APPENDIX B ECOLOGICAL ASSESSMENT

ECOLOGICAL ASSESSMENT

Muskerry Solar Power Station

September 2022

Project Number: 19-941

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TABLE OF CONTENTS

FIGURES

TABLE

ACRONYMS AND ABBREVIATIONS

Item	Definition
ASL	Above sea level
AWS	Automatic weather station
BOM	Australian Bureau of Meteorology
CaLP Act	*Catchment and Land Protection Act, 1994*
CEMP	Construction environmental management plan
Cwth	Commonwealth
DELWP	Department of Environment, Land, Water and Planning
DAWE	(Cwth) Department of Agriculture Water and the Environment
DSE	Department of Sustainability and Environment
EPBC Act	(Cwth) *Environment Protection and Biodiversity Conservation Act 1999*
EVC	Ecological Vegetation Community
FFG	*Flora and Fauna Guarantee Act, 1988*
ha	Hectares
HDM	Habitat Distribution Model (NatureKit 2.0)
HIM	Habitat Importance Map (NatureKit 2.0)
km	Kilometres
m	Metres
MNES	Matters of National Significance
P&E	*Planning and Environment Act, 1987*
SLL	Striped Legless Lizard (*Delma impar)*
SP	Swift Parrot (*Lathamus discolor)*
sp/spp	Species/multiple species

The guidelines	Guidelines for the removal, destruction or lopping of native vegetation
VBA	Victorian Biodiversity Atlas
VQA	Vegetation Quality Assessment

EXECUTIVE SUMMARY

The study area for the proposed Solar Fam is located at Muskerry, 35 km east of Bendigo, Victoria. The proposed area for Muskerry Solar Power Station covers 927 hectares divided between the north and the south. The southern Solar Power Station boundaries include Toolleen-Axedale Road to the south and Murphys Lane to the east. There are neighbouring private properties to the north and west. The northern Solar Power Station's boundary to the north is Toolleen Angle Road, Muskerry School East Lane to the west and private property to the east and south. Murphy's Lane links the two proposed Solar Power Station areas.

The study area covers 927 hectares. The final proposed development footprint covers 496.21 hectares. Muskerry North development footprint covers 184.28 hectares and the substation to connect both properties will be located on Lot 8~D\PP3243. The connection to the substation to Muskerry North will run through lots 7B~D\PP3243 and Lot 1 TP892631. Muskerry South covers 229.34 hectares.

Under the *Planning and Environment Act 1987*, the study area is in Farm Zone (FZ1) and other relevant overlays include a Bushfire Management Overlay (BMO) and Environmental Significance Overlay (ESO1). Under Clause 53.13 - Renewable Energy Facility (other than wind farm), Clause 52.17 – Native Vegetation and the Solar Energy Facilities - Design and Development Guideline (DELWP 2019) an ecological assessment needs to be undertaken to determine the native vegetation on site and the potential impacts on threatened species and/or threatened vegetation communities.

The results from the field assessment determined the Ecological Vegetation Classes (EVCs) in the study area are Box Ironbark Forest (EVC 61), Creek line Grassy Woodland (EVC 68), Grassy Woodland (EVC 175_61), Plains Woodland (EVC 803) and Floodplain Pond Herbland (EVC 810).

The native vegetation on site includes eleven habitat zones covering 129.60 hectares, 691 large trees and 67 scattered trees. The habitat zones that would be retained covers 123.83 hectares and 642 large trees and 54 scattered trees.

The native vegetation will be avoided include habitat zones 2, 7, 8, 9. The proposed native vegetation impacts Habitat Zones 1, 3, 4, 5, 6,10 and 11 involving partial or complete removal of habitat zones. However, significant steps were undertaken to avoid and minimise any unnecessary native vegetation removal.

The steps to avoid native vegetation impacts include the following:

- No native vegetation removal will occur in creek lines and erosion gullies.
- Trees in unmade road reserves and on roadsides will be retained as much as possible for canopy connection for the Brush-tailed Phascogale.
- Roadside vegetation would be impacted on Muskerry East School Road (habitat zones 10b and 10c) for a width of 10 metres to connect Muskerry North and South. There are two options proposed (Option A and Option B) and these areas have been appropriately offset.
- Large and small scattered trees and patches of native vegetation on boundaries will be avoided. A buffer has been included in the development footprint to protect these areas.
- The development footprint has avoided habitat zones in Muskerry South on Axedale-Toolleen Road, Habitat Zone 5, and the southwest corner (Axedale-Toolleen Road and Murphys Lane).
- The development footprint has been reduced in Muskerry North to retain the large, scattered trees.
- A 30-metre buffer has been applied to the creeks.
- Large patches of native vegetation or scattered trees have been retained to maintain the stepping-stones within the landscape to ensure habitat connectivity. This includes Habitat Zones 1, 4, 6 and 8.
- Habitat Zones with higher quality vegetation (Habitat Zones 7 and 9) have been retained.
- The bioregional conservation status of each EVC has been given further consideration and impacts have been avoided as much as possible. The habitat zones impacted are modified low condition vegetation.

- No EPBC vegetation communities will be impacted.
- All overhanging trees from the road reserve have a 15-metre buffer applied.
- Only the large trees impacted by the Solar Power Station development footprint are proposed to be removed. These trees will be appropriately offset within the site or as close to the site as possible.

The table below shows the reduction in native vegetation impacts from October 2020 to September 2022.

Reduction in native vegetation impacts.

Native Vegetation	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)
	October 2020		**March 2021**		**October 2021**		**September 2022**	
Extent of native vegetation removal	60.57	68.03	22.565	107.04	21.514	108.09	8.653	123.83
Total (hectares)								**129.60**
Number of large trees	346	361	65	642	63 (52 large and 11 small)	689	49 large trees 8 small trees	642
Total (number of trees)								**696**

The offset requirements include 3.041 general habitat units and 49 large trees. The offsets must be located within the North Central Catchment Management Authority Area or the Campaspe Council or Greater Bendigo City Council Local Government Area (LGAs). The minimum strategic biodiversity score for the offset site must be a minimum of 0.454.

The offset strategy includes a third party offset quote that has been provided in Appendix G. First Party Offsets require further consideration, however, Habitat Zones 1, 2A, 2B, 2C, 5, 6, 7, 8, 9 potentially qualify as offset sites.

The results from the fauna surveys recorded 57 fauna species over two survey periods (January and February 2021). The two threatened species observed on site were the Brush-tailed Phascogale and the Lace Monitor. Further mitigation measures have been included for these species No threatened birds were recorded however given the locality includes the FFG listed Victorian Temperate Woodland Bird Community area further consideration for improving foraging habitat for these species in a rehabilitation or Biodiversity Management Plan is recommended. This will improve connectivity on the roadside vegetation and creek lines. These measures are further outlined in the mitigation measures.

Additional targeted surveys were undertaken in August 2022 for the Swift Parrot (*Lathamus discolor*). The survey effort did not detect any individuals. A habitat assessment was undertaken during this survey period

(2022) for the Striped Legless Lizard (*Delma impar*). A small potential habitat area was located in Muskerry North. It is considered a low-moderate likelihood of the species occurring in this area, however areas identified as providing moderate habitat for the species have been avoided from the development.

The threatened vegetation community listed under the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC)* is the Grey Box Grassy Woodlands. However, none of these habitat zones will be impacted and an EPBC referral is not required. An EPBC referral may be considered by the client as a precautionary approach.

Mitigation measures to minimise the biodiversity impacts includes a biodiversity management plan with specific considerations for Swift Parrot, Lace Monitor and Brush-tailed Phascogale, a flora management plan, sediment control measures and weed hygiene.

1. INTRODUCTION

NGH Pty Ltd has been engaged by Edify Energy Pty Ltd to assess the potential to develop a Solar Power Station at Muskerry, Victoria. This ecological assessment will form part of the Appendix of the planning report for the proposed Solar Power Station.

This ecological assessment aims to address the following information:

- An assessment of native vegetation in the defined study area as determined under Clause 52.17.
- Undertake fauna surveys to determine presence and/or absence.
- An assessment of threatened entities listed under EPBC and FFG.
- Determination of the offset requirements and associated offset strategy.

