Grassy Woodland (EVC 175_61) is modelled to occur within the study area (DELWP 2021b). However, the presence of this EVC is not consistent with the modelled pre-1750s native vegetation mapping (DELWP 2021c) due to the lack of a shrubs and trees within these patches. Specific details relating to the observed EVC are provided below.

The results of the habitat hectare assessment are provided in Appendix 1.2.

Low Rises Grassy Woodland

Low Rises Grassy Woodland is characterised by open woodland with eucalypts to 15 metres tall. The ground layer contains a diverse assortment of grasses and herbs, with shrub layer typically being diverse but sparse (DELWP 2021c).

Low Rises Grassy Woodland occurred as two habitat zones of differing quality. Habitat zone GW1 covered a total area of 0.60 hectares and contained an understorey layer of grasses and/or sedges between approximately 40% to 80% coverage and no shrubs or canopy trees (Figure 2). Species typically found in these patches included Kneed Wallaby-grass *Rytidosperma geniculatum*, Slender Wallaby-grass *Rytidosperma racemosum* var. *racemosum* and Gold Rush *Juncus flavidus* (Plate 1). Conversely, the two patches of GW2 contained a canopy of Yellow Box *Eucalyptus melliodora* and no native understorey shrubs, grasses or herbs and covered a total area of 0.14 hectares (Plate 2; Figure 2).

Plate 1. Moderate quality patch of GW1 containing Wallaby Grass along the south-eastern boundary (Ecology and Heritage Partners Pty Ltd 07/12/2020).

Plate 2. A patch of GW2 containing three Large Trees (Trees 17 to 19 on Figure 2) (Ecology and Heritage Partners Pty Ltd 07/12/2020).

3.1.2 *Large Trees in Patches*

Six Large Trees in Low Rises Grassy Woodland patches were present (Figure 2), all of which were Yellow Box (Plate 2; Plate 3; Appendix 1.3).

Plate 3. A patch of GW2 containing three Large Trees (Trees 13 to 15 on Figure 2) and two small trees, all being eucalypts (Ecology and Heritage Partners Pty Ltd 07/12/2020).

3.1.3 *Scattered Trees*

A total of 24 scattered trees (10 Yellow Box, 12 River Red-gum *Eucalyptus camaldulensis* and two dead eucalypt stags) were recorded within and adjoining the study area, which consisted of 23 large trees and one small scattered tree (Plate 4; Plate 5; Figure 2; Appendix 1.3). These trees would have once formed part of the Low Rises Grassy Woodland EVC; however, the understorey vegetation contained predominantly introduced species (mainly exotic pasture grasses) and the trees no longer formed a patch of native vegetation.

Plate 4. A large Yellow Box towards the south-eastern boundary of the study area (Tree 12 on Figure 2) (Ecology and Heritage Partners Pty Ltd 07/12/2020).

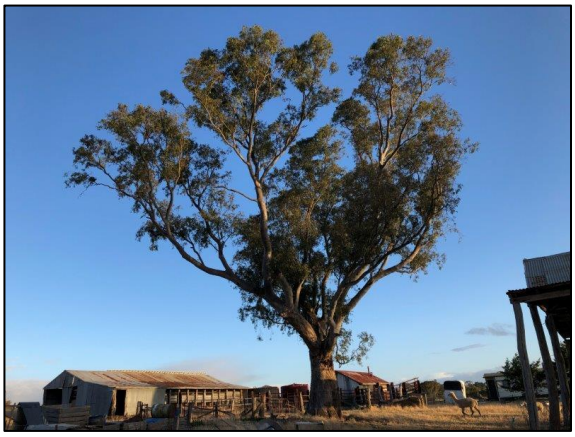

Plate 5. A large River Red-gum towards the south-western boundary of the study area (Tree 27 on Figure 2) (Ecology and Heritage Partners Pty Ltd 07/12/2020).

3.1.4 *Introduced and Planted Vegetation*

A large majority of the study area (>95%) contained exotic pasture grass, with the main species being Rat's-tail Fescue *Vulpia myuros*, Barley *Hordeum vulgare* (Plate 6) and Perennial Rye-grass *Lolium perenne*. Other less common species included Brown-top Bent *Agristis capillaris*, Bearded Oat *Avena barbata* and Clustered Dock *Rumex conglomeratus*. Scattered native grasses and rushes were sometimes present in these areas (Plate 7), however they did not have the required 25% relative cover to be considered a patch.

Ornamental gardens encircle the existing dwelling and sheds (Plate 8), while a stand of planted River Red-gum saplings is located at the entrance of the property along the study area's south-western boundary (Plate 9).

Plate 6. Barley growing within the paddocks (Ecology and Heritage Partners Pty Ltd 07/12/2020).

Plate 7. Single specimens of native rush scattered around the north-eastern-most dam mixed with exotic pasture grasses, which are too sparse to constitute a patch of native vegetation (Ecology and Heritage Partners Pty Ltd 07/12/2020).

Plate 8. Ornamental gardens around the existing dwelling (Ecology and Heritage Partners Pty Ltd 07/12/2020).

Plate 9. A stand of planted River Red-gum saplings near the property entrance along the study area's south-western boundary (Ecology and Heritage Partners Pty Ltd 07/12/2020).

3.2 Fauna Habitat

Most of the study area consisted of paddocks, which contained improved exotic pastures, likely to be used as a foraging resource by common generalist bird species that are tolerant of modified open areas. Patches of native grassland occur throughout the study area. These vary in quality and floristic composition according to grazing regimes and historical land use. Habitat attributes of the native grassland are suitable for an array of common native fauna, including snakes, lizards and skinks, and grassland birds.

Fauna observed using this habitat included Australian Magpie *Cracticus tibicen*, Willie Wagtail *Rhipidura leucophrys*, Eastern Rosella *Platycercus eximius* and Galah *Eolophus roseicapilla*.

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

The below clearing scenario is based on impacts to patches of GW1 within the development footprint, which consist of native grasses only (Plate 1; Figure 2a). All Large Trees in patches and scattered trees will not be impacted due to the deliberate positioning of the solar arrays (i.e. the strips of solar panels), access road and associated infrastructure away from these trees, or due to the minimal ground disturbance posed by installing the solar arrays within a tree's Tree Protection Zone (TPZ) (Appendix 2).

The development features that will impact native vegetation include the solar arrays, access road and MV cable trench (Figure 2a), with the construction works for these elements occurring only with the development footprint. The impact area for the solar arrays does not include the gaps between the arrays, as these gaps are large enough (i.e. 3.3 metres between the solar panels when horizontal) to allow the sunlight to reach all areas of the ground below during the day. However, there will be some shading in these gaps in the early morning and late afternoon due to the angle of the arrays blocking direct sunlight to the ground. Based on the amount of sunlight still reaching the ground during a large part of the day, it is considered that the native grasses and rushes will not be adversely affected by the slightly modified lighting conditions. A detailed assessment of the solar array design and the implications for native vegetation is provided in Appendix 2.

The proposed cyclone fencing and landscaping (Figure 2a) is considered to have a negligible impact on native grass patches and tree roots. The posts for the cyclone fencing will be hand dug or will use a hand-held or vehicle-mounted auger where they are within a patch or tree's TPZ. The landscaping will consist of entirely indigenous trees and shrubs, which will be planted with the minimal disturbance to soil within native grass patches and tree TPZs. Where there has been bare soil left as a result of these activities in native grass patches, which will be minimal to begin with, native grasses are expected to recolonise these areas. There are expected to be negligible losses to native grasses where the landscaping has occurred, as these native grasses naturally occur in a woodland setting below trees and shrubs.

Sheep grazing has occurred within the study area for many decades and will continue to occur throughout the operation of the solar farm. A security fence is being constructed around the perimeter of the solar farm; however, the landowner will be able to open the gate to this area and periodically graze their sheep within it, i.e. a few days to a week before they are removed again. The native vegetation within the fenced off area is therefore not considered to be adversely impacted by these activities as it is a continuation of existing farming practices.

With respect to ongoing infrastructure maintenance, the solar farm will be fully automated and unmanned. The infrastructure will be serviced once every six months and consist of a single vehicle (i.e. ute) accessing the site via the constructed access road. A vehicle may need to venture off the access road if, for example, it needs to deliver a part (e.g. solar panel) to the location it is being installed. Apart from when absolutely required all traffic off the access track will be via foot. Again, these activities are not considered to adversely impact the native vegetation.

3.3.1 Vegetation proposed to be removed

The study area is within Location 1, with 0.195 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway (Table 3).

Condition scores for vegetation proposed to be removed are provided in Appendix 1.2.

