ecology & heritage partners

Final Report

Biodiversity Assessment for the proposed Mangalore Solar Farm: 101 Coombes Road, Mangalore, Victoria

Prepared for

Tetris Energy

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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 **Detailed** 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 2 (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 native 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

No.	Application Requirement	Response
10	A site assessment report of the native vegetation to be removed, including: • A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.	Refer to Figure 2, Appendix 1.2 (habitat hectares assessment) and Appendix 1.3 (tree information)
11	Information about impacts on rare or threatened species habitat, including the relevant section of the Habitat importance map for each rare or threatened species requiring a species offset.	Refer to Appendix 2 (NVR Report)

1 INTRODUCTION

1.1 Background

Ecology and Heritage Partners Pty Ltd was commissioned by Tetris Energy to undertake a Biodiversity Assessment for the proposed Mangalore Solar Farm at 101 Coombes Road, Mangalore, 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 Station Road 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. As part of the initial above assessment, a Golden Sun Moth *Synemon plana* targeted survey was undertaken due to the presence of native grassland within the study area and the local region being part of their known distribution. This report presents the results of the assessments and discusses the potential ecological and legislative implications associated with the proposed action.

1.2 Study Area

The property is located at 101 Coombes Road, Mangalore and is approximately 100 kilometres north of Melbourne's CBD (Figure 1). The study area includes the 'wedge' of property between Station Road and the rail reserve parallel to Seymour-Avenel Road, Mangalore and covers approximately 17.41 hectares. In addition, the study area also includes the existing access point along Station Road into 101 Coombes Road and a strip of public land heading south-east from 101 Coombes Road's south-eastern boundary to accommodate the alignment of the power cables that will connect the development to the existing powerlines. The study area is bound by paddocks to the north, the rail reserve to the south-east and Station Road to the west.

The study area is currently used for grazing and is generally flat, with no ridges or crests within or immediately adjacent to the site A dam exists along the study area's northern boundary.

According to the Department of Environment, Land, Water and Planning (DELWP) NatureKit Map (DELWP 2021a), the study area is located within the Victorian Riverina bioregion, Goulburn Broken Catchment Management Authority (CMA) and Strathbogie 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);
- Strathbogie Planning Scheme; including,
    - 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

2.2.1 Biodiversity 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 2021);
- Relevant listings under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act), including the latest Threatened (DELWP 2019b) and Protected (DELWP 2019c) 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 2021d) to ascertain current zoning and environmental overlays in the study area; and
- Aerial photography of the study area.

2.3 Field Assessments

2.3.1 Biodiversity Assessment

A field assessment was undertaken on 9 December 2020 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).

2.3.2 Golden Sun Moth Targeted Survey

The aim of a Golden Sun Moth targeted survey is to confirm the presence or absence of the species, and to determine the potential regulatory and legislative implications associated with the proposed action.

Survey procedures were in accordance with the Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (DEWHA 2009), with the following tasks undertaken:

- Surveys were conducted by ecologists experienced in the detection and identification of Golden Sun Moth;
- Surveys were undertaken across the entire study area, as most of it contained potential habitat;
- A habitat assessment was completed detailing information on habitat quality, biomass levels, presence of weeds and floristic diversity;
- The study area was surveyed on four separate occasions (if the species is not recorded prior), with at least one week between surveys where possible, and at least two days since rain (unless confirmed flying at a reference site within two days of rainfall);

- Surveys took place during the species' flight season (early November 2020 to early January 2021). Moths were confirmed flying at known reference sites (Epping, Bacchus Marsh, Lovely Banks) prior to undertaking each survey;
- Surveys were undertaken during weather conditions suitable for detecting the species. Male moths generally fly between 10am and 3pm on warm (over 20˚C by 10am) days with minimal cloud cover and still conditions. However, if males are observed flying on site after 3pm or during moderately windy conditions surveys can continue until males are no longer observed flying; and,
- Surveys were conducted using parallel transects no more than 50 metres wide with observers walking or, if terrain permitted, driving in a car at < 10 kilometres / hour (flying male moths can be readily seen from a vehicle) until moths are observed).

Targeted Golden Sun Moth surveys were undertaken on four separate occasions (9, 24 and 26 December 2020 and 7 January 2021) during optimal conditions suitable for detecting species within the study area.

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

Under the *Planning and Environment Act 1987,* Clause 52.17 of the Strathbogie 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

2.5.1 Biodiversity Assessment

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.

2.5.2 Golden Sun Moth Targeted Survey

It is important to acknowledge that the number of documented records for this target species in a given location is not necessarily a reflection of population size or density. Furthermore, a documented record may indicate a species' presence in an area at a given point in time, but it generally does not offer information about how a species is making use of an area (e.g. foraging, dispersing, reintroducing, etc.). This can be important information when determining the potential impact of a proposed action on a threatened species.

Surveys for this species were generally conducted in line with the recommended conditions (e.g. climatic conditions relating to temperature (over 20˚C by 10am) with minimal cloud cover and wind speed, within the active flying season), although if the species was confirmed flying at a reference site during conditions outside of the optimal conditions stated in the recommended survey guidelines (DEWHA 2009) then surveys proceeded. Nonetheless, it is considered that the survey effort, timing and results presented meet the objectives of the surveys and provide sufficient information to support the approvals processes.

3 RESULTS

3.1 Vegetation Condition

Vegetation within 101 Coombes Road contained a mixture of exotic pasture grass and native grasses, rushes and trees of various ages, while vegetation on public land consisted of native woodlands.

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

3.1.1 Patches of Native Vegetation

Plains Grassy Woodland (EVC 55_61) is modelled to occur within the study area (DELWP 2021b). The presence of this EVC is generally consistent with the modelled pre-1750s native vegetation mapping within the public land component of the study area along the road and rail reserves (DELWP 2021c). However, vegetation within 101 Coombes Road does not align with the pre-1750s native vegetation due to the lack of the shrubby and treed strata. Specific details relating to the observed EVC are provided below.

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

Plains Grassy Woodland

Plains Grassy Woodland is characterised by eucalypt woodland to approximately 15 metres tall on fertile and well drained soils. The understorey typically comprises a species-rich grassy and herbaceous ground layer with a sparse shrub layer.

Plains Grassy Woodland was present as two habitat zones of differing quality, being PGW1 and PGW2 (Figure 2). PGW1 occupied approximately 13 hectares within 101 Coombes Road and predominantly consisted of native grasses and rushes between approximately 40% to 100% of the vegetation coverage. These species included Brown-back Wallaby-grass *Rytidosperma duttonianum*, Bristly Wallaby-grass *Rytidosperma setaceum*, Rough Spear-grass *Austrostipa scabra* and Gold Rush *Juncus flavidus* (Plate 1). A stand of Yellow Box *Eucalyptus melliodora* saplings were also present towards the southern corner of 101 Coombes Road (Plate 2).

PGW2 was present in four patches and consisted of higher quality treed vegetation typical of Plains Grassy Woodland within the rail and road reserves with a canopy cover of Yellow Box and White Box *Eucalyptus albens* and a mix of the same native grasses as within PGW1 (Plate 3).

Plate 1. Wallaby Grass and Gold Rush within a patch of PGW1 towards the study area's western boundary (Ecology and Heritage Partners Pty Ltd 09/12/2020).