If a permit is granted for the proposed Solar Power Station a Construction Environmental Management Plan (CEMP) would be prepared. This ecological assessment has provided some preliminary mitigation measures for biodiversity matters which should be included in development of the CEMP.

1.1. DEVELOPMENT PROPOSAL

The proposal is to build a 250MW Solar Power Station divided between two sites – Muskerry North and Muskerry South. The study area covers 927 hectares. The final proposed development footprint covers 496.21 hectares.

Muskerry North development footprint covers 184.28 hectares and the substation to connect both properties will be located on Lot 8~D\PP3243. The connection easement from Muskerry North substation to Muskerry South runs through lots 7B~D\PP3243 and Lot 1 TP892631 covering 2.13 ha (includes option A and option B). Muskerry South covers 229.34 hectares.

The site access point for Muskerry North is Toolleen Angle Road which is a single bitumen lane and there are double gates to access the northern part of the development site. There are two additional access points to Muskerry North from Muskerry School East Road. The first is a set of double gates off Muskerry East School Road to the shearing shed and the second is a double gate near the existing transmission line. The substation is proposed near this access point.

Muskerry North and South would be connected via a transmission line easement that would run north-south in private property west of Muskerry East School Road. The current proposal for the transmission line connection includes open trench cabling from Muskerry North to Muskerry South and crossing Muskerry East School Road at Option A or Option B. The easement is 10 metres wide and is considered a worst-case scenario. Not all of the native vegetation would be impacted but the entire area has been offset. The transmission line will be overhead when crossing the creek to Muskerry South.

There is an existing easement for the overhead transmission line and a Telstra cable running underground on the edge of the overhead transmission line at Option A. There are no cables or transmission lines at Option B.

The access points for Muskerry South include Axedale – Toolleen Road which is a two-lane bitumen road. There is a set of double gates on Axedale – Toolleen Road..

As identified in the Traffic Impact Assessment (Amber 2022), all vehicles will enter the Muskerry North via Toolleen-Angle Road. Access between Muskerry North and Muskerry South is proposed by an internal private road and the internal roads will be designed and constructed appropriately according to their intended use (Amber 2022).

1.2.

1.3. LOCALITY

Muskerry North boundaries include Toolleen Angle Road to the north, Muskerry School East Road and Murphys Lane to the west and private land to the south and east. The main access is Toolleen Angle Road which is a single lane bitumen road. Muskerry School East Road is gravel road but in good condition. Murphy's Lane is a single dirt road which is covered by water in low-lying areas.

The easement corridor to connect Muskerry North and Muskerry South runs in private property west of Muskerry East School Road.

Muskerry South is bordered by Toolleen-Axedale Road to the south, Murphys Lane to the east and part of the north and private property to the remaining north and west. Access is from Toolleen-Axedale Road, Toolleen.

Table 1-1 identifies the Lot and DP numbers, address, local government area and if the Lot is located in Muskerry North or South.

Figure 1-1 to Figure 1-3 shows the study area for Muskerry Solar Power Station.

Table 1-1. Lot and DP numbers for properties within the study area

Lot and Plan Number/SPI Number	Property address	Council	Location
Lot 1 PS704656	847 Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
Lot 2 PS704656	877 Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
5A~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
5~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
1~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
4~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
2~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
3~2\PP3801	Toolleen Axedale Road, Toolleen	Greater Bendigo	Muskerry South
12D~D\PP3243	Dwyer Lane, Muskerry	Campaspe	Muskerry South

Lot and Plan Number/SPI Number	Property address	Council	Location
Lot 1 TP120975	Muskerry East School Road, Muskerry	Campaspe	Muskerry South
12C~D\PP3243	Dwyer Lane, Muskerry	Campaspe	Muskerry South
Lot 2 TP120975	Muskerry East School Road, Muskerry	Campaspe	Muskerry South
Lot 4 TP120975	Muskerry East School Road, Muskerry	Campaspe	Muskerry South
Lot 1 TP395103	Murphys Lane	Campaspe	Muskerry South
7B~D\PP3243	Muskerry East School Road, Muskerry	Campaspe	Connecting transmission
Lot 1 TP892631	Muskerry East School Road, Muskerry	Campaspe	Connecting transmission
8~D\PP3243	Muskerry East School Road, Muskerry	Campaspe	Muskerry North
5~D\PP3243	Muskerry East School Road, Muskerry	Campaspe	Muskerry North
Lot 1 LP113736	Muskerry East School Road, Muskerry	Campaspe	Muskerry North
Lot 2 LP113736	Muskerry East School Road, Muskerry	Campaspe	Muskerry North
Lot 1 TP677364	Muskerry East School Road, Muskerry	Campaspe	Muskerry North
Lot 2 TP677364	Muskerry East School Road, Muskerry	Campaspe	Muskerry North

1.4. STUDY AREA

The study area is divided up into Muskerry North, the transmission line connection and Muskerry South. Roadside vegetation will also be impacted where entrance and exit points will be located for Muskerry North. An emergency access point only would be provided for Muskerry South off Axedale Toolleen Road, allowing for safe access in the case of an emergency situation. All traffic will enter from Toolleen Angle Road in Muskerry North.

The entrance to Muskerry North is located on Toolleen Angle Road approximately 1.5 kilometres from Muskerry School East Road. The roadside vegetation on Toolleen Angle Road is dominated by Grey Box with patches of exotic and native understorey shrubs, herbs, and grasses.

The proposed Solar Power Station for Muskerry North borders Toolleen Angle Road and Muskerry East School Road is 318.97 hectares (Lot 5~D\PP3243, Lot 1 LP113736, Lot 2 LP113736, Lot 1 TP677364 and Lot 2 TP677364). The substation in Muskerry North covers 2.03 hectares. The site is dominated by scattered Grey Box (*Eucalyptus microcarpa*). The understorey vegetation includes improved pastures with exotic herbs and grasses. This property is currently grazed by sheep. There are several paddocks with dams. Some of the dams have small patches of remnant vegetation. There were some larger patches of Grey Box within the centre of the property.

Lot 8~D\PP3243 is located east of Muskerry East School Road, Muskerry and covers 132.67 hectares. The. The northern boundary is bordered by a small dirt laneway that is an extension of Joyces Bridge Road which ends when it reaches the existing powerlines. The remainder of the unmade road reserve is fenced and managed by the property to the north. There is a small ephemeral creek that runs northwest along the property which is not currently fenced but has some natural regeneration of Eucalypts.

The substation is proposed at two locations. The first location is at Muskerry North on Lot 5~D\PP3243 (See Figure 1-1). Access to this location would be from Toolleen Angle Road. The second proposed substation is located on Lot 8~D\PP3243 (See Figure 1-2). Whilst it may be possible to access the second substation from Muskerry East School Road, this road is a narrow gravel road with overhanging roadside vegetation and was therefore considered an inappropriate route to access the substation. Therefore, in the event the eastern substation location is established on Lot 8~D/PP3243, access would continue to utilise the exclusive site access off Toolleen Angle Road.

Muskerry South consist of two areas. The northern area that is cropped and the southern area which is grazed. The cropped area covers 155.65 hectares including Lot 1 TP120975, Lot 2 TP120975 and Lot 4 TP120975. The northeast boundary road is Muskerry East School Road. There is an unmade road reserve on the western boundary. There is access from Dwyer Lane and Muskerry East School Road. The cropped paddocks are scattered with large Eucalypts. Back Creek runs east-west through the northern section. The creek has been fenced and revegetated (planted) with indigenous trees and shrubs. The erosion gully on the edges of the creek line is still active in places.

The second creek in Muskerry South is Burke Creek. Burke Creek runs northwest between the grazed and cropped paddocks. The western end of Burke Creek has sparse native vegetation cover between Lot 1 TP120975 and Lot 2 TP120975. The remaining vegetation along the banks of Burke Creek has mature Eucalypts and planted Eucalypts and shrubs at the southern end. This area of Burke Creek is fenced and has extensive erosion gullies. The creek is currently open for the sheep to graze.