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

Assessment pathway	Basic
Location Category	1
Total Extent (past and proposed) (ha)	0.195
Extent of past removal (ha)	0.000
Extent of proposed removal (ha)	0.195
Large Trees (scattered and in patches) to be removed (no.)	0
Small scattered trees to be removed (no.)	0
EVC Conservation Status of vegetation to be removed	Vulnerable

3.3.2 Offset Targets

The offset requirement for native vegetation removal is 0.022 General Habitat Units.

A summary of proposed vegetation losses and associated offset requirements is presented in Table 4 and the Native Vegetation Removal (NVR) report is presented in Appendix 3.

Table 4. Offset Targets.

General Offsets Required	0.022 General Habitat Units
Large Trees	0
Vicinity (catchment/council)	North Central CMA / Mount Alexander Shire Council
Minimum Strategic Biodiversity Value*	0.279

***The minimum Strategic Biodiversity Value is 80% of the weighted average score across habitat zones where a General offset is required.

3.4 Significance Assessment

3.4.1 Flora

No national or State significant flora were recorded during the site assessment. Most previous significant flora records are located within or adjoining parks and reserves approximately 800 metres or more from the study area (Figure 3). Southern Shepherd's Purse *Ballantinia antipoda* (a small annual herb) is the closest and most common significant species within five kilometres of the study area (Figure 3). It is highly unlikely that Southern Shephard's Purse occurs within the study area due to this species typically growing on moist moss mats, or in the absence of moss mats, occupying depressions or cracks in rock faces (Nevill and Camilleri 2010), both of which were absent from the study area.

Based on the modified nature of the study area, landscape context and the proximity of previous records, significant flora species are considered highly unlikely to occur within the study area due to the and high levels of disturbance and absence of suitable habitat.

3.4.2 Fauna

No national or State significant fauna were recorded during the site assessment. The remnant eucalypts within the study area would provide suitable habitat for nesting, roosting and foraging, however they are isolated specimens within a large extent of open modified grasslands and thus only highly mobile animals, e.g. birds and bats, are expected to utilise these trees. Despite the number of large old native trees within the study area, approximately half had a sound structure and therefore limited hollows, fissures and/or spouts. However, the hollows, fissures and spouts that were present would provide valuable habitat for fauna species. The only observation within one kilometre of the study area within the past 30 years was of a Square-tailed Kite *Lophoictinia isura* (Figure 4), which, like all birds, may periodically fly over or use trees for a range of purposes.

Based on the modified nature of the study area, landscape context and the proximity and age of previous records, significant fauna species are considered unlikely to rely on habitat within the study area for foraging or breeding purposes due to the lack of suitable and/or important habitat features.

3.4.3 Ecological Communities

Two nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DAWE 2021a), being the:

- Grey Box (Eucalyptus macrocarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

However, vegetation within the study area did not meet the condition thresholds that define any national or State-significant communities due to the absence of key indicator species, the low diversity of native flora and high cover of exotic vegetation.

4 LEGISLATIVE AND POLICY IMPLICATIONS

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

The EPBC Act establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES). The proposed action is highly unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is unlikely to be required regarding matters listed under the EPBC Act.

4.2 *Flora and Fauna Guarantee Act 1988* (Victoria)

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' threatened and/or protected flora species, listed vegetation communities and listed fish species in areas of public land (e.g. within road reserves, drainage lines and public reserves/parks). An FFG Act permit is generally not required for the removal of species or communities, or for the removal of habitat for a listed terrestrial fauna species on private land. However, the *Flora and Fauna Guarantee Amendment Act 2019* came into effect on 1 June 2020 and now applies the FFG Act to Crown land and private/freehold land that is managed by a public authority. There are no confirmed records of species or ecological communities listed as threatened and/or protected under the FFG Act being within the study area.

4.3 *Planning and Environment Act 1987* (Victoria)

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17, which requires a planning permit from the relevant local Council to remove, destroy or lop native vegetation, unless an exemption at Clause 52.17-7 of the Victoria Planning Provisions applies.

In addition, Solar Farm development is subject to Clause 53.13 of the Mount Alexander Planning Scheme, as a Renewable Energy Facility, which states within the application requirements that the extent of vegetation removal, ecological legislative implications, and an environmental management plan must be addressed, with the Minster for Planning as the responsible authority for assessment of a project proposal for the use and development of the land as a renewable energy facility.

Victorian Planning Provision's Clause 19.01 Energy outlines the policy objectives and strategies that support the development of solar energy facilities.

In accordance with Clause 72.01 Responsible Authority for this Planning Scheme of the Mount Alexander Planning Scheme, the Minister of Planning is the Responsible Authority for the use and development of land for a renewable energy facility with an installed capacity of 1 megawatt or greater.

4.3.1 *Local Planning Scheme*

The study area is located within the Mount Alexander Shire Council. The Farming Zone (FZ) applies to the study area. No overlays apply (DELWP 2021e).

4.3.2 *The Guidelines*

The State Planning Policy Framework and the decision guidelines at Clause 12.01 Biodiversity and Clause 52.17 Native Vegetation require Planning and Responsible Authorities to have regard for the Guidelines (DELWP 2017).

4.3.3 *Implications*

The study area is within Location 1, with 0.195 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway.

The offset requirement for native vegetation removal is 0.022 General Habitat Units.

A planning permit from the Mount Alexander Shire Council is required to remove, destroy or lop any native vegetation under Clause 52.17 of the Planning Scheme. In this instance, the application is not required to be referred to DELWP.

A permit is required under Clause 53.13 of the Planning Scheme to use or develop a renewable energy facility (other than a wind energy facility).

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

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

5 MITIGATION MEASURES

5.1 Solar Energy Facility Design and Development Guidelines

The *Solar Energy Facility Design and Development Guidelines* (DELWP 2019a) recommend the following items for consideration and minimisation of impacts:

- Flora and fauna implications;
- Native vegetation and biodiversity implications;
- Landscape value implications;
- Bushfire management – Within rural and regional areas, a proponent should consult the CFAs (2019) *Guidelines for Renewable Energy Installations* for information about bushfire risk management and other risk management matters;
- Glint and glare management; and
- Environmental Management Plan – Where a planning permit is granted for a solar energy facility, the responsible authority will require several construction and operation matters to be addressed as part of an EMP. The requirement for an EMP will be a permit condition, and it must be submitted to, and approved by, the responsible authority before an activity starts on the site. The EMP can include:
    - An overview of construction methods including management of construction zones, site preparation, schedule and timing of works;
    - The management structure and site roles including any environmental audit processed needed under any applicable planning or legislative requirements; and
    - The management of environmental matters or mitigation requirements for erosion or sediment, surface water pollution, dust, odour noise, waste/hazardous materials handling, natural hazard management, terrestrial or aquatic ecology.

5.2 Avoid and Minimise Statement

The development footprint has been specifically designed to avoid and/or minimise the loss of native vegetation through the following measures:

- The area of impact to native vegetation (i.e. patches of GW1) has been reduced from 0.328 hectares as part of the Biodiversity Assessment report submitted as part of the planning application (dated 19 April 2021) to 0.195 hectares as part of this current report based on the amended concept plan, which is a reduction of 0.133 hectares (or 41%). This is due in part to the native vegetation impact area within the solar array blocks being restricted to the boundary of the arrays only (i.e. not the gaps between them), with Appendix 2 providing the rationale and justification for this action.
- All eucalypts, including dead stags, have been retained as part of the development by placing the solar panels entirely within the grassed areas. Where a block of solar panels comes within a tree's TPZ (i.e. Tree 3, 7, 12, 16 of Figure 2a), the area of actual ground disturbance is very low (refer to the next

dot pint below). Similarly, the access road leading in from the existing property driveway and between the solar panels has been positioned to avoid the loss of all trees within the study area;

- The construction method used to install the solar arrays is expected to have minimal physical impact on the patches of native grasses (i.e. GW1) and tree roots. The steel posts on which the solar arrays are mounted are driven into the ground using a pole driver attached to the back of a soft-tyred vehicle and set three metres apart. The only physical impact to the ground is therefore the width of the poles, with each one being approximately 10 centimetres in diameter;
- There will be no indirect construction impacts to native vegetation associated with the development, as the solar arrays, access road and MV cable trench can all be constructed within the extent of their final footprint. The width of the MV cable trench will be a maximum width of 50 centimetres and filled in to allow grasses to recolonise the area;
- Once installed, there will be a 5.4 metre separation distance between each solar array, which will allow sunlight to reach all the native grass as the sun moves across the sky. Appendix 2 provides a detailed discussion as to the solar array angle implications for the native grass;
- The location of the battery/power storage cells in the middle of the study area, temporary laydown area (which will only be used during the construction phase and includes the site office during that time) and carparking space have all been designed to avoid impacts to all trees and patches; and
- The coverage of mid and upper-level native vegetation within the study area will increase as a result of this development, as the trees and shrubs being planted as part of the landscaping ring around the impact area will be entirely composed of indigenous trees and shrubs.