Plate 2. Yellow Box saplings in a patch of PGW1 at the southern corner of the study area (Ecology and Heritage Partners Pty Ltd 09/12/2020).

Plate 3. A patch of PGW2 along Seymour-Avenel Road (Ecology and Heritage Partners Pty Ltd 09/12/2020).

3.1.2 Large Trees in Patches

One Large Yellow Box within a patch was recorded towards the southern corner of the study area (Plate 4; Figure 2: Appendix 1.3).

Plate 4. A Large Yellow Box towards the southern corner of the study area in PGW1 (Tree 2 on Figure 2) (Ecology and Heritage Partners Pty Ltd 09/12/2020).

3.1.3 Scattered Trees

A total of three scattered trees (Yellow Box and White Box) were recorded within the study area, which consisted of two Large Trees and one small scattered tree (Plate 5; Plate 6; Figure 2; Appendix 1.3).

Plate 5. A Large Yellow Box towards the study area's northern boundary (Tree 1 on Figure 2) (Ecology and Heritage Partners Pty Ltd 09/12/2020).

Plate 6. A Large White Box on the southern side of the existing farm access gate and driveway (Tree 3 on Figure 2) (Ecology and Heritage Partners Pty Ltd 09/12/2020).

3.1.4 Introduced and Planted Vegetation

Areas not supporting native vegetation accounted for approximately 4.41 hectares (25%) within 101 Coombes Road (Figure 2). These areas had a high cover (>90%) of exotic grassy pasture species consisting largely of Rat's-tail Fescue *Vulpia myuros*, with other species such as Soft Brome *Bromus hordeaceus* subsp. *hordeaceus*, Barley *Hordeum vulgare* and Clustered Dock *Rumex conglomeratus* also present (Plate 7). Scattered native grasses and rushes were sometimes present in these areas, however they did not have the required 25% relative cover to be considered a patch.

Plate 7. A section of the paddock within 101 Coombes Road dominated by Rat's-tail Fescue (Ecology and Heritage Partners Pty Ltd 09/12/2020).

3.2 Fauna Habitat

Patches of native grassland occur throughout the study area, which 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 native fauna, including snakes, insects, lizards, skinks and grassland birds. Diurnal and nocturnal raptors are also likely to forage across these areas. The portion of the paddocks containing pasture grasses would also be used by native fauna species. The woodland vegetation and scattered trees would provide an important resource for arboreal fauna, providing nesting, roosting and foraging opportunities for birds, insects and arboreal mammals. Fauna observed using this habitat included Australian Magpie *Cracticus tibicen*, Australian Raven *Corvus coronoides*, Little Corella *Cacatua sanguinea* and Welcome Swallow *Hirundo neoxena*.

Golden Sun Moth typically occur in native grassland, grassy woodland, dominated by greater than 40% cover of wallaby-grass, in particular *Rytidosperma* spp. (DSE 2004), but may also inhabit areas dominated by Kangaroo Grass *Themeda triandra* (Endersby and Koehler 2006) and introduced grassland dominated by Chilean Needle-grass *Nassella neesiana* and other introduced species (Aaron Organ, Ecology and Heritage Partners, pers. obs.). Male flight is typically low, to about a metre above the ground, fast and can be prolonged, but they are generally not recorded flying more than 100 metres from suitable habitat (Clarke and O'Dwyer 1999). The study area supports broad areas of suitable habitat for the species as indicated by areas of habitat zone PGW1 (Plate 1; Figure 2) containing wallaby-grass.

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

The below clearing scenario is based on impacts to patches of PGW1 within the development footprint, which consist of native grasses and rushes (Plate 1; Figure 2a). All scattered trees and the Large Tree in a patch will not be impacted due to the deliberate positioning of the solar panels, access road and associated infrastructure away from these trees. All construction works will occur within the impact area, with no indirect construction impact buffers required as part of these works.

None of the native vegetation within PGW2 will be impacted, as the power cable running from the battery storage facility within 101 Coombes Road to the overhead powerlines connection point (shown as an aqua blue circle on Figure 2a) south-east of Seymour-Avenel Road will use directional drilling underground to navigate under the road and rail reserves.

Vegetation within the Station Road reserve, i.e. where the access point is to 101 Coombes Road (Figure 2a), is an unsealed single lane carriage way (Plate 6). It has a clearance width and height of approximately six and 12 metres respectively, which is large enough to allow large truck to pass through without needing to remove, lop or prune any roadside vegetation.

3.3.1 Vegetation proposed to be removed

The study area is within Location 2, with 4.513 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Detailed 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	Detailed
Location Category	2
Total Extent (past and proposed) (ha)	4.513
Extent of past removal (ha)	0.000
Extent of proposed removal (ha)	4.513
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	Endangered

3.3.2 Offset Targets

The offset requirement for native vegetation removal is 0.816 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	0.816 General Habitat Units
Large Trees	0
Vicinity (catchment/council)	Goulburn Broken CMA / Strathbogie Shire Council
Minimum Strategic Biodiversity Value*	0.334

*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. One State significant flora, Cottony Cassinia *Cassinia ozothamnoides* has previously been recorded in 1980 approximately 4.5 kilometres north-east of the study area (Figure 3). Based on the historical farming practices that removed most trees and herbs and all shrubs from 101 Coombes Road and continuous cropping/grazing, absence of suitable habitat (i.e. rocky areas/knolls) within 101 Coombes Road, wider agricultural landscape context and proximity and age of previous records, significant flora species are considered unlikely to occur within the study area.

3.4.2 Fauna

No national or State significant fauna were recorded during the site assessment. The remnant eucalypts within 101 Coombes Road 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. There largest number of previous observations within five kilometres of the study have been for the Brown Treecreeper *Climacteris picumnus*, Hooded Robin *Melanodryas cucullata* and Bush Stone-curlew *Burhinus grallarius* (Figure 4). The Brown Treecreeper and Hooded Robin typically occupy woodland vegetation and are therefore very unlikely to be observed within 101 Coombes Road. While it is feasible for the Bush Stone-curlew to forage in the grassland of 101 Coombes Road, the most recent record was 25 years ago, and it is unlikely that they would rely on this habitat.

There is suitable habitat for the Golden Sun Moth within the study area given the presence of wallaby-grass within patches of PGW1 and PGW2 (Figure 2) and a targeted survey was undertaken with respect to this species within 101 Coombes Road.

Based on the highly modified nature of the study area within 101 Coombes Road, landscape context and the proximity and age of previous records, significant fauna species other than the Golden Sun Moth 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

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

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia;
- Natural Grasslands of the Murray Valley Plains;
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; 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.

The study area and adjoining land contained White Box and Yellow Box, however to qualify as the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community, the ground layer must be dominated by native species (which it was in the areas identified as PGW1 and PGW2 on Figure 2) and contain at least 12 native non-grassy species, e.g. forbs, shrubs, ferns, sedges (Threatened Species Scientific Committee (TSSC) 2006). However, the only non-grassy native species recorded were Gold Rush, Tall Sedge *Carex appressa* and Chocolate Lily *Arthropodium strictum*. Further, given the absence of 'important species', as defined in the Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (TSSC 2006) such as Kangaroo Grass *Themeda triandra* and orchids, the vegetation present did not meet the thresholds that define this nationally significant ecological community.

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia is also modelled to occur within the study area and requires Grey Box to be present in order to be considered as part of this ecological community. However, no Grey Boxes were recorded within the study area.