The remaining open paddocks on either side of Burke Creek include Lot 1 PS704656, Lot 2 PS704656, 5A~2\PP3801, 5~2\PP3801, 1~2\PP3801, 4~2\PP3801, 2~2\PP3801, 3~2\PP3801, 12D~D\PP3243 and 12C~D\PP3243 covering 316.6 hectares. These open paddocks consist of patches of native vegetation, scattered trees, Eucalypt regeneration and native shrubs and the groundstorey vegetation has small patches of native grasses but mostly exotic grasses. The entire area is currently grazed by sheep. There is evidence of pasture improvement in the west and southwestern part of this property.

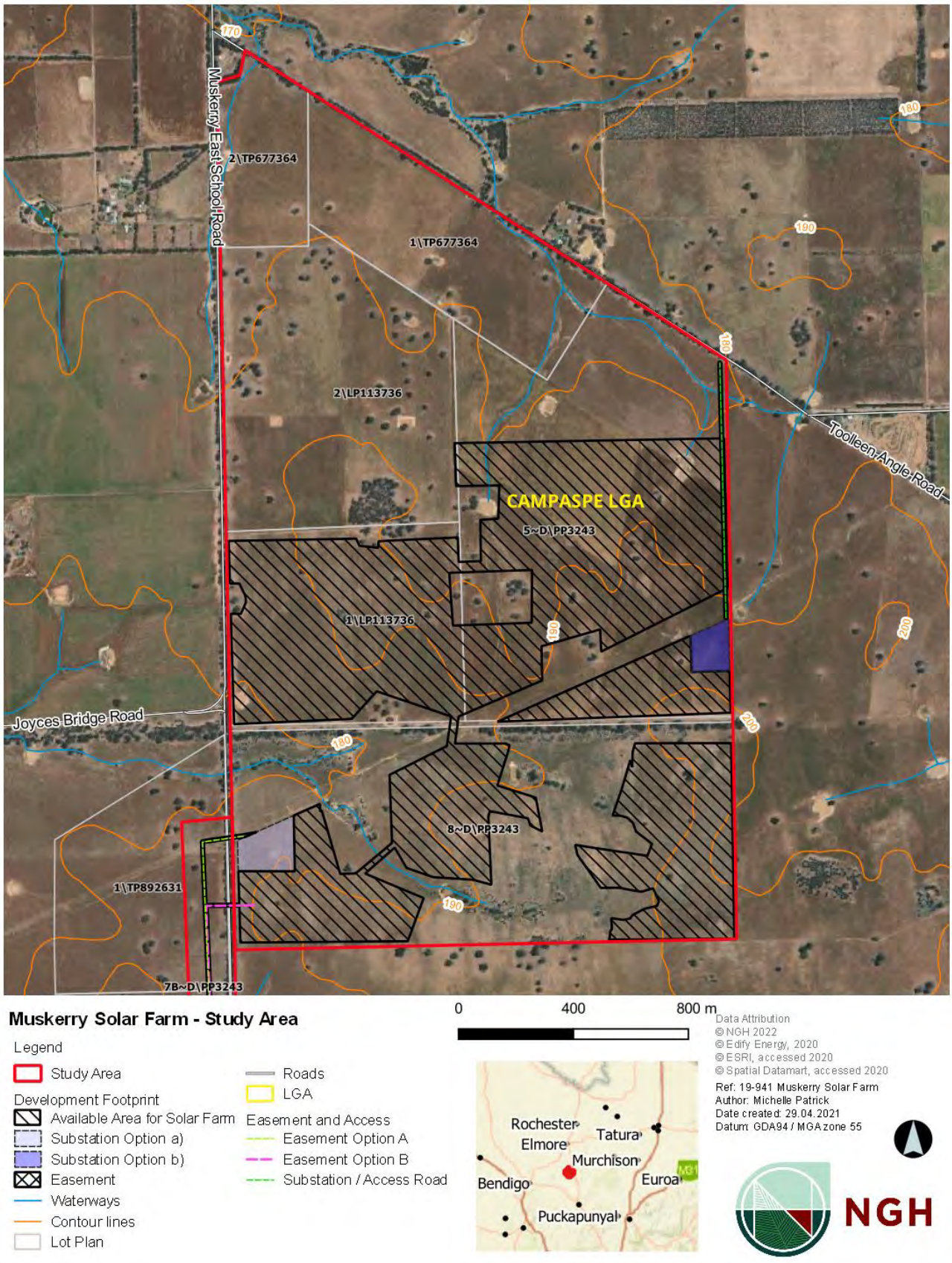

Figure 1-1. Study area Muskerry Solar Power Station (North)

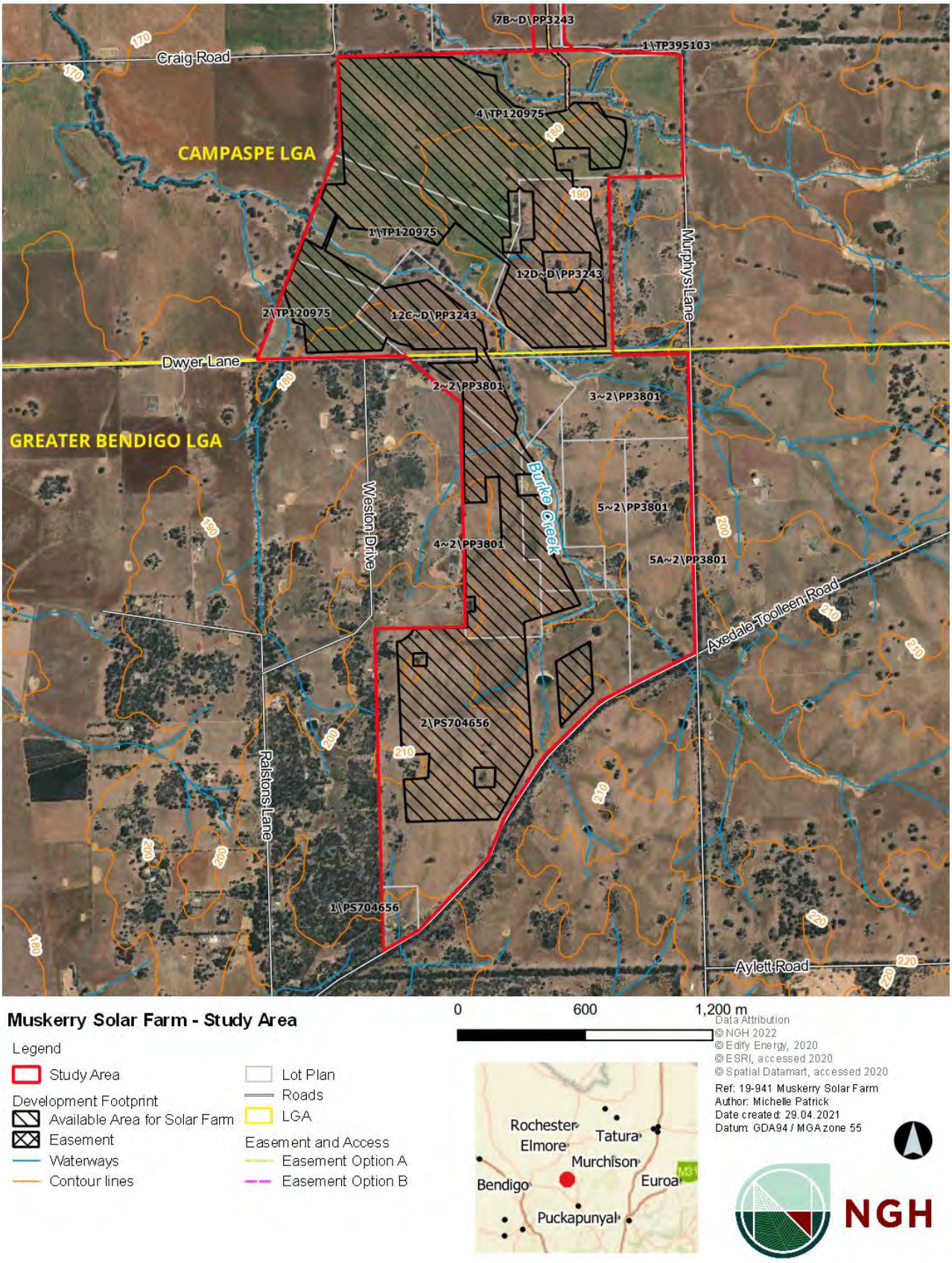

Figure 1-2 Study area Muskerry Solar Power Station (South)