In the context of the development, the modified condition of ecological values proposed to be impacted, and the extent of native vegetation proposed to be retained within the study area, it is considered that the minimisation measures implemented are appropriate in this instance.

5.3 Best Practice Mitigation Measures

Recommended measures to mitigate impacts upon terrestrial values present within the study area may include:

- Minimise impacts to native vegetation and habitats through construction and micro-siting techniques, including fencing retained areas of native vegetation. If indeed necessary, trees should be lopped or trimmed rather than removed;
- All contractors should be aware of ecologically sensitive areas to minimise the likelihood of inadvertent disturbance to areas marked for retention. Native vegetation (areas of sensitivity) should be included as a mapping overlay on any construction plans;
- Tree Protection Zones (TPZs) should be implemented to prevent indirect losses of native vegetation during construction activities (DSE 2011). A TPZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height (DBH). At a minimum standard a TPZ should consider the following:
    - A TPZ of trees should be a radius no less than two metres or greater than 15 metres;

- Construction, related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TPZ;
- Where encroachment regarding ground disturbance is 10% or more of the total area of the TPZ, the tree should be considered as lost and offset accordingly (unless an arboricultural report specifies otherwise);
- Directional drilling may be used for works within the TPZ without being considered encroachment. The directional bore should be at least 600 millimetres deep;
- The above guidelines may be varied if a qualified arborist confirms the works will not significantly damage the tree (including stags / dead trees). In this case the tree would be retained, and no offset would be required; and,
- Where the minimum standard for a TPZ has not been met an offset may be required.

- Where possible, construction stockpiles, machinery, roads, and other infrastructure should be placed away from areas supporting native vegetation and/or Large Trees; and
- As indigenous flora provides valuable habitat for indigenous fauna, it is recommended that any landscape plantings that are undertaken as part of the proposed works are conducted using indigenous species sourced from a local provenance, rather than exotic deciduous trees and shrubs.

5.4 Offset Impacts and Strategy

According to DELWPs Native Vegetation Offset Register (DELWP 2021f), there are 31 offset sites within the North Central CMA or Mount Alexander Shire Council region that can be used to satisfy the General Habitat Unit offset requirements.

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

6 FURTHER REQUIREMENTS

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 5.

Table 5. Further requirements associated with development of the study area.

Relevant Legislation	Implications	Further Action
Environment Protection and Biodiversity Conservation Act 1999	The EPBC Act establishes a Commonwealth process for the assessment of proposed actions likely to have a significant impact on any matters of National Environment Significance (NES). The proposed action is highly unlikely to have a significant impact on any matter of NES. As such, a referral to the Commonwealth Environment Minister is unlikely to be required regarding matters listed under the EPBC Act.	No further action required.
Flora and Fauna Guarantee Act 1988	. However, the Flora and Fauna Guarantee Amendment Act 2019 came into effect on 1 June 2020 and now applies the FFG Act to Crown land and private/freehold land that is managed by a public authority. There are no confirmed records of species or ecological communities listed as threatened and/or protected under the FFG Act being within the study area.	No further action required.
Planning and Environment Act 1987	The study area is within Location 1, with 0.195 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Basic assessment pathway. The offset requirement for native vegetation removal is 0.022 General Habitat Units. A planning permit from the Mount Alexander Shire Council is required to remove, destroy or lop any native vegetation under Clause 52.17 of the Planning Scheme. In this instance, the application is not required to be referred to DELWP. A permit is required under Clause 53.13 of the Planning Scheme to use or develop a renewable energy facility (other than a wind energy facility).	Prepare and submit a Planning Permit application.
Wildlife Act 1975	Any persons engaged to conduct salvage and translocation or general handling of terrestrial fauna species must hold a current Management Authorisation.	Ensure wildlife specialists hold a current Management Authorisation.

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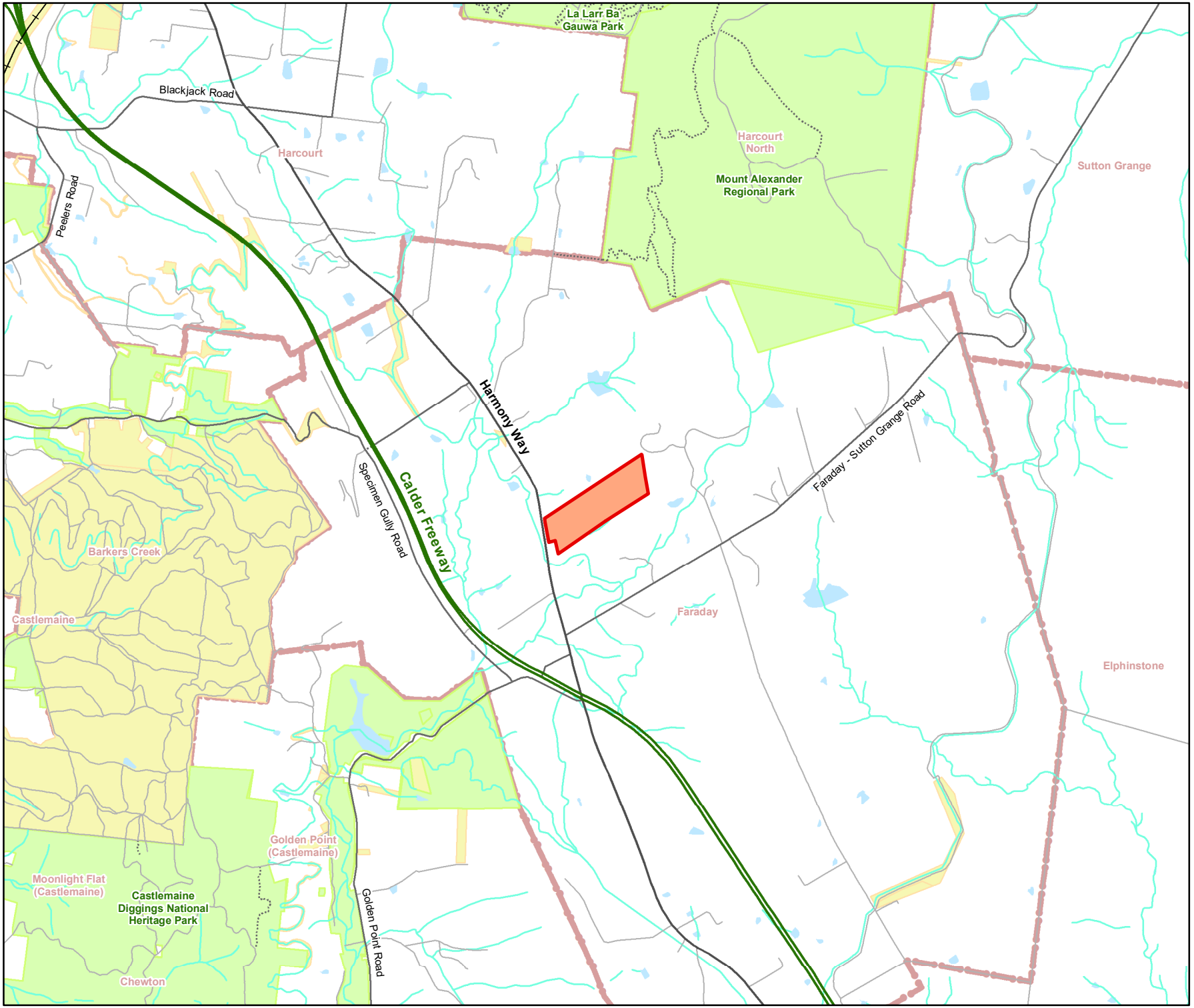


Legend

- Study Area
- Railway
- Freeway
- Major Road
- Collector Road
- Minor Road
- Walking Track
- Minor Watercourse
- Permanent Waterbody
- Parks and Reserves
- Crown Land
- Localities

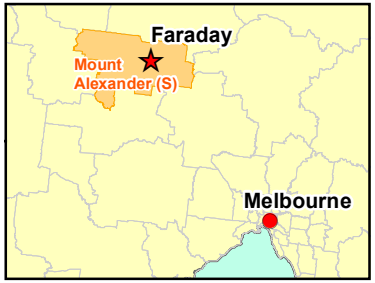


Figure 1

Location of the study area

Ecological Assessment for the proposed Faraday Solar Farm, 3040 Harmony Way, Faraday

N

0 0.5 1

Kilometres

Map Scale: 1:35,000 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

Legend

- Study Area
- Scattered Large Tree
- Scattered Small Tree
- Large Tree within a patch