Vegetation within the study area does not correspond to any FFG Act-listed ecological communities.

3.5 Golden Sun Moth Targeted Survey

3.5.1 Desktop Assessment

The Golden Sun Moth is listed as Critically Endangered under the EPBC Act. The DELWP NatureKit tool (DELWP 2021a) contains seven Golden Sun Moth records between 16 to 20 kilometres from the study area to the south-east and south-west, which were recorded between 2009 and 2012. Furthermore, Ecology and Heritage Partners recorded Golden Sun Moth on a large rural property in Nagambie approximately 15 kilometres north of the study area during December 2020.

3.5.2 Habitat Assessment

101 Coombes Road has a long history of being used for agriculture and as a result the vegetation is highly modified from its original state as Plains Grassy Woodland (Plate 1; Plate 7). However, the patches of native grasslands within 101 Coombes Road still provide habitat features suitable for the Golden Sun Moth. Golden Sun Moth typically occur in native grassland and grassy woodland dominated by greater than 40% cover of wallaby-grass (DSE 2004), but may also inhabit areas dominated by Kangaroo Grass (Endersby and Koehler 2006) and introduced grassland dominated by Chilean Needle-grass *Nassella neesiana* and other introduced species. The species' preferred host plant, wallaby-grass, occurs within the areas shown as PGW1 and PGW2 on Figure 2 and has a coverage of between 40% to 100%.

3.5.3 Results

No individuals were recorded within the study area during the targeted surveys (Table 5). Grazing is likely to have impacted the suitability of the site as Golden Sun Moth habitat, both with the study area and in the wider landscape.

Table 5. Results of the Golden Sun Moth targeted survey.

Survey Date	Survey times	Reference Site	Temperature (°C)	Wind (km/hr)	Cloud cover (%)	No. of days since rain	No. GSM
09/12/2020	11:00 – 16:00	Cooper Street, Epping. Bences Road, Bacchus Marsh.	20.5	10.3	5	>2	0
24/12/2020	10:00 – 15:30	Cooper Street, Epping. Bences Road, Bacchus Marsh.	20.1	18.1	5	1	0
26/12/2020	10:00 – 15:00	Cooper Street, Epping. Bences Road, Bacchus Marsh.	24.6	12.8	5	>2	0
07/01/2021	10:30 – 15:30	Cooper Street, Epping. Bences Road, Bacchus Marsh.	22.1	15.2	10	>2	0

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). A Golden Sun Moth targeted survey was undertaken due to the suitability of grasslands within the study area as potential habitat, however no moths were observed. 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 Strathbogie 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 Strathbogie 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 Strathbogie Shire Council. The following zoning and overlays apply (DELWP 2021d):

- Farming Zone (FZ) (private property)
- Public Use – Transport (PUZ4) (public property)
- Bushfire Management Overlay (BMO) (public property)

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 2, with 4.513 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Detailed assessment pathway.

The offset requirement for native vegetation removal is 0.816 General Habitat Units.

A planning permit from the Strathbogie 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 required to be referred to DELWP because it falls under the Detailed assessment pathway.

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 original concept plan for this site included the solar panels extending to the study area's northern and eastern boundaries. Following the field assessment to map patches of native vegetation, the concept plan was revised to minimise the impact to native grasses. The revised concept plan presented in this report has reduced the development footprint's extent over patches of PGW1 by 45% from 8.140 hectares to 4.513 hectares.
- The existing access point off Station Road will continue to be used for the solar farm development, thereby avoiding the need to remove road-side vegetation.

- There will be no indirect construction impacts to native vegetation associated with the development, as the solar panels, access road and PCU battery storage building can all be constructed within the extent of their final footprint.
- The power cables that connect the PCU battery storage facility within 101 Coombes Road to the overhead powerlines connection point (shown as an aqua blue circle south-east of Seymour-Avenel Road on Figure 2a) will not impact any native vegetation within the study area. The power cables must be directionally dug under the rail reserve and will also be directionally dug under the road reserve.
- The construction method used to install the solar panels is expected to have minimal physical impact on the patches of native grasses (i.e. PGW1). The steel posts on which the solar panels are mounted are driven into the ground using a pole driver attached to the back of a soft-tyred vehicle. The only physical impact to the ground is therefore the width of the poles, with each one being approximately 10 centimetres in diameter.
- Once installed, there will be a six-metre separation distance between each row of solar panels, which will allow sunlight to reach most of the native grass as the sun moves across the sky. However, it is acknowledged that the longevity of the native grasses within the development footprint over several years is not certain due to changed micro-climatic conditions. All patches of PGW1 within the development footprint have therefore been assumed as lost when calculating the offset requirements.

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 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 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 2021e), there are five offset sites within the Goulburn Broken CMA or Strathbogie 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 3.

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 6.

Table 6. 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). A Golden Sun Moth targeted survey was undertaken due to the suitability of grasslands within the study area as potential habitat, however no moths were observed. 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	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 2, with 4.513 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Detailed assessment pathway. The offset requirement for native vegetation removal is 0.816 General Habitat Units. A planning permit from the Strathbogie 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 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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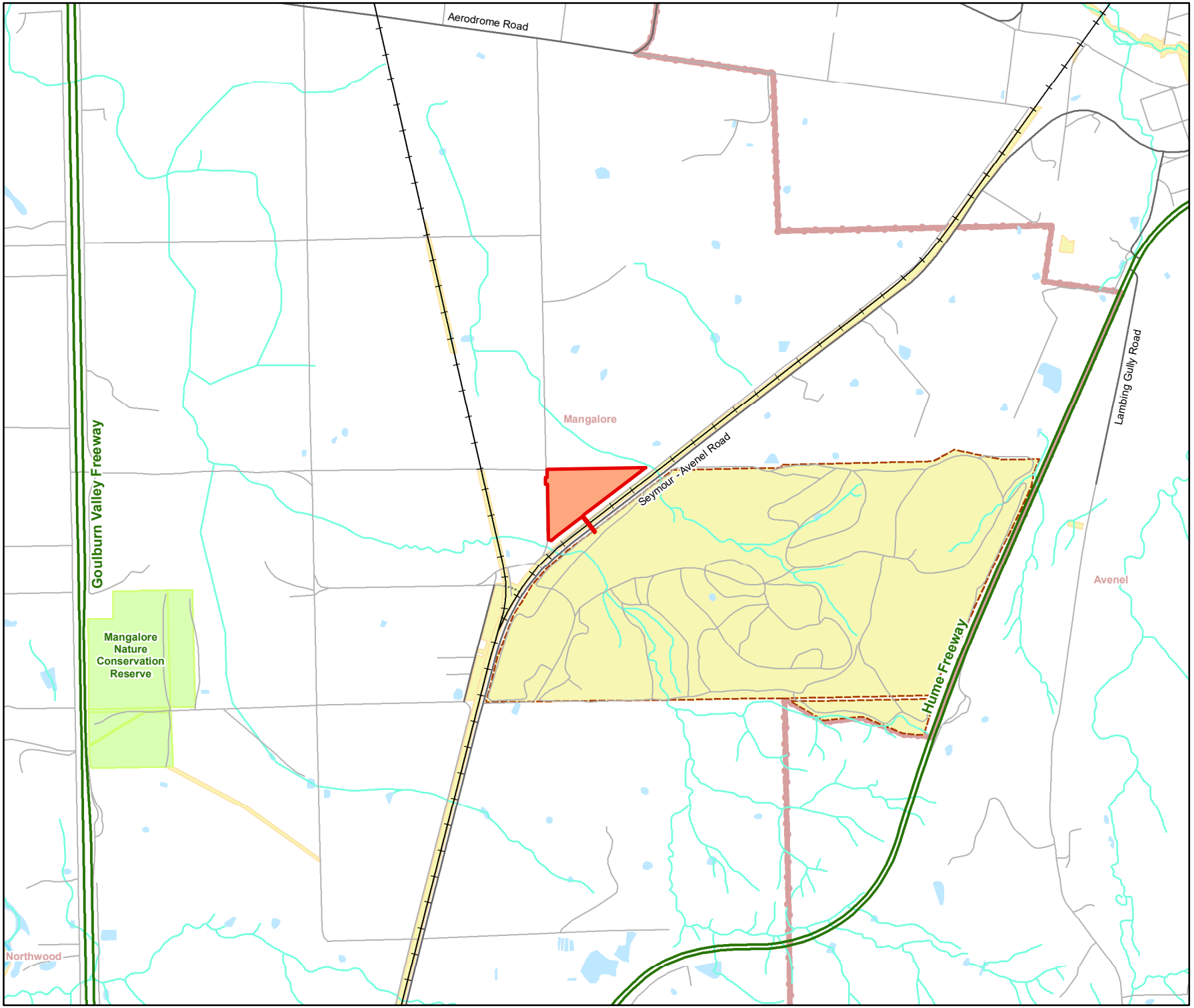