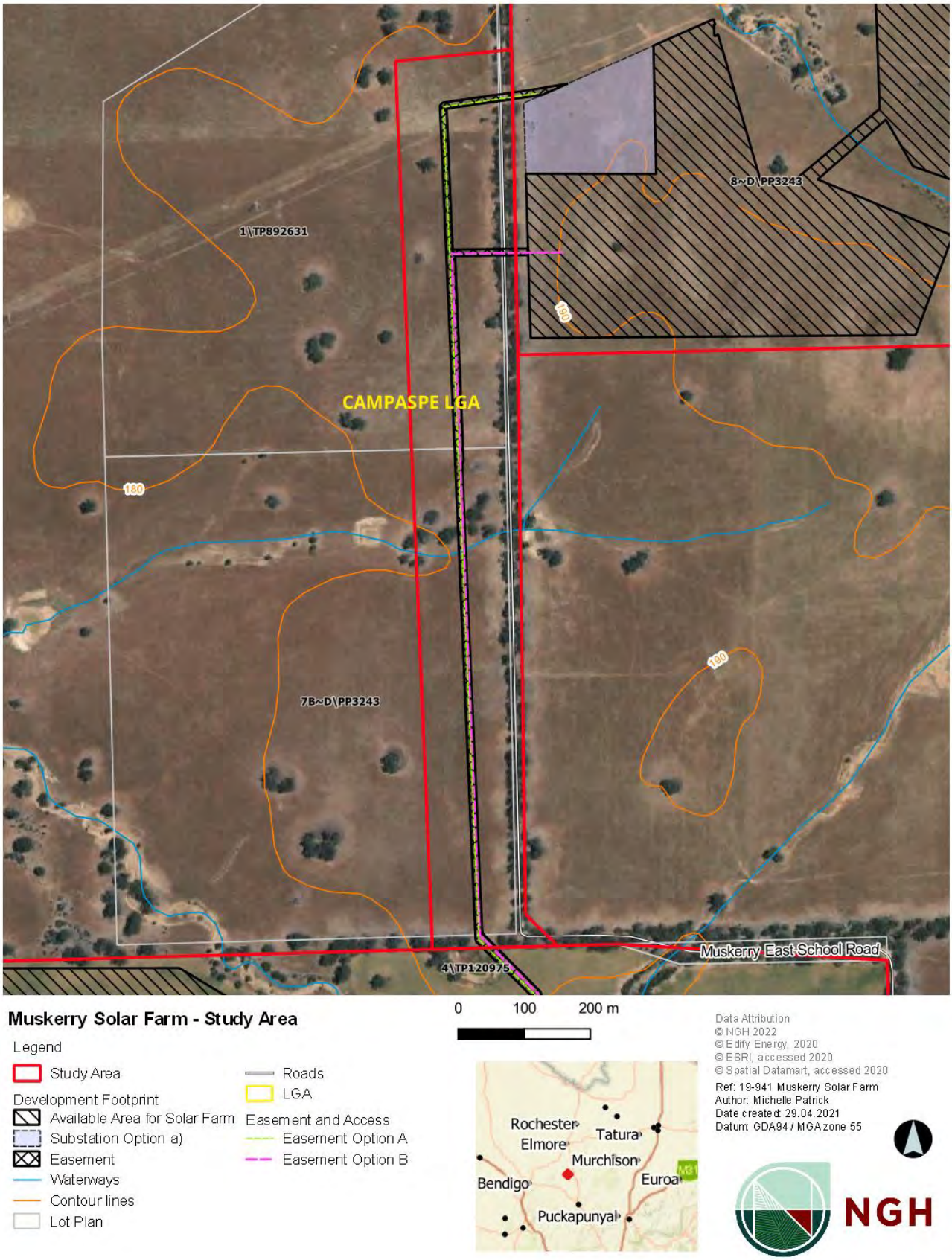

Figure 1-3 Study Area Muskerry Power Station (easement)

1.5. BIOREGION

Bioregions are determined by climate, geomorphology, soils, and vegetation to classify the environment at a landscape scale (DELWP 2020). Victoria has 28 bioregions. The study area is located in the Goldfields Bioregion in central Victoria (DELWP 2020). The geology is Lower Palaeozoic, Metamorphic rocks which have formed steep peaks and ridges scattered throughout the landscape (DELWP 2020). The soils are poor yellow, grey, and brown Chromosols and Sodosols or Dermosols and Ferrosols. Rainfall is this area averages about 400 to 700 mm per annum and temperature variation from 2-15°C minimum up to 12 -32°C maximum. This bioregion was part of the Victorian goldrush particularly around Castlemaine.

The forests of the Goldfields are dominated by Box Ironbark Forests, Heathy Dry Forest, and Grassy Dry Forest on the lower, drier slopes with poor soil, Grassy Woodlands on the granite and sedimentary deposits and Low Rises Grassy Woodland and Alluvial Terraces Herb-rich Woodland in alluvial areas (DELWP 2020).

1.6. WATERWAYS AND WETLANDS

There are two small creeks flowing through the study area. The creeks are Burke Creek and Back Creek and their small tributaries which flow into Campaspe River. All creek and river systems flow north into the Murray. Other rivers in this region include the Wimmera, Avoca, Loddon, and Goulburn Rivers.

The creeks in the study area are shown in Figure 1-1 and Figure 1-2.

1.7. LEGISLATIVE REQUIREMENTS

This section details the legislative requirements in relation to the assessment of the proposed Solar Power Station. Table 1-2 details the legislation and the section of the report that addresses the legislation.

Table 1-2. Legislation requirements for the assessment of the proposed Muskerry Solar Power Station

Legislation	Requirements	Section of this Report
Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC)	Matters of National Environmental Significance for threatened entities and RAMSAR wetlands	Section 4.7
Victorian Planning and Environment Act, 1987 (P&E)	Municipal Planning Schemes including Planning Zones and Overlays Clause 53.13 Renewable Energy Facility (other than wind farm) Clause 52.17 – Native Vegetation	Section Zoning-1.6.8 Section 1.7.1 Section 1.7.1
Victorian Flora and Fauna Guarantee Amendment Act, 2019 (formerly Flora and Fauna Guarantee Act 1988) (FFGA)	Threatened entities and critical habitat listed in Victoria	Section 4.4, 4.5, and 5
Victorian Wildlife Act 1975	Protection of native fauna	Section 4.6

Legislation	Requirements	Section of this Report
Victorian Catchment and Land Protection Act 1994 (CaLP Act)	Declared noxious weeds and pest animals	Section 4.5.5 and 4.5.4

1.7.1. Planning and Environment Act, 1987

The *Planning and Environment Act* was introduced in 1987. The purpose of this act is to establish a framework for planning the use, development, and protection of land in Victoria in the present and long-term interests of all Victorians. Each municipality has a Local Planning Scheme setting out policies and clauses specific to zones and overlays that relate to an area or parcel of land. The study area is in Campaspe and Greater Bendigo Planning Schemes. There are a total of 21 titles with 8 in the City of Greater Bendigo and 13 in Campaspe Shire Council. There are two unmade road reserves through the proposed Solar Power Station site. The two unmade road reserves are extensions of Dwyer Lane and Joyces Bridge Road. The zones and overlays are listed below.