Ecological Vegetation Class

- Low Rises Grassy Woodland (EVC 175_61)

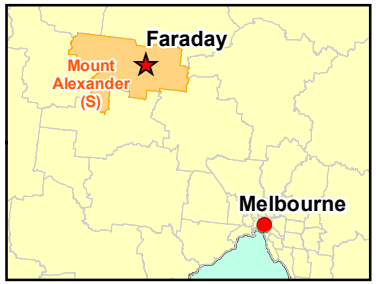


Figure 2

Ecological features

Ecological Assessment for the proposed Faraday Solar Farm, 3040 Harmony Way, Faraday

N

0 50 100

Meters

Map Scale: 1:3,800 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

Legend

- Study Area
- Scattered Large Tree
- Scattered Small Tree
- Large Tree within a patch
- Tree Protection Zone

Ecological Vegetation Class

- Low Rises Grassy Woodland (EVC 175_61)
- Impacted vegetation

Development features

- PV modules
- BESS, MVPS and MVSS
- Site fence
- Site perimeter landscaping zone
- Site access road
- Carparking area
- Temporary laydown area
- MV cable trench
- Point of connection

Figure 2a

Development impacts

Ecological Assessment for the proposed Faraday Solar Farm, 3040 Harmony Way, Faraday

N

0 50 100

Meters

Map Scale: 1:3,800 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

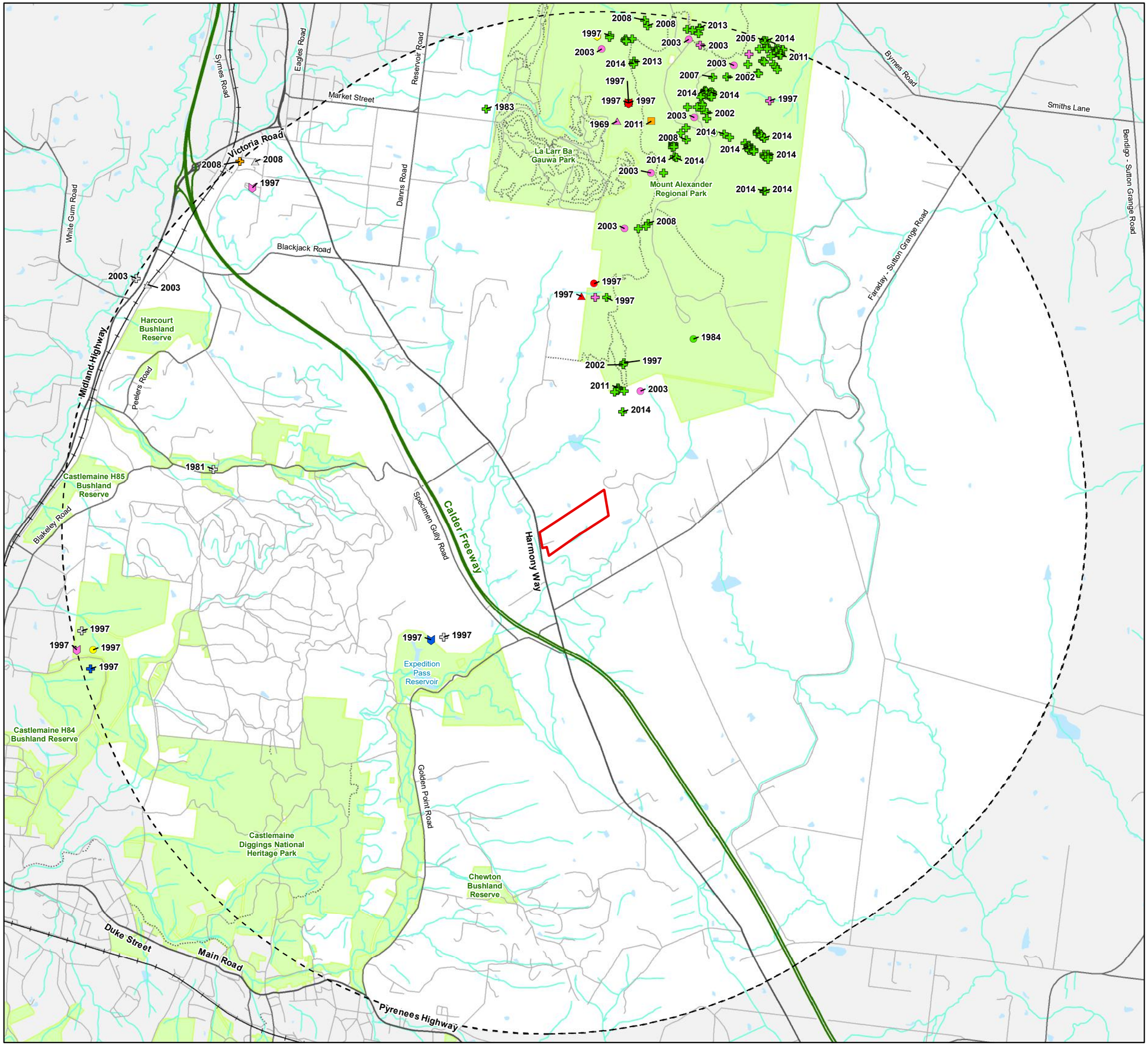


Figure 3

Previously documented significant flora within 5km of the study area

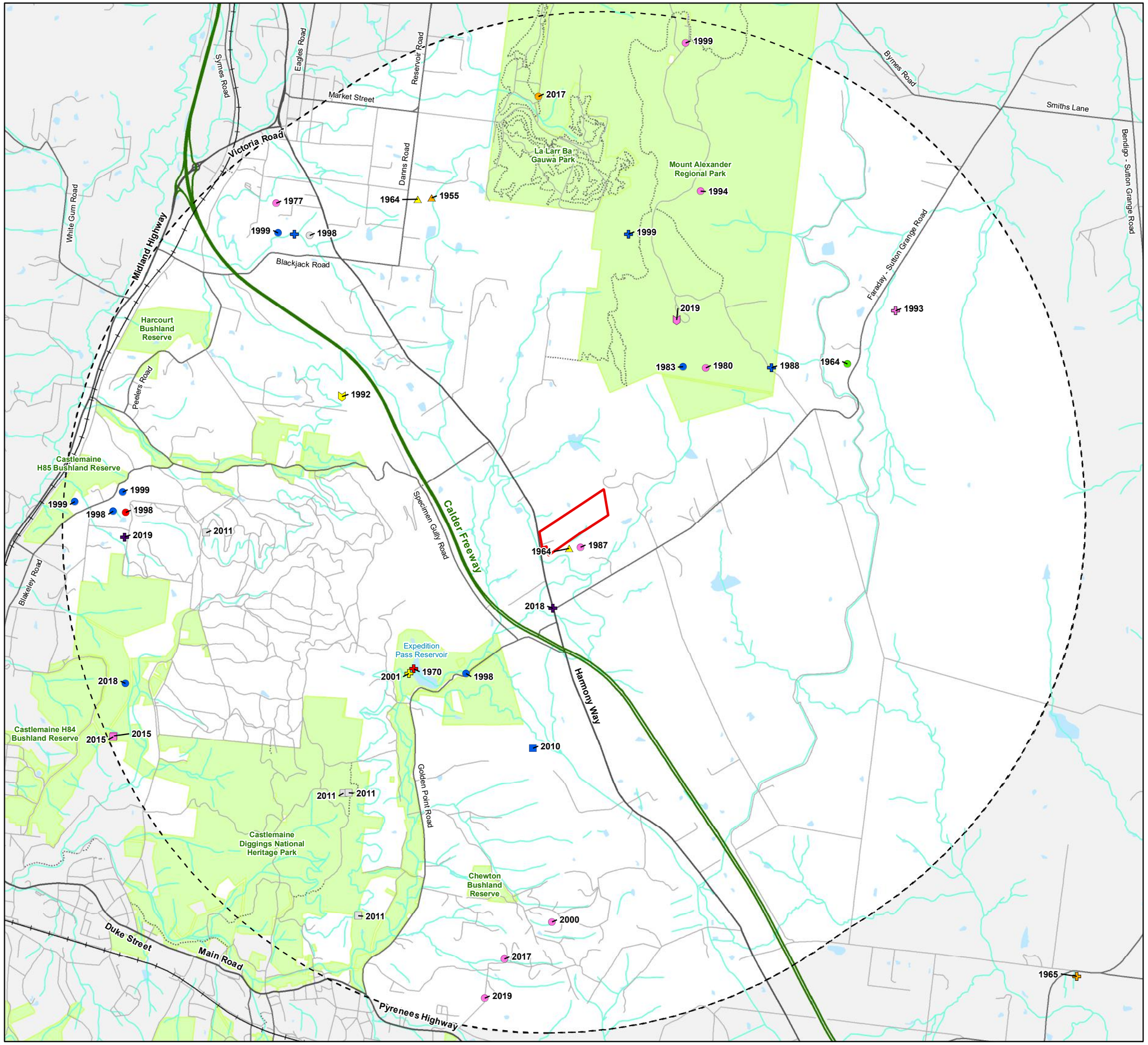
Ecological Assessment for the proposed Faraday Solar Farm, 3040 Harmony Way, Faraday