Legend

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

Figure 1

Location of the study area

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

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

- Plains Grassy Woodland (EVC 55)

Figure 2

Ecological features

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

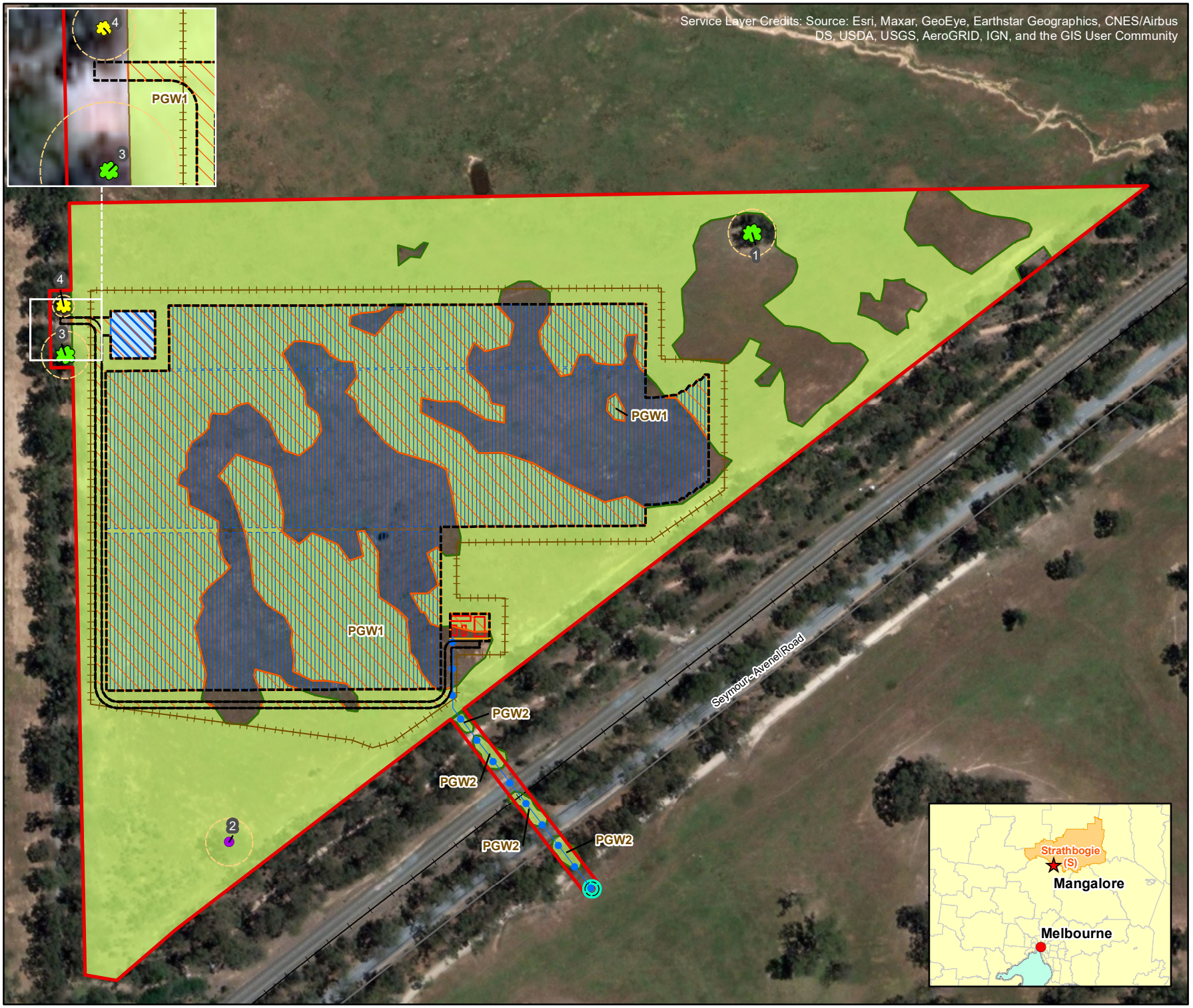
N

0 40 80

Meters

Map Scale: 1:3,200 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners



Legend

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

Ecological Vegetation Class

- Plains Grassy Woodland (EVC 55)
- Impacted vegetation

Development plan

- Boundary fence
- Solar panel trackers
- Laydown area
- PCS
- PCU Battery storage
- Point of connection
- Access roads
- OH Power lines