Clause 53.13 Renewable Energy Facility (other than wind energy)

The purpose of Clause 53.13 is to facilitate the establishment and expansion of renewable energy facilities, in appropriate locations, with minimal impact on the amenity of the area. The planning permit requirements of this Clause must include the information listed below. This information is presented in a planning report which is submitted to the responsible authority. This ecological assessment addresses native vegetation and threatened entities. The planning report requires a summary of the following information:

- A site and context analysis, including:
- A site plan, photographs, or other techniques to accurately describe the site and the surrounding area.
- A location plan showing the full site area, local electricity grid, access roads to the site and direction and distance to nearby accommodation, hospital, or education centre.
- A design response, including:
- Detailed plans of the proposed development including, the layout and height of the facility and associated building and works, materials, reflectivity, colour, lighting, landscaping, the electricity distribution starting point (where the electricity will enter the distribution system), access roads and parking areas.
- Accurate visual simulations illustrating the development in the context of the surrounding area and from key public viewpoints.
- The extent of vegetation removal and a rehabilitation plan for the site.
- Written report and assessment, including:
- An explanation of how the proposed design derives from and responds to the site analysis.
- A description of the proposal, including the types of process to be utilised, materials to be stored and the treatment of waste.
- Whether a Works Approval or Licence is required from the Environment Protection Authority.
- The potential amenity impacts such as noise, glint, light spill, emissions to air, land or water, vibration, smell, and electromagnetic interference.
- The effect of traffic to be generated on roads.
- The impact upon Aboriginal or non-Aboriginal cultural heritage.
- The impact of the proposal on any species listed under the *Flora and Fauna Guarantee Act 1988* or *Environment Protection and Biodiversity Conservation Act 1999*.
- A statement of why the site is suitable for a renewable energy facility including, a calculation of the greenhouse benefits.

- An environmental management plan including, a construction management plan, any rehabilitation and monitoring.

Relevance to native vegetation for the Solar Power Station Proposal

This ecological assessment at this stage assesses:

- The extent of vegetation removal for the site.
- The impact of the proposal on any species listed under the *Flora and Fauna Guarantee Act 1988* or *Environment Protection and Biodiversity Conservation Act 1999*.
- A site rehabilitation plan is not yet prepared for the site. This is planned to be prepared when the offset strategy is prepared, and the development footprint has been determined.

If a planning permit is granted for the Solar Power Station Proposal an environmental management plan including, a construction management plan, any rehabilitation and monitoring would be prepared.

Native vegetation assessment pathway

The study area is located in assessment pathway Locations 1 and 2 as shown on Figure 1-4. The native vegetation guidelines (DELWP 2017) identify assessment pathways as basic, intermediate, and detailed and these are divided into three location categories across the state of Victoria. These assessment pathways are determined to reduce overall impacts to Victoria's biodiversity. Table 3 (p. 19 of the guidelines; DELWP 2017) shows the assessment pathway and location category thresholds below.

Table 1-3 Planning permit thresholds for native vegetation removal (Source: Table 3 from the Guidelines; DELWP 2017)

Extent of native vegetation	Location category		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

Requirements of Clause 52.17

The requirements to remove native vegetation in Victoria must consider the following criteria in Table 1-4. These criteria are addressed in Section 5.

Table 1-4 Planning permit requirements for native vegetation removal

Criteria
Has the assessment pathway and reason for the assessment pathway been determined? Has the location category of the native vegetation proposed to be removed identified?
A description of the native vegetation to be removed
Maps showing the native vegetation
The offset requirement determined in accordance with section 5 of the Guidelines.

Criteria
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.
Recent, dated photographs of the native vegetation.
Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five-year period before the application for a permit is lodged.
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.
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
Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.
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 6.
An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured.
A site assessment report of the native vegetation to be removed, completed by an accredited native vegetation assessor.
Information about impacts on rare or threatened species habitat.

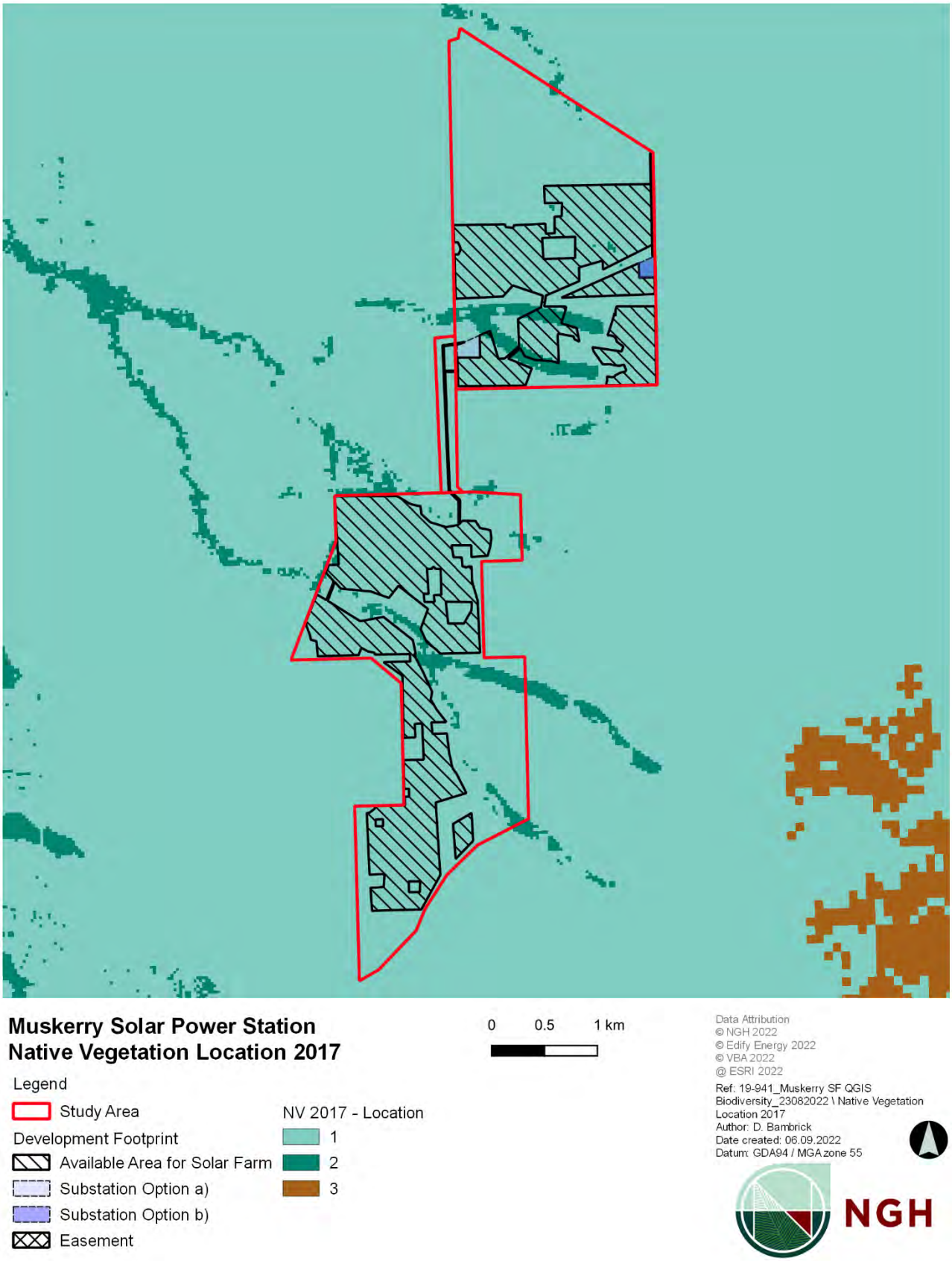

Figure 1-4. Assessment pathway for study area

Zoning

All of the 21 titles in the study area are in Farm Zone (Schedule 1). The objectives of this Zone are:

To implement the Municipal Planning Strategy and the Planning Policy Framework.

To provide for the use of land for agriculture.

- To encourage the retention of productive agricultural land.
- To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.
- To encourage the retention of employment and population to support rural communities.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.
- To provide for the use and development of land for the specific purposes identified in a schedule to this zone.

A planning report will be submitted to DELWP which will address the objectives of this zone.