0 1 2

Kilometres

Map Scale: 1:38,000 @ A3
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners



Legend

- Study Area

Significant Fauna

- Australasian Shoveler
- Barking Owl
- Black-eared Cuckoo
- Brown Toadlet
- Brown Treecreeper
- Brush-tailed Phascogale
- Common Bent-wing Bat (eastern ssp.)
- Eastern Snake-necked Turtle
- Eltham Copper Butterfly
- Grey-crowned Babbler
- Grey-headed Flying-fox
- Murray Cod
- Musk Duck
- Nankeen Night Heron
- Speckled Warbler
- Spotted Harrier
- Square-tailed Kite
- Swift Parrot
- White-throated Needletail

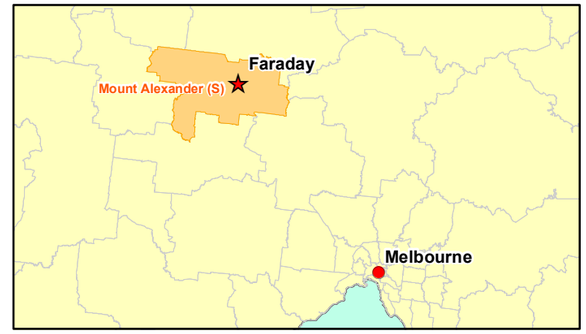


Figure 4

Previously documented significant fauna within 5km of the study area

Ecological Assessment for the proposed Faraday Solar Farm, 3040 Harmony Way, Faraday

N

0 1 2

Kilometres

Map Scale: 1:38,000 @ A3
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

APPENDIX 1 FLORA

Appendix 1.1 Flora Results

Table A1.1. Flora within the study area.

Scientific Name	Common Name	Notes
INDIGENOUS SPECIES		
Carex appressa	Tall Sedge	
Eucalyptus camaldulensis	River Red-gum	
Eucalyptus melliodora	Yellow Box	
Juncus flavidus	Gold Rush	
Juncus subsecundus	Finger Rush	
Rytidosperma geniculatum	Kneed Wallaby-grass	
Rytidosperma racemosum var. *racemosum*	Slender Wallaby-grass	
NON-INDIGENOUS OR INTRODUCED SPECIES		
Agrostis capillaris	Brown-top Bent	
Aira elegantissima	Delicate Hair-grass	
Arctotheca calendula	Cape Weed	
Avena barbata	Bearded Oat	
Bromus diandrus	Great Brome	
Bromus hordeaceus subsp. *hordeaceus*	Soft Brome	
Holcus lanatus	Yorkshire Fog	
Hordeum vulgare	Barley	
Hypochaeris radicata	Flatweed	
Lolium perenne	Perennial Rye-grass	
Romulea rosea	Onion Grass	
Rumex acetosella	Sheep's Sorrel	
Rumex conglomeratus	Clustered Dock	
Trifolium dubium	Suckling Clover	
Urtica dioica	Giant Nettle	
Vulpia myuros	Rat's-tail Fescue	

Appendix 1.2 Habitat Hectare Assessment

Table A1.2. Habitat Hectare Assessment Table.

Vegetation Zone		GW1	GW2
Bioregion		Goldfields	Goldfields
EVC / Tree		Grassy Woodland (Low Rises)	Grassy Woodland (Low Rises)
EVC Number		175_61	175_61
EVC Conservation Status		Vulnerable	Vulnerable
Patch Condition	Large Old Trees /10	0	10
	Canopy Cover /5	0	4
	Under storey /25	5	0
	Lack of Weeds /15	0	0
	Recruitment /10	0	0
	Organic Matter /5	4	4
	Logs /5	0	2
	Treeless EVC Multiplier	1.00	1.00
	Subtotal =	9.00	20.00
Landscape Value /25		2	2
Habitat Points /100		11	22
Habitat Score		0.11	0.22

Note: GW = Grassy Woodland

Appendix 1.3 Scattered Trees and Large Trees in Patches

Table A1.3. Scattered Trees and Large Trees in Patches.

Tree # (Figure 2)	Scientific Name	Common Name	DBH (cm)	Size Class	Scattered / Parch	Status
1	*Eucalyptus camaldulensis*	River Red-gum	270	Large	Scattered	Retained
2	*Eucalyptus melliodora*	Yellow Box	135	Large	Scattered	Retained
3	*Eucalyptus melliodora*	Yellow Box	91	Large	Scattered	Retained
4	*Eucalyptus melliodora*	Yellow Box	94	Large	Scattered	Retained
5	*Eucalyptus* spp. (dead stag)	Gum Tree	94	Large	Scattered	Retained
6	*Eucalyptus melliodora*	Yellow Box	64	Small	Scattered	Retained
7	*Eucalyptus melliodora*	Yellow Box	148	Large	Scattered	Retained
8	*Eucalyptus camaldulensis*	River Red-gum	145	Large	Scattered	Retained
9	*Eucalyptus camaldulensis*	River Red-gum	188	Large	Scattered	Retained
10	*Eucalyptus melliodora*	Yellow Box	84	Large	Scattered	Retained
11	*Eucalyptus melliodora*	Yellow Box	103	Large	Scattered	Retained
12	*Eucalyptus melliodora*	Yellow Box	164	Large	Scattered	Retained
13	*Eucalyptus melliodora*	Yellow Box	82	Large	Patch	Retained
14	*Eucalyptus melliodora*	Yellow Box	104	Large	Patch	Retained
15	*Eucalyptus melliodora*	Yellow Box	100	Large	Patch	Retained
16	*Eucalyptus camaldulensis*	River Red-gum	220	Large	Scattered	Retained
17	*Eucalyptus melliodora*	Yellow Box	113	Large	Patch	Retained
18	*Eucalyptus melliodora*	Yellow Box	118	Large	Patch	Retained
19	*Eucalyptus melliodora*	Yellow Box	94	Large	Patch	Retained

Tree # (Figure 2)	Scientific Name	Common Name	DBH (cm)	Size Class	Scattered / Parch	Status
20	*Eucalyptus camaldulensis*	River Red-gum	89	Large	Scattered	Retained
21	*Eucalyptus camaldulensis*	River Red-gum	117	Large	Scattered	Retained
22	*Eucalyptus camaldulensis*	River Red-gum	243	Large	Scattered	Retained
23	*Eucalyptus melliodora*	Yellow Box	110	Large	Scattered	Retained
24	*Eucalyptus melliodora*	Yellow Box	100	Large	Scattered	Retained
25	*Eucalyptus camaldulensis*	River Red-gum	157	Large	Scattered	Retained
26	*Eucalyptus camaldulensis*	River Red-gum	162	Large	Scattered	Retained
27	*Eucalyptus camaldulensis*	River Red-gum	163	Large	Scattered	Retained
28	*Eucalyptus* spp. (dead stag)	Gum Tree	120	Large	Scattered	Retained
29	*Eucalyptus camaldulensis*	River Red-gum	174	Large	Scattered	Retained
30	*Eucalyptus camaldulensis*	River Red-gum	99	Large	Scattered	Retained

APPENDIX 2 SOLAR ARRAY ANGLE IMPLICATIONS FOR NATIVE VEGETATION

This solar farm will be installed with bifacial photo-voltaic (PV) modules mounted on a single axis tracker system. Single-axis trackers are used to increase the performance (output) of the system. This is achieved by allowing the PV modules to rotate on a single axis following the sun's path throughout the day (Figure 1). The PV modules are bifacial, which means that they can also capture light on the rear face of the module.