Figure 2a

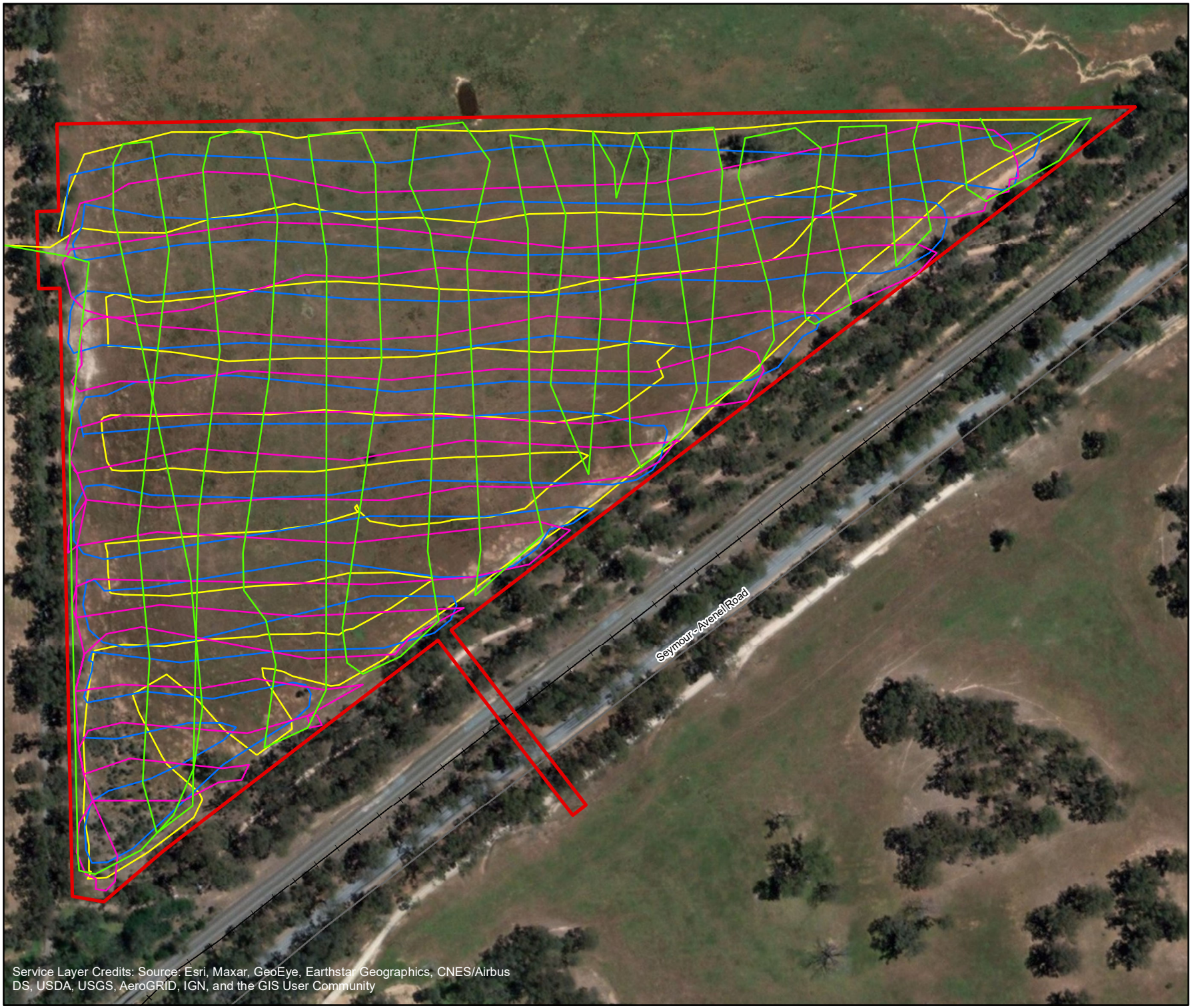
Development impacts

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

0 40 80
Meters

Map Scale: 1:3,200 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

Study Area

Survey tracks

- Survey 1: 9 December 2020
- Survey 2: 24 December 2020
- Survey 3: 26 December 2020
- Survey 4: 7 January 2021