Environmental Significant Overlay

The Environmental Significance Overlay (ESO1) includes the following lots (1~2\PP3801, 2~2\PP3801, 5A~2\PP3801, 5~2\PP3801, Lot 2 PS704656) where Burke Creek and Back Creek are present.

The objective of this overlay on these creek lines in the study area are:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To identify areas where the development of land may be affected by environmental constraints.
- To ensure that development is compatible with identified environmental values.

Relevance to the Solar Power Station Proposal

A permit is required to remove, destroy, or lop any vegetation, including dead vegetation but does not apply if the schedule or clause specifically states a permit is not required, or a native vegetation precinct plan applies to the site.

This proposal does not propose to remove, destroy, or lop any native vegetation covered by this overlay.

Bushfire Management Overlay (BMO)

The Bushfire Management Overlay (BMO) includes the following lots (1\PS704656 and Lot 2 PS704656). The purpose of this overlay is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.
- To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.
- To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level.

The remaining lots are within a Bushfire Prone Area.

Relevance to the Solar Power Station Proposal

There are no native vegetation impacts that need to be addressed under this Clause.

Vegetation Protection Overlay

There is a Vegetation Protection Overlay (VPO) on the Road Reserve for Toolleen Angle Road and Murphys Lane.

The purpose of the VPO is:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To protect areas of significant vegetation.
- To ensure that development minimises loss of vegetation.
- To preserve existing trees and other vegetation.
- To recognise vegetation protection areas as locations of special significance, natural beauty, interest, and importance.
- To maintain and enhance habitat and habitat corridors for indigenous fauna.
- To encourage the regeneration of native vegetation.

Relevance to the Solar Power Station Proposal

A permit is required to remove, destroy, or lop any vegetation specified in a schedule to this overlay.

1.7.2. Flora and Fauna Amendment Act, 2019

The *Flora and Fauna Guarantee Act 1988 (FFG Act)* was amended to the Flora and Fauna Amendment Act in 2019. The flora and fauna conservation and management objectives are:

- to guarantee that all taxa of Victoria's flora and fauna, other than taxa specified in the excluded list, can persist, and improve in the wild and retain their capacity to adapt to environmental changes; and
- to prevent taxa and communities of flora and fauna from becoming threatened and to recover threatened taxa and communities so their conservation status improves; and
- to protect, conserve, restore and enhance biodiversity, including -
- flora and fauna and their habitats; and
- genetic diversity; and
- ecological communities; and
- ecological processes; and
- to identify and mitigate the impacts of potentially threatening processes to address the important underlying causes of biodiversity decline; and
- to ensure the use of biodiversity as a natural resource is ecologically sustainable; and
- to identify and conserve areas of Victoria in respect of which critical habitat determinations are made.

Relevance to the Solar Power Station Proposal

The threatened community listed under the FFG Act that has the potential to occur in this geographical location in Goldfields Bioregion are Creek line Grassy Woodland (Goldfields) Community and Victorian Temperate Woodland Bird Community. These listed communities are detailed in Section 4.4.

1.7.3. Wildlife Act 1975

Under the *Wildlife Act 1975* all native wildlife is protected in Victoria. It is an offence to kill, take, control or harm wildlife under the *Wildlife Act 1975*. It is also an offence to use poisons to kill, destroy or take wildlife.

Severe penalties (including imprisonment and fines) apply to those found guilty of an offence under the Wildlife Act.

Relevance to the Proposed Solar Power Station

There is no proposal to impact on wildlife during this proposal. However, prior to vegetation removal a Biodiversity Management Plan will be completed including fauna and flora management protocols and will be completed by an appropriately qualified Ecologist.

1.7.4. Environmental Effects Statement (EES)

Under the *Environmental Effects Act, 1978,* an environmental effects statement is referred to the Minister for Planning based on Ministerial Guidelines (DSE 2006) referral criteria. A combination of two or more of the following types of potential effects on the environment that might be of regional or State significance, and therefore warrant referral of a project, are:

- Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan
- Matters listed under the Flora and Fauna Guarantee Act 1988:
    - Potential loss of a significant area of a listed ecological community; or
    - Potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or
    - Potential loss of critical habitat; or
    - Potential significant effects on habitat values of a wetland supporting migratory bird species.
- Potential extensive or major effects on landscape values of regional importance, especially recognised by a planning scheme overlay or within or adjoining land reserved under the National Parks Act 1975
- Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long term
- Potential extensive or major effects on beneficial uses of waterbodies over the long term due to changes in water quality, stream flows or regional groundwater levels
- Potential extensive or major effects on social or economic well-being due to direct or indirect displacement of non-residential land use activities
- Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development
- Potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions
- Potential exposure of a human community to severe or chronic health or safety hazards over the short or long term, due to emissions to air or water or noise or chemical hazards or associated transport
- Potential extensive or major effects on Aboriginal cultural heritage
- Potential extensive or major effects on cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the Heritage Act 1995.

Relevance to the Solar Power Station Proposal

The two triggers with regard to ecological values include the following:

- Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plant or;
- Matters listed under the Flora and Fauna Guarantee Act 1988:
    i. Potential loss of a significant area of a listed ecological community; or
    ii. Potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or
    iii. Potential loss of critical habitat; or

iv. Potential significant effects on habitat values of a wetland supporting migratory bird species.

These two triggers are considered in more detail below:

Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan or:

The current proposed native vegetation removal includes 5.76 hectares of native vegetation and 49 large trees which reaches a total of 8.653 hectares (as per NVR and applying the DEWLP standards). As the proposed native vegetation removal is <10 hectares for this proposal, there is no trigger for a potential EES.

Matters listed under the Flora and Fauna Guarantee Act 1988:

i. Potential loss of a significant area of a listed ecological community; or

Under the FFG Act, the Creekline Grassy Woodland (Goldfields) Community sub-communities are not present on site and no Creekline vegetation is proposed to be impacted. Therefore, there is no potential loss of a significant area of a listed ecological community.

ii. Potential loss of a genetically important population of an endangered or threatened species (listed or nominated for listing), including as a result of loss or fragmentation of habitats; or

There is no current information available that has identified the proposed Solar Power Station location as being an area where there is a genetically important population of an endangered or threatened species (listed or nominated for listing); therefore, the proposed native vegetation removal should not impact on any genetically important population.

The Brush-tailed Phascogale was recorded at the southwest corner of the Study Area and these species require canopy connectivity and trees with hollows. These species rely on successful annual breeding to sustain local populations. The steps taken to avoid and minimise native vegetation loss included avoiding roadside vegetation and creekline vegetation as much as possible to minimise impacts on arboreal species and retain canopy connectivity. Further mitigation for the Brush-tailed Phascogale ensure the proposed Solar Power Station does not impact these species during breeding or reduce connectivity.

The vegetation within this locality is already highly fragmented, it is important to consider fauna movement throughout the construction period for the Solar Power Station in particular the Lace Monitor. A fauna management plan has been recommended in the mitigation measures for this species as part of the development of an overarching Biodiversity Management Plan to ensure appropriate management of large fauna species moving through the landscape.

iii. Potential loss of critical habitat; or

The proposed Solar Power Station study area has not been identified as critical habitat for any threatened species. The locality is part of the FFG listed regional Victorian Temperate Woodland Bird Community. These temperate woodlands provide important habitat for a list of fauna species recorded 10kms from study area. However, further bird surveys in early 2021 did not observe any of these temperate woodland birds and it was identified by Wildlife and Ecology and NGH ecologists, an absence of dense shrub cover which may limit adequate habitat for these temperate woodland species.

Additional surveys in 2022 determined that there are no areas of critical habitat for Swift Parrot and Striped Legless Lizard being impacted by the proposal.

iv. Potential significant effects on habitat values of a wetland supporting migratory bird species.

There are no wetlands in the study area that supports migratory bird species.

Conclusion

A combination of two or more triggers are required for an EES. The first trigger for an EES is the proposed clearing of native vegetation which is more than 10 hectares. There is currently no second trigger from referral criteria. However, it is possible a second potential referral criteria may trigger an EES.