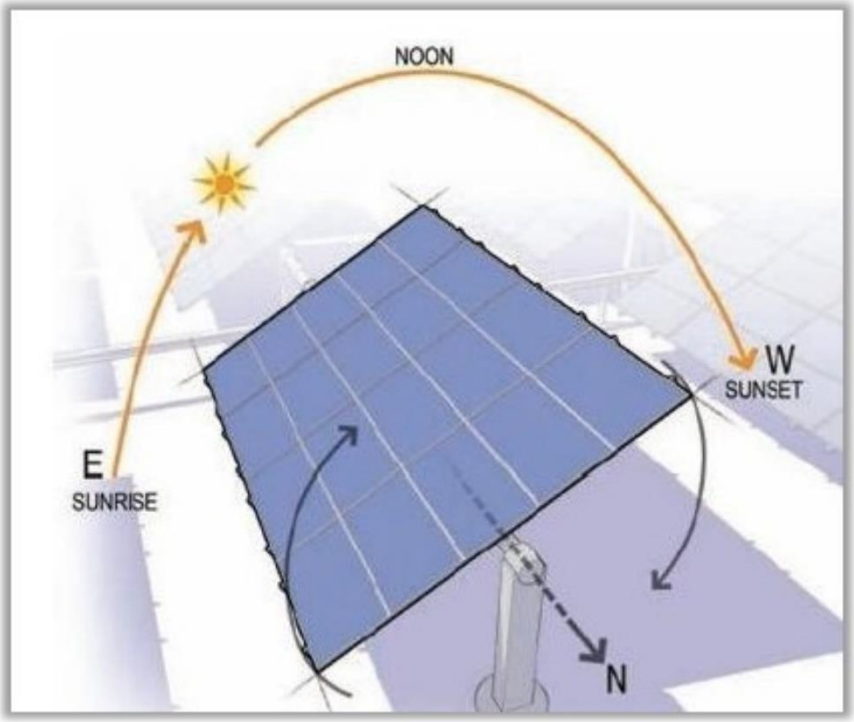


Figure 1. Example of a single axis tracker PV system.

To improve the system's performance further, the tracker rows are spaced apart by a substantial distance, being 5.4 metres in this project. This spacing prevents inter-row shading and notably increases the amount of reflected and diffused light available below the PV modules (Figure 2).

The amount of light (diffused and reflected) below the PV modules and tracker system is significant, which is why bifacial PV modules are used. This level of reflected and diffused light allows vegetation below the PV modules to continue to grow even when the tracker is in a position that would shade the ground below from direct irradiance (Figure 3).

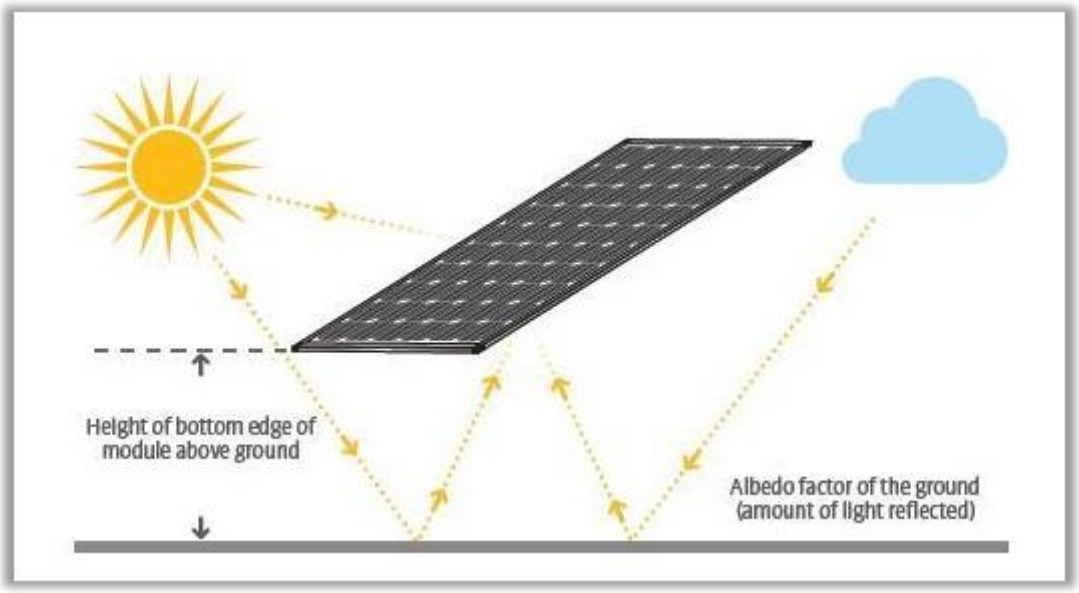


Figure 2. Example of diffused and reflected irradiance below a PV module.

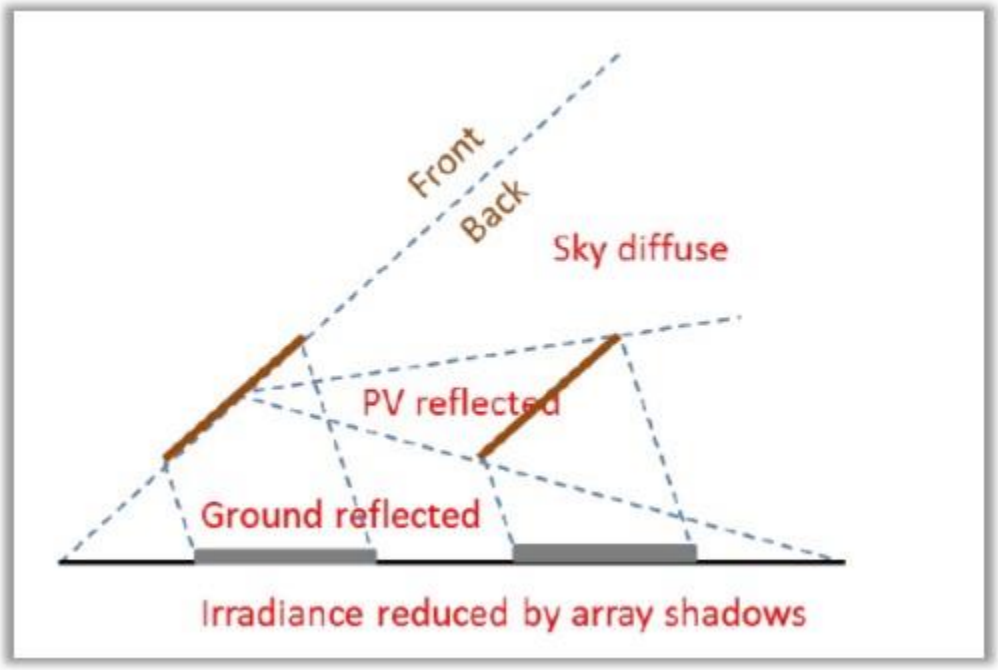


Figure 3. Example of the irradiance components behind and below a ground-mounted PV system.

The reduction (in terms of hours per day) of direct irradiance on the ground and increase in the amount of indirect and diffused light has been shown to positively impact vegetation growth (Figure 4; Figure 5). This can be seen in the rise of the 'agrivoltaic' industry worldwide, where agricultural and solar PV projects are being co-developed and co-located to take advantage of these positive side-effects.

Figure 4. Illustrated example of vegetation growth below a single axis tracker PV system.

Figure 5. Real-life example of vegetation growth below a single axis tracker PV system.

The spacing between the tracker rows (pitch) is 5.4 metres, and the length of the PV modules is approximately 2.1 metres. This results in a minimum clear space between two arrays of approximately 3.3 metres (Figure 6) when the trackers are in the horizontal plane (0°); this is the trackers' position during the middle of the day when the sun is at its maximum elevation angle. At this time the ground between the tracker rows will receive direct irradiance, with zero shading.

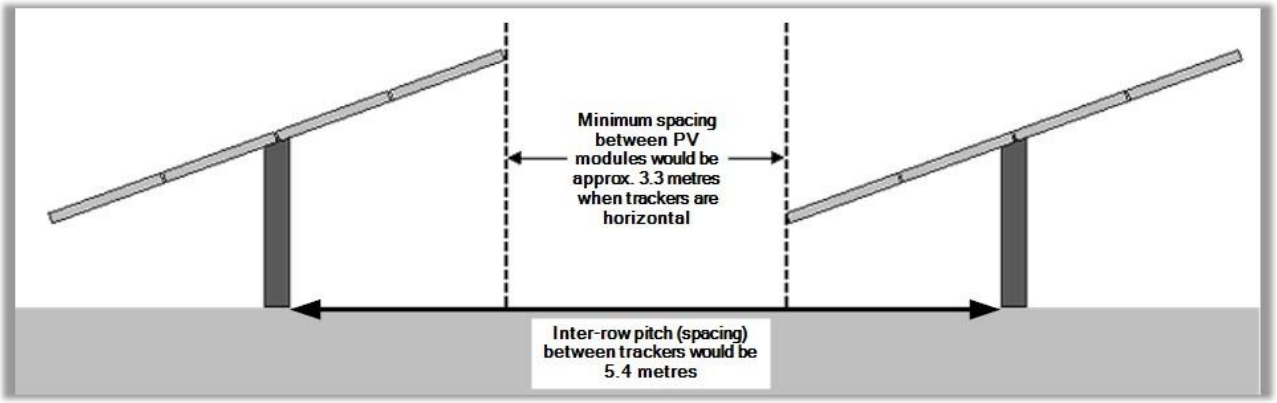


Figure 6. Illustration to explain the difference between the inter-row spacing (pitch) and the minimum spacing between PV modules.