Figure 3

Golden Sun Moth survey tracks

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

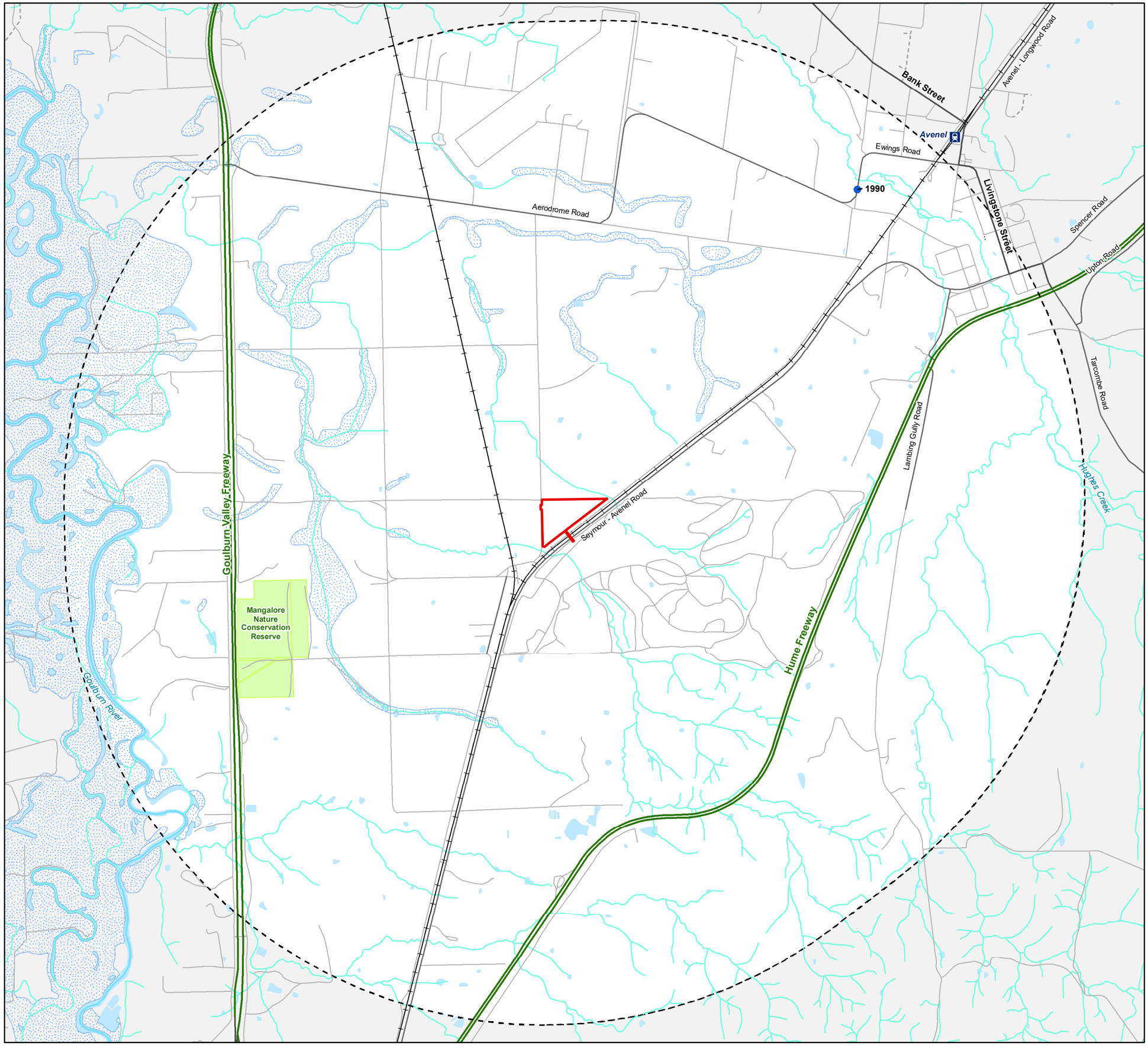
N

0 40 80

Meters

Map Scale: 1:3,200 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners



Legend

Study Area

Significant Flora

- Cottony Cassinia

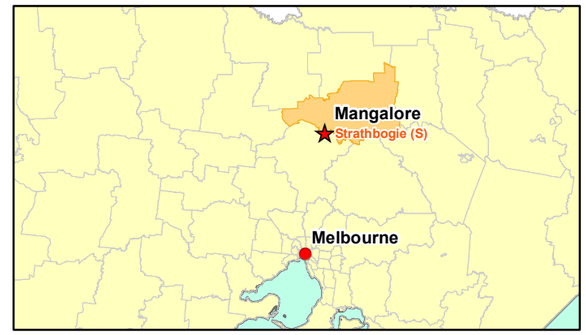


Figure 4

Previously documented significant flora within 5km of the study area

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

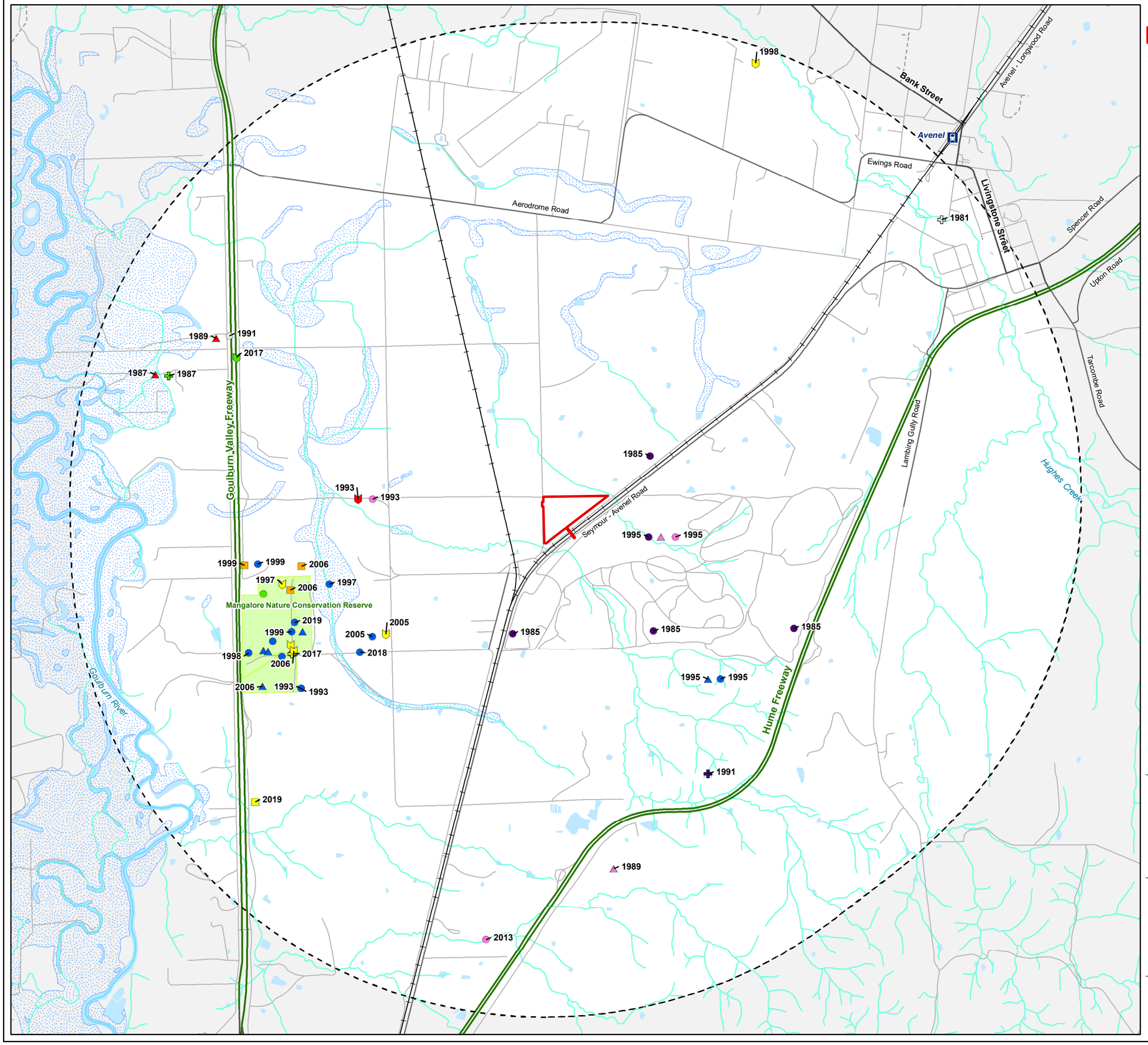
N

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
- Brown Toadlet
- Brown Treecreeper
- Brush-tailed Phascogale
- Bush Stone-curlew
- Diamond Firetail
- Eastern Great Egret
- Great Egret
- Hooded Robin
- Lace Monitor
- Macquarie Perch
- Nankeen Night Heron
- Pied Cormorant
- Square-tailed Kite
- Squirrel Glider
- Swift Parrot
- White-bellied Sea-Eagle

Figure 5

Previously documented significant fauna within 5km of the study area

Ecological Assessment for the proposed Mangalore Solar Farm, 101 Coombes Road, Mangalore

N

0 1 2

Kilometres

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

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APPENDIX 1 FLORA

Appendix 1.1 Flora Results

Table A1.1. Flora within the study area.

Scientific Name	Common Name	Notes
INDIGENOUS SPECIES		
Amyema spp.	Mistletoe	
Anthosachne scabra	Common Wheat-grass	
Arthropodium strictum	Chocolate Lily	
Austrostipa scabra	Rough Spear-grass	
Carex appressa	Tall Sedge	
Eucalyptus albens	White Box	
Eucalyptus melliodora	Yellow Box	
Juncus flavidus	Gold Rush	
Rytidosperma duttonianum	Brown-back Wallaby-grass	
Rytidosperma racemosum var. *racemosum*	Slender Wallaby-grass	
Rytidosperma setaceum	Bristly Wallaby-grass	
NON-INDIGENOUS OR INTRODUCED SPECIES		
Agrostis capillaris	Brown-top Bent	
Aira elegantissima	Delicate Hair-grass	
Avena barbata	Bearded Oat	
Bromus hordeaceus subsp. *hordeaceus*	Soft Brome	
Cynodon dactylon	Couch	
Hordeum vulgare	Barley	
Romulea rosea	Onion Grass	
Rumex acetosella	Sheep's Sorrel	
Rumex conglomeratus	Clustered Dock	
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		PGW1	PGW2
Bioregion		Victorian Riverina	Victorian Riverina
EVC / Tree		Plains Grassy Woodland	Plains Grassy Woodland
EVC Number		55	55
EVC Conservation Status		Endangered	Endangered
Patch Condition	Large Old Trees /10	2	0
	Canopy Cover /5	0	4
	Under storey /25	5	5
	Lack of Weeds /15	0	4
	Recruitment /10	0	0
	Organic Matter /5	4	5
	Logs /5	0	0
	Treeless EVC Multiplier	1.00	1.00
	Subtotal =	11.00	18.00
Landscape Value /25		6	6
Habitat Points /100		17	24
Habitat Score		0.17	0.24

Note: PGW = Plains 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)	Species Name	Common Name	DBH (cm)	Size Class	Scattered / Parch	Status
1	*Eucalyptus melliodora*	Yellow Box	228	Large	Scattered	Retained
2	*Eucalyptus melliodora*	Yellow Box	140	Large	Patch	Retained
3	*Eucalyptus albens*	White Box	131	Large	Scattered	Retained
4	*Eucalyptus albens*	White Box	57	Small	Scattered	Retained

APPENDIX 2 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: **14/04/2021**
Time of issue: **3:32 pm**