1.7.5. Catchment and Land Protection Act, 1994

Declared noxious weeds

In Victoria, the *Catchment and Land Protection Act 1994 (CaLP Act*) separates noxious weeds into four categories (DJPP 2019). The CaLP Act defines four categories of noxious weeds as:

- State Prohibited Weeds.
- Regionally Prohibited Weeds.
- Regionally Controlled Weeds.
- Restricted Weeds.

State prohibited weeds

State Prohibited Weeds may not occur in Victoria or any known infestations are very small. The Victorian Government is responsible for eradicating State Prohibited Weeds and all known infestations should be eradicated. These weeds are considered a significant threat if introduced (DJPP 2019).

Regionally prohibited weeds

Regionally prohibited weeds are capable of spreading across a region and the aim should be to eradicate them. Regionally prohibited weeds are not widely distributed so landowners must take all reasonable steps to eradicate these weeds to prevent them spreading further. Landowners (including public authorities) are responsible for the eradication of these weeds on their land (DJPP 2019).

Regionally controlled weeds

These regionally controlled weeds are usually widespread and highly invasive. Landowners need to take all reasonable steps to prevent the growth and spread of regionally controlled weeds on their land (DJPP 2019).

Restricted weeds

Restricted weeds cannot be traded, and this includes plants, seeds or propagules or contaminants (DJPP 2019). Restricted weeds are at risk of spreading within Victoria or other States or Territories of Australia (DJPP 2019). It is a landowner's responsibility to prevent the spread of these weeds.

2. PURPOSE OF THIS ASSESSMENT

The proposed Muskerry Solar Power Station must meet the requirements under Clause 53.13 as outlined in the Section 1.7.1. This ecological assessment addresses the native vegetation and threatened entities under this Clause, but essentially under the Planning and Environment Act, 1987, native vegetation in Victoria must address the requirements of Clause 52.17 – Native Vegetation. The following section identifies the native vegetation assessment pathway.

2.1. ASSESSMENT PATHWAY FOR PROPOSED SOLAR POWER STATION

The assessment pathway for the proposed Muskerry Solar Power Station Development is:

The Solar Power Station development footprint is predominantly in Location 1 and 2.

- More than 0.5 hectares or more is proposed to be removed.
- More than one large tree is proposed to be removed.

Therefore, a detailed assessment is required (Table 3, DELWP 2017) which includes an assessment of:

- All large and small scattered trees.
- Large trees within a patch of vegetation.
- Patches of native vegetation in the development footprint.

A habitat hectares assessment has been undertaken for all of the areas within the study area and the development footprint.

3. METHODS

3.1. THREATENED SPECIES DATABASE SEARCHES

3.1.1. Victorian threatened species and communities

A desktop search for threatened species was undertaken prior to field work using the Victorian Biodiversity Atlas (VBA) (DELWP 2019a). The VBA search included the study area and a buffer area of 10 km. The search results are summarised in Section 4.5 and 4.6.

An assessment of the threatened communities was undertaken comparing the characteristics of threatened communities summary report (DSE no date) with the vegetation in the study area.

3.1.2. Matters of National Significance (MNES)

A Matters of National Significance (MNES) desktop search was undertaken with a 10km buffer for nationally threatened flora, fauna, and vegetation communities prior to field work. The results are summarised in Section 4.7 and the report is included in Appendix F.

3.1.3. Likelihood of occurrence

The likelihood of occurrence table is a broad way to categorise the likelihood of threatened flora and fauna presence at the study site based on the MNES results, VBA records and habitat features observed on site.

Table 3-1 Likelihood of threatened species being observed on site.

Likelihood of Occurrence	Reasoning
Nil/Absent	Suitable habitat is not present within the study area.
Low	Considered unlikely to occur due to older records, unsuitable or degraded habitat.
Medium	Potential habitat occurs on site. Low record numbers or species not recorded in the area for many years. Considered that the species may occur infrequently.
High	Observed on site. Important habitat occurs onsite (i.e., nesting sites, suitable habitat).

3.2. FLORA SURVEYS

3.2.1. Native vegetation assessment

The site assessment was completed by two NGH Ecologists Michelle Patrick and Taylor Hume on 7-15 May 2020. There had been recent rainfall events and there were wet areas around the property. The weather was cool and cloudy on most days with light winds.

The flora survey was completed on foot and with the use of the vehicle across the entire study area. The flora survey includes using the random meander method as well as the habitat hectares methodology. The entire study area was assessed (as required under Clause 52.17 – Native Vegetation), to determine patches of native vegetation, scattered trees, and any revegetation areas. The revegetation occurs along the creeks

where areas have been fenced and replanted with native vegetation indigenous to the locality. These areas are a mix of existing native vegetation and replanting and are considered patches of native vegetation.

The site assessment included the native vegetation assessment, scattered tree assessment, vegetation mapping and incidental fauna observations was undertaken. The methods used are outlined in the following sections.

Native vegetation

The native vegetation assessment was undertaken based on the Guidelines of Clause 52.17 for the removal, destruction or lopping, of native vegetation, (DELWP 2017). The guidelines state native vegetation is assessed to ensure it meets the following criteria:

- An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native; or
- Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy; or
- Any mapped wetland included in the current wetlands map, available in department of environment, land, water, and planning (DELWP) systems and tools.

During this site assessment, any native vegetation patch determined to have greater than 25% perennial ground cover; the habitat hectare method was applied.

Any native vegetation that meets these criteria in the study area has been described in the results section of this report.

Scattered and large trees within a habitat zone

Based upon the criteria in the guidelines (DELWP 2017), a scattered tree is defined as a tree that is indigenous to the area which is:

- A native canopy tree (large or small in size) that does not form part of a patch; or
- A large scattered tree that is greater than or equal to the diameter at breast height (DBH) as determined by the EVC benchmark.

All large trees within a habitat zone were recorded where the tree was greater than the EVC benchmark DBH. All stags (dead canopy trees) were recorded if they were greater than 40 cm DBH. Within the habitat zone, only tree stags that are greater than the EVC benchmark DBH are recorded.

For each scattered tree, large tree or stag the following information was recorded:

- Plant species identified (including scientific and common name).
- Location recorded using a handheld GPS.
- DBH measured and recorded.
- Tree health.
- Presence of habitat features such as hollows or nests.

The tree species list can be found in Appendix B and the summary information can be found in Section 4.3 of this report.

3.2.2. Ecological Vegetation Classes (EVC)

The vegetation communities found in the Goldfields Bioregion are termed Ecological Vegetation Classes (EVCs). These EVCs were mapped by the Victorian Government based on landscape attributes to determine the pre-European native vegetation extent (DSE 2004). Each Bioregion consists of a number of EVCs. Each EVC has pre-determined benchmarks which are used in the habitat hectare assessment to determine the site condition score (DSE 2004).

The Ecological Vegetation Classes identified in the study area are in Section 4.1

3.2.3. EVC Conservation Status

Each EVC has a Bioregional Conservation Status based on the extent cleared or remaining since European settlement. Table 3-2 lists the criteria for the conservation status for Ecological Vegetation Classes (DELWP 2020).

The conservation status for each EVC found onsite is listed in Section 3.2.3.

Table 3-2 Criteria for the conservation status for Ecological Vegetation Classes (Source: DELWP 2020)

Category	Status Code	Criteria
Presumed Extinct	X	Probably no longer present in the bioregion (the accuracy of this assumption is limited by the use of remotely - sensed 1:100 000 scale woody vegetation cover mapping to determine depletion - grassland, open woodland and wetland types are particularly affected).
Endangered	E	Contracted to less than 10% of former range; OR Less than 10% pre-European extent remains; OR Combination of depletion, degradation, current threats, and rarity is comparable overall to the above: 10 to 30% pre-European extent remains and severely degraded over a majority of this area; or naturally restricted EVC reduced to 30% or less of former range and moderately degraded over a majority of this area; or rare EVC cleared and/or moderately degraded over a majority of former area.
Vulnerable	V	10 to 30% pre-European extent remains; OR Combination of depletion, degradation, current threats, and rarity is comparable overall to the above: greater than 30% and up to 50% pre-European extent remains and moderately degraded over a majority of this area; or greater than 50% pre-European extent remains and severely degraded over a majority of this area; or naturally restricted EVC where greater than 30% pre-European extent remains and moderately degraded over a majority of this area; or rare EVC cleared and/or moderately degraded over a minority of former area.
Depleted	D	Greater than 30% and up to 50% pre-European extent remains; OR Combination of depletion, degradation and current threats is comparable overall to the above and: greater than 50% pre-European extent remains. and moderately degraded over a majority of this area.