There will be some inter-row shading in the early morning (Figure 7) and late afternoon (the ground between the tracker rows will have shading from direct irradiance). However, as noted above, there will still be diffused and reflected irradiance.

From approximately 8am until 1pm (exact times depend on the time of the year), the shaded area will continually move and decrease in size as the trackers move from an East facing angle of 60° to a horizontal position of 0° (Figure 8; Figure 9). From approximately 1pm until 6 pm, the trackers will move from the horizontal position of 0° to a West facing angle of 60°; during this time, the shaded area between tracker rows will move and increase in size.

This rotation of the tracker axis and associated travel of the PV modules allows for direct irradiance to reach all areas of the ground below the PV system during the day.

Figure 7. Example of a single axis tracker PV system at 60° angle with maximum inter-row shading.

Figure 8. Example of a single axis tracker PV system at 40° angle with reduced inter-row shading.

Figure 9. Example of a single axis tracker PV system at 0° with zero inter-row shading.

APPENDIX 3 NATIVE VEGETATION REMOVAL (NVR) 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: **20/09/2021**
Time of issue: **11:48 am**

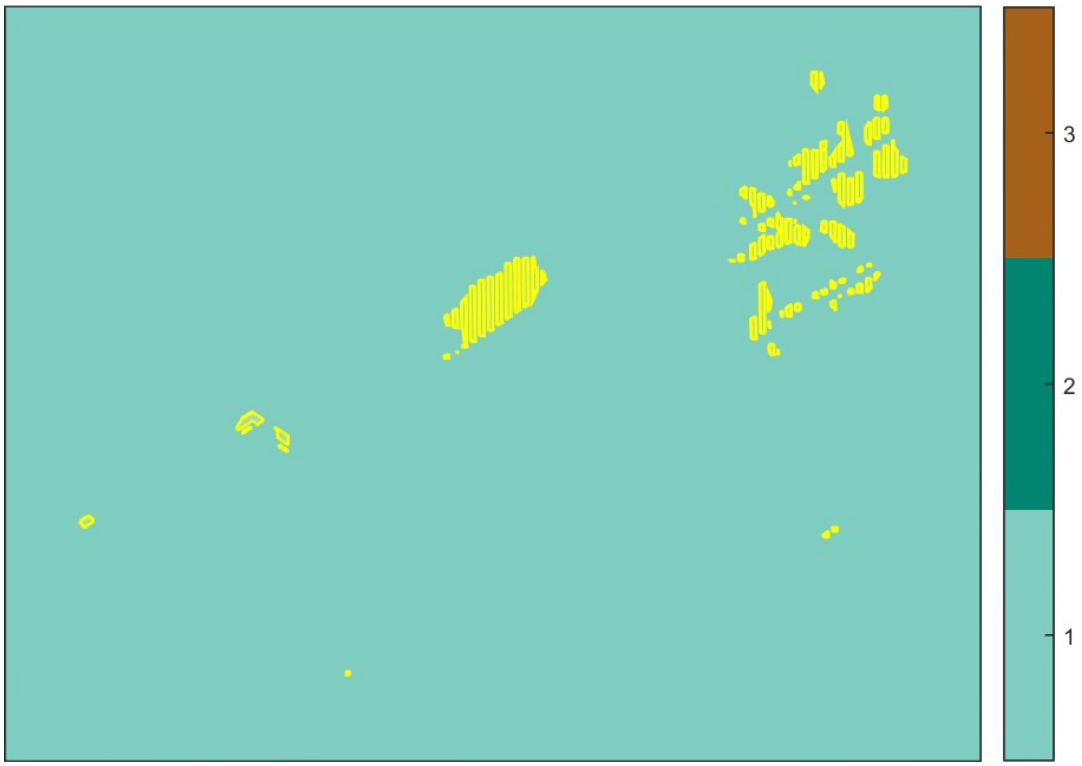
Report ID: EHP_2021_128

Project ID	EHP14168_Faraday_VG94_15092021

Assessment pathway

Assessment pathway	**Basic Assessment Pathway**
Extent including past and proposed	0.195 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.195 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 1 The native vegetation is not in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map), sensitive wetland or coastal area. Removal of less than 0.5 hectares in this location will not have a significant impact on any habitat for a rare or threatened species

1. Location map



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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]	0.022 general habitat units
Vicinity	North Central Catchment Management Authority (CMA) or Mount Alexander Shire Council
Minimum strategic biodiversity value score[2]	0.279
Large trees	0 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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 Basic Assessment Pathway and it will be assessed under the Basic 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 (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- 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
- 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

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
1-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.310		0.001	General
2-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.006	0.006	0.360		0.001	General
3-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.390		0.000	General
4-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.360		0.000	General
5-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
6-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
7-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
8-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
9-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
10-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
11-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
12-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
13-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
14-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.005	0.005	0.360		0.001	General
15-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.008	0.008	0.360		0.001	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
16-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.008	0.008	0.360		0.001	General
17-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.360		0.001	General
18-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.360		0.001	General
19-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.360		0.001	General
20-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.360		0.001	General
21-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
22-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
23-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.007	0.007	0.360		0.001	General
24-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
25-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
26-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
27-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
28-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
29-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
30-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
31-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
32-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
33-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
34-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.005	0.005	0.360		0.001	General
35-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
36-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
37-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
38-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
39-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
40-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
41-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
42-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
43-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
44-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.360		0.000	General
45-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.360		0.000	General
46-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.360		0.000	General
47-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.360		0.000	General
48-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
49-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
50-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
51-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.360		0.000	General
52-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
53-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.360		0.000	General
54-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.343		0.000	General
55-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.310		0.000	General
56-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.330		0.000	General
57-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.317		0.000	General
58-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.360		0.000	General
59-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.344		0.000	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
60-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.360		0.000	General
61-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.310		0.000	General
62-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.311		0.000	General
63-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.317		0.000	General
64-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.310		0.000	General
65-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.330		0.000	General
66-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.004	0.004	0.332		0.000	General
67-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
68-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
69-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.310		0.000	General
70-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
71-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
72-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.003	0.003	0.310		0.000	General
73-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
74-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
75-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
76-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
77-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
78-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
79-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
80-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
81-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General

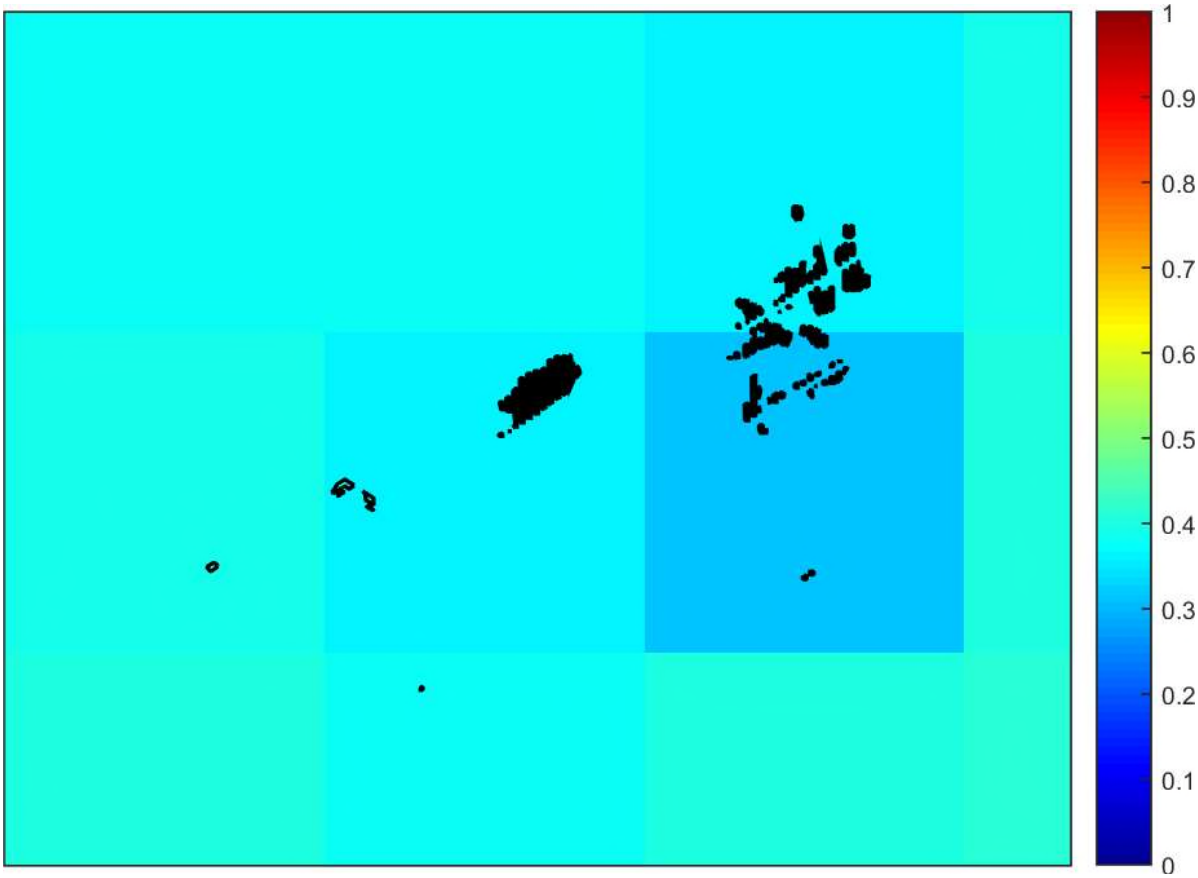
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
82-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
83-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
84-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
85-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
86-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
87-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.002	0.002	0.310		0.000	General
88-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
89-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
90-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.310		0.000	General
91-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.001	0.001	0.310		0.000	General
92-A	Patch	gold0175_61	Vulnerable	0	no	0.110	0.000	0.000	0.380		0.000	General