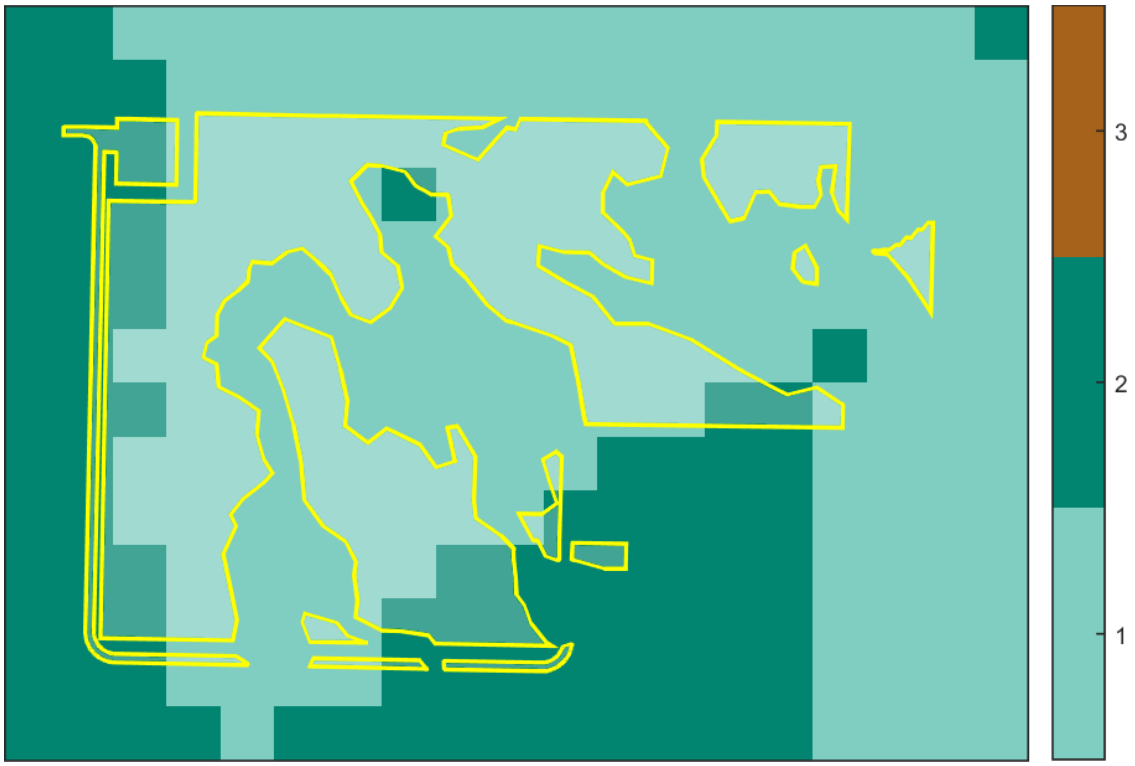
Report ID: EHP_2021_037

Project ID	EHP14168_Mangalore_VG94

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	4.513 ha
Extent of past removal	0.000 ha
Extent of proposed removal	4.513 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



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]	0.816 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Strathbogie Shire Council
Minimum strategic biodiversity value score[2]	0.334
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 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
1-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.013	0.013	0.300		0.002	General
2-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.021	0.021	0.470		0.004	General
3-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.025	0.025	0.529		0.005	General
4-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.021	0.021	0.470		0.004	General
5-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.026	0.026	0.560		0.005	General
6-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.041	0.041	0.560		0.008	General
7-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.860	0.860	0.478		0.162	General
8-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.044	0.044	0.300		0.007	General
9-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.222	0.222	0.403		0.040	General
10-A	Patch	vriv0055_61	Endangered	0	no	0.170	3.004	3.004	0.408		0.539	General
11-A	Patch	vriv0055_61	Endangered	0	no	0.170	0.235	0.235	0.300		0.039	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	0.0004
Western Silver Wattle	*Acacia decora*	500027	Vulnerable	Dispersed	Habitat importance map	0.0001
Narrow Goodenia	*Goodenia macbarronii*	501513	Vulnerable	Dispersed	Habitat importance map	0.0001
Bent-leaf Wattle	*Acacia flexifolia*	500035	Rare	Dispersed	Habitat importance map	0.0001
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0001
Ausfeld's Wattle	*Acacia ausfeldii*	500013	Vulnerable	Dispersed	Habitat importance map	0.0001
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0000
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0000
Broom Bitter-pea	*Daviesia genistifolia s.s.*	503813	Rare	Dispersed	Habitat importance map	0.0000
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Umbrella Grass	*Digitaria divaricatissima var. divaricatissima*	501045	Vulnerable	Dispersed	Habitat importance map	0.0000
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0000
Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0000
Rosemary Grevillea	*Grevillea rosmarinifolia subsp. rosmarinifolia*	504066	Rare	Dispersed	Habitat importance map	0.0000
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0000
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0000
Kamarooka Mallee	*Eucalyptus froggattii*	501279	Rare	Dispersed	Habitat importance map	0.0000

Slender Club-sedge	*Isolepis congrua*	501773	Vulnerable	Dispersed	Habitat importance map	0.0000
Fuzzy New Holland Daisy	*Vittadinia cuneata var. morrisii*	505060	Rare	Dispersed	Habitat importance map	0.0000
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0000
Delicate Crane's-bill	*Geranium sp. 6*	505347	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	507229	Endangered	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0000
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	503104	Rare	Dispersed	Habitat importance map	0.0000
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0000
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	504823	Endangered	Dispersed	Habitat importance map	0.0000
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0000
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0000
Lanky Buttons	*Leptorhynchos elongatus*	501941	Endangered	Dispersed	Habitat importance map	0.0000
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke Mistletoe	*Amyema linophylla subsp. orientalis*	500217	Vulnerable	Dispersed	Habitat importance map	0.0000
Southern Swainson-pea	*Swainsona behriana*	504944	Rare	Dispersed	Habitat importance map	0.0000
Lewin's Rail	*Lewinia pectoralis pectoralis*	10045	Vulnerable	Dispersed	Habitat importance map	0.0000
Squirrel Glider	*Petaurus norfolcensis*	11137	Endangered	Dispersed	Habitat importance map	0.0000
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0000
Small Scurf-pea	*Cullen parvum*	502773	Endangered	Dispersed	Habitat importance map	0.0000
Swift Parrot	*Lathamus discolor*	10309	Endangered	Dispersed	Habitat importance map	0.0000
Growling Grass Frog	*Litoria raniformis*	13207	Endangered	Dispersed	Habitat importance map	0.0000

Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0000
Speckled Warbler	*Chthonicola sagittatus*	10504	Vulnerable	Dispersed	Habitat importance map	0.0000
Golden Sun Moth	*Synemon plana*	15021	Critically endangered	Dispersed	Habitat importance map	0.0000
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000

Habitat group

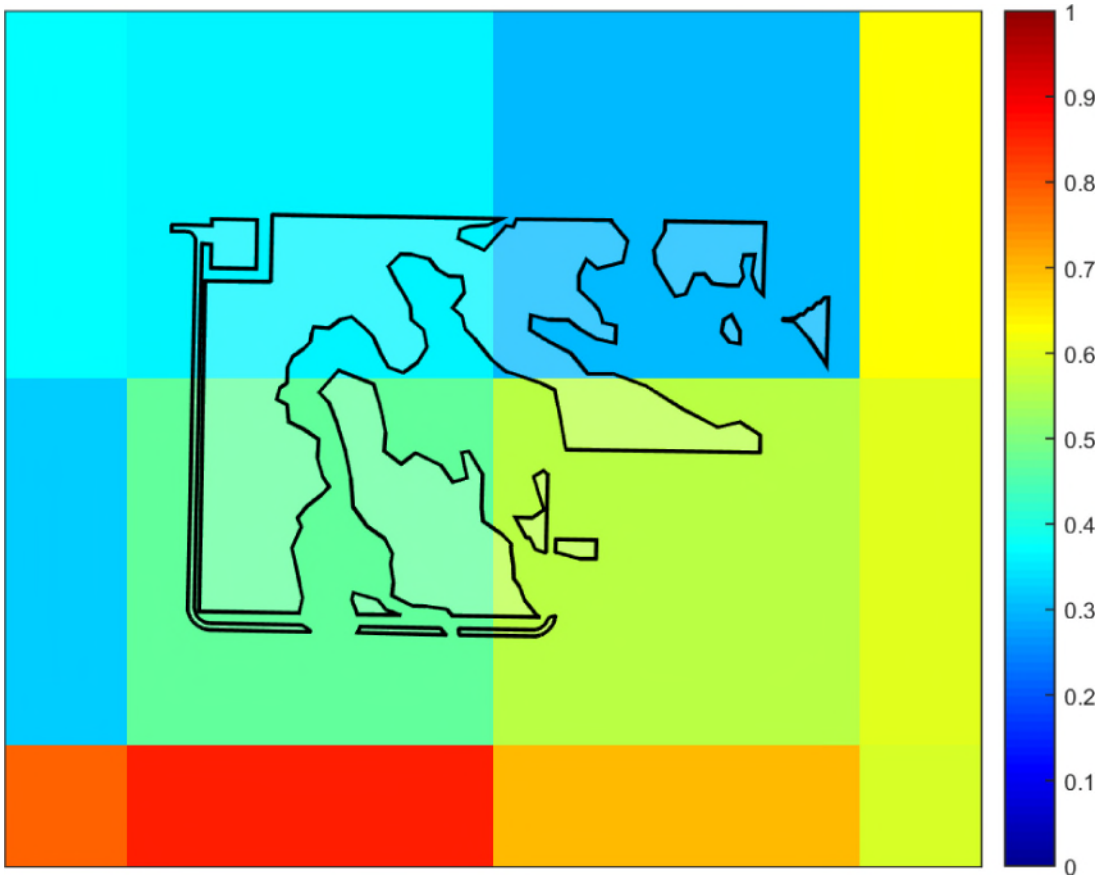
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

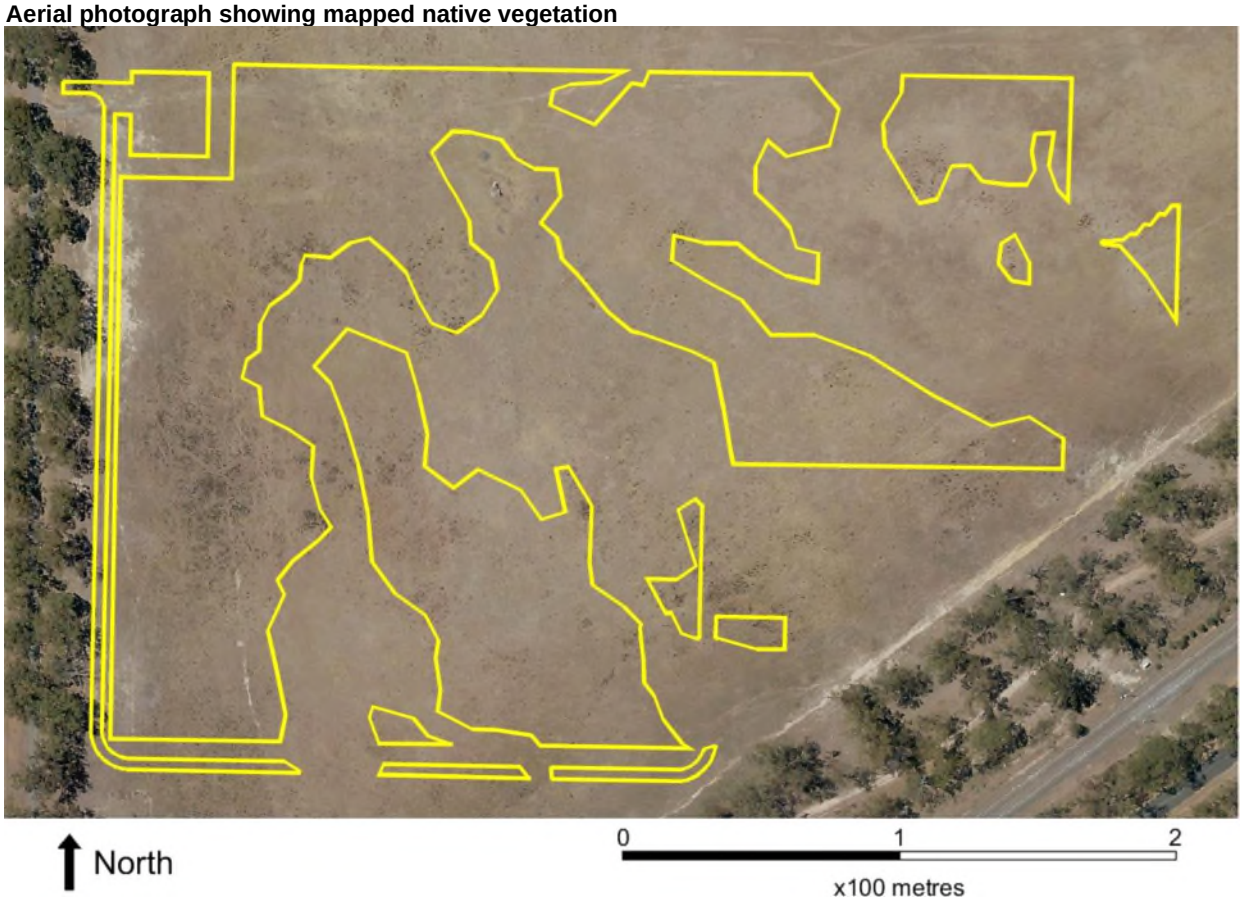
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance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

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

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 17/03/2021 04:43 **Report ID: 8150**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.816	0.334	0	CMA	Goulburn Broken
			or LGA	Strathbogie Shire

Details of available native vegetation credits on 17 March 2021 04:43

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-1145	1.441	58	Goulburn Broken	Mitchell Shire	No	Yes	No	Ethos
TFN-C1962	0.850	19	Goulburn Broken, Port Phillip and Westernport	Macedon Ranges Shire	No	Yes	No	Contact NVOR
VC_CFL-2636_01	19.537	148	Goulburn Broken	Strathbogie Shire	Yes	Yes	No	Bio Offsets, VegLink
VC_CFL-3075_01	9.585	132	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
VC_TFN-C2047_01	9.059	47	Goulburn Broken	Mitchell Shire	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)

There are no potential sites listed in the Native Vegetation Credit Register that meet your offset requirements.

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

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

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

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
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