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

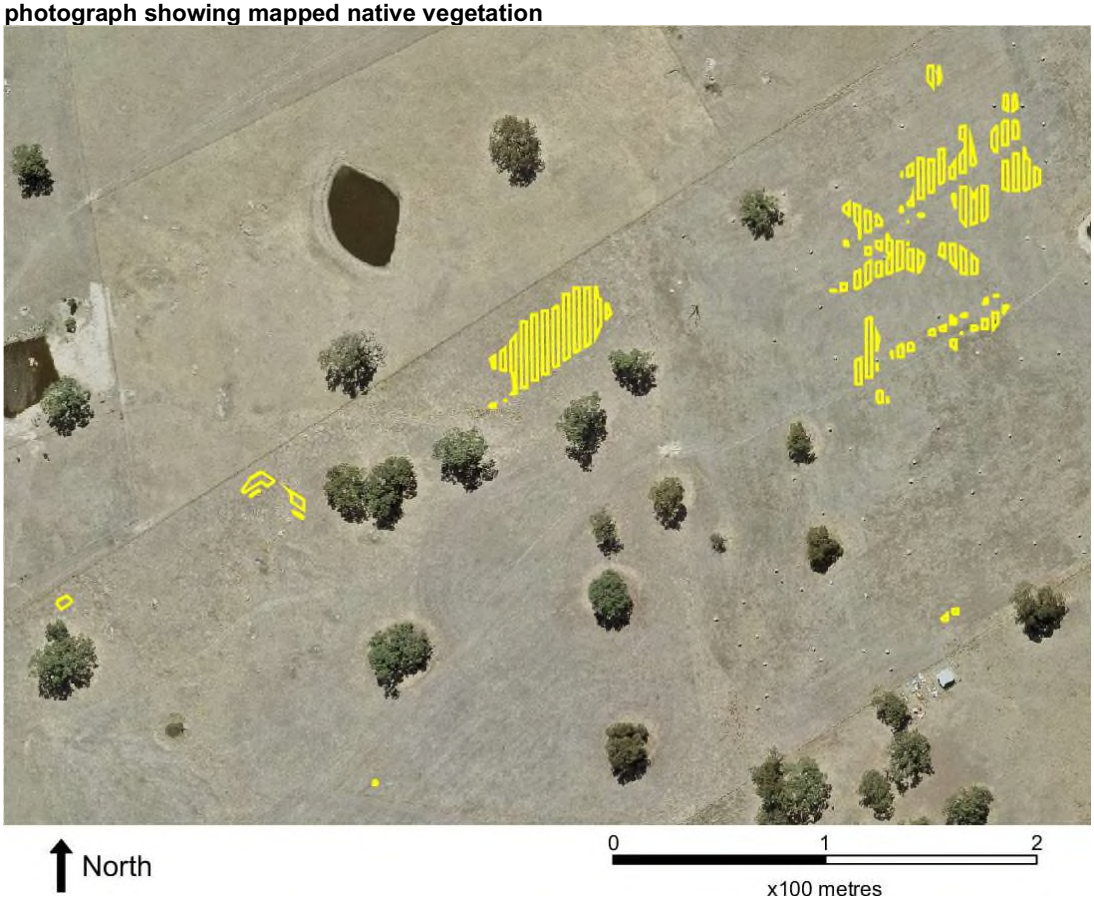
This is not applicable in the Basic Assessment Pathway.

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 4 AVAILABLE NATIVE VEGETATION CREDITS

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: 21/09/2021 09:32 **Report ID: 11011**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.022	0.279	0	CMA	North Central
			or LGA	Mount Alexander Shire

Details of available native vegetation credits on 21 September 2021 09:32

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0074	0.095	2	North Central	Northern Grampians Shire	Yes	Yes	No	VegLink
BBA-0085_2	0.087	0	North Central	Hepburn Shire	Yes	Yes	No	Bio Offsets
BBA-0737	0.192	16	North Central	Northern Grampians Shire	Yes	Yes	No	Bio Offsets
BBA-0741	1.691	0	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-0771	0.212	1	North Central	Loddon Shire	Yes	Yes	No	VegLink
BBA-0888	0.056	0	North Central	Swan Hill Rural City	Yes	Yes	No	Contact NVOR
BBA-1053	4.267	33	North Central	Gannawarra Shire	Yes	Yes	No	Contact NVOR
BBA-2163	0.085	0	North Central	Loddon Shire	Yes	Yes	No	VegLink
BBA-2389	0.177	3	North Central	Loddon Shire	Yes	Yes	No	VegLink
BBA-2438	0.033	0	North Central	Loddon Shire	Yes	Yes	No	VegLink
BBA-2606	0.125	15	North Central	Campaspe Shire	Yes	Yes	No	VegLink
BBA-3006	18.750	3	North Central	Greater Bendigo City	No	Yes	No	Ethos
BBA-3006	18.750	3	North Central	Greater Bendigo City	No	Yes	No	Contact NVOR
BBA-3031	8.852	174	North Central	Pyrenees Shire	Yes	Yes	No	VegLink
BBA-3031	1.000	0	North Central	Pyrenees Shire	Yes	Yes	Yes	VegLink
BBA-3052_01	12.981	275	North Central	Northern Grampians Shire	Yes	Yes	No	VegLink
TFN_2-C1626	22.893	0	North Central	Gannawarra Shire	No	Yes	No	VegLink
TFN-C1626	0.081	0	North Central	Gannawarra Shire	Yes	Yes	No	VegLink
TFN-C1640	0.854	3	North Central	Hepburn Shire	Yes	Yes	No	VegLink

TFN-C1662	0.038	0	North Central	Gannawarra Shire	Yes	Yes	No	VegLink
TFN-C1662_2	10.659	0	North Central	Gannawarra Shire	Yes	Yes	No	VegLink
TFN-C1662_3	7.753	0	North Central	Gannawarra Shire	Yes	Yes	No	VegLink
TFN-C1702	16.952	16	North Central	Gannawarra Shire	Yes	Yes	No	TFN
TFN-C1854	1.102	0	North Central	Macedon Ranges Shire	No	Yes	No	VegLink
TFN-C1970	7.509	0	North Central	Greater Bendigo City	No	Yes	No	Contact NVOR
TFN-C1970_2	3.631	0	North Central	Greater Bendigo City	No	Yes	No	Ethos
VC_CFL-3071_01	3.299	148	North Central	Loddon Shire	Yes	Yes	No	VegLink
VC_CFL-3076_01	9.378	49	North Central	Pyrenees Shire	Yes	Yes	No	Bio Offsets
VC_CLO-2451_01	19.100	146	North Central	Greater Bendigo City	No	Yes	No	Contact NVOR
VC_CLO-3046_01	1.365	96	North Central	Greater Bendigo City	No	Yes	No	Contact NVOR

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)
BBA-0765	0.094	0	North Central	Buloke Shire	Yes	Yes	No	Contact NVOR

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-0771_03	8.345	19	North Central	Loddon Shire	Yes	Yes	No	Contact NVOR
VC_CFL-3701_01	10.574	18	Goulburn Broken, North Central	Greater Bendigo City	Yes	Yes	No	Bio Offsets

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