Category	Status Code	Criteria
Rare	R	Rare EVC (as defined by geographic occurrence) but neither depleted, degraded nor currently threatened to an extent that would qualify as Endangered, Vulnerable or Depleted.
Least Concern	LC	Greater than 50% pre-European extent remains and subject too little to no degradation over a majority of this area.

3.2.4. Habitat hectares methodology

The habitat hectare methodology compares the EVC benchmark with site attributes and landscape components to determine the vegetation site condition (DSE 2003).

Each area defined as native vegetation, where the perennial ground cover is more than 25% or three or more canopy trees driplines touch forming a canopy, a habitat hectares assessment is required to be undertaken. These areas are defined as habitat zones and are identified throughout the study area. The habitat zones are divided by similarities in their habitat components and vegetation condition.

The habitat hectares results are included in Section 4.2.

3.3. FAUNA SURVEYS

Fauna surveys were carried out over 8 transects over January and February 2021 by two Zoologists from Wildlife and Ecology. The report can be found in Appendix C.

The habitat features were recorded during the first site assessment in May 2020. As part of the May site assessment the likelihood of occurrence of threatened flora, fauna and vegetation communities were determined. The outcome of this initial site assessment determined additional targeted surveys were required for the fauna (listed below). The purpose of these surveys was to determine the presence and/or absence of these threatened species. The fauna surveys included camera trapping, spotlighting, audio recording devices such as a Anabats, call playback, bird surveys and incidental observations.

The targeted surveys included the following fauna groups:

Temperate Woodland Birds – Diurnal

- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis)*
- Regent Honeyeater (*Anthochaera phrygia)*
- Crested Bellbird (*Oreoica gutturalis)*
- Hooded Robin (*Melanodryas cucullata*)
- Diamond Firetail (*Stagonopleura guttata)*
- Speckled Warbler (*Pyrrholaemus sagittatus)*
- Swift Parrot (*Lathamus discolor*)

Woodland Birds – Nocturnal

- Bush Stone-curlew

Birds of Prey

- Square-tailed Kite (*Lophoictinia isura*)
- Black Falcon (*Falco subniger*)

Large Forest Owls

- Barking Owl (*Ninox connivens*)
- Powerful Owl (*Ninox strenua*)

Mammals

- Brush-tailed Phascogale (*Phascogale tapoatafa)*
- Microbats – general

The survey methodology (provided by Wildlife and Ecology 2021) is outlined below, and the report provided by Wildlife and Ecology are provided in Section 4.6 of this report.

The likelihood of occurrence for all threatened species can be found in Appendix D.

3.3.1. Spotlighting

As outlined in the fauna report by Wildlife and Ecology (2021), Spotlighting was used to detect large forest owls, Bush-stone Curlew, mammals, and amphibians following the eight transects see results Section 4.6. Spotlighting was undertaken by vehicle and walking using LED torches. The purpose of spotlighting is to catch eye-shine or spot the movement of vegetation or fauna (Wildlife and Ecology 2021) and gain a good view or photograph of the observed species in the beam of the spotlight. Klaris ® FH10, light brightness at 700 lumens with a range up to 500 metres. The second torch was the Led Lenser® M10 LED with a lumen range 1000 lumens and a beam range of 200 metres (Wildlife and Ecology 2021), Spotlighting occurred between 21:00 and 00:30 following the transects on roads and tracks (Wildlife and Ecology 2021),

3.3.2. Camera Trapping

As outlined in the fauna report by Wildlife and Ecology (2021), 12 cameras were installed by tying each camera to a tree at 2-3 metres height with the bait station to detect mammals. The baits were a mix of peanut butter, golden syrup, vegetable oil and rolled oats which was placed opposite or in front of the camera. The cameras were Nine Little Acorn® Infra-red motion cameras set for 26 days from late January 2021, operating 24 hours a day. An additional three Reconyx Hyperfire Professional® cameras were set for two nights on 22 February 2021 (Wildlife and Ecology 2021). Analysis of the photographs involved staff experienced in fauna identification reviewing all the photos for threatened species observations.

Note: cameras were not placed on the ground to avoid detection from foxes and cats (Wildlife and Ecology 2021),

3.3.3. Call Playback

The fauna surveys used call playback to target Powerful Owls and Barking Owls at various locations in Muskerry South and Muskerry North in the January and February surveys. As outlined in the fauna report (Wildlife and Ecology 2021), call playback used pre-recorded calls projected through speakers with a reciprocal period of listening for a response and recording (where relevant).

3.3.4. Anabat detector

Acoustic echo location detection devices were deployed. Echo locations are high frequency sound waves, measured in kilohertz (kHz), with the average bat call being around 50kHz (Churchill 2008). Five Anabat Express® units were used to detect and record echolocation calls of microbats (Wildlife and Ecology 2021). Five sites were selected, two sites in Muskerry North and three in Muskerry South (see Figure 4-32 and Figure 4-33). Anabat units were deployed for two nights at each of the five sites from over both survey periods in January 2021 and February 2021. The calls were recorded automatically from sunset to sunrise. Call analysis was conducted by a specialist experienced in analysing microbat calls.

3.3.5. Diurnal Bird Surveys

The bird surveys targeted diurnal birds that are likely to inhabit the Victorian Temperate Woodland Bird Community. These species include Swift Parrot (*Lathamus discolor*), Speckled Warbler (*Chthonicola sagittata*), Regent Honeyeater (*Anthochaera = Xanthomyza phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (*Melanodryas cucullata*), Grey-crowned Babbler (*Pomatostomus temporalis*), Ground Cuckoo-shrike (*Coracina maxima*) and Diamond Firetail (*Stagonopleura guttata*). The birds of prey included the Black Falcon (*Falco subniger*) and Square-tailed Kite (*Lophoictinia isura*). The surveys were timed when birds are likely to be active (early morning and late afternoon) during the January and February surveys. The surveys were undertaken along transects tracks and roads across both Muskerry North and South. The surveys were conducted by vehicle or on foot recording bird calls and birds observed.

3.3.6. Targeted species surveys

In addition to fauna surveys completed in 2021, consultation with DELWP (meeting 1st June 2022) recommended targeted surveys for Swift Parrot and Striped Legless Lizard. The surveys were undertaken to assess the impacts on threatened fauna in addition to the previous survey effort in 2021.

The surveys, completed in January and February 2021, were not in the known season migration for the Swift Parrot. Table 3-3 outlines the survey methods for the two species.

Table 3-3 Swift Parrot and Striped Legless Lizard survey requirements

Common Name	Scientific Name	EPBC Act Status	FFG Act Status (VIC)	Survey Type
Swift Parrot	*Lathamus discolor*	Critically Endangered	Critically Endangered	Targeted Survey
Striped Legless Lizard	*Delma impar*	Vulnerable	Endangered	Habitat Assessment – with Targeted Survey based on habitat assessment outcome if required

Swift Parrot (*Lathamus discolor)*

The targeted surveys for the Swift Parrot will determine if the species is present and assess the likely utilisation of the area. The survey aims to:

- Assess the potential impact from the proposed works
- Assess the presence of the species in this locality based on previous records and;
- Consider Habitat Distribution Modelling (Naturekit).

The Swift Parrot surveys will be required to meet the following recognised guidelines for the species and include the following:

- Survey guidelines for Australia's threatened birds- Guidelines for detecting birds listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999.*
- Swift Parrot Search – revised guidelines for survey, Birdlife Australia 2021

Based on the national recommended survey guidelines, the survey effort needs to meet a minimum 20 survey hours over 8 days either in targeted areas of heavily flowering eucalypts or as area searches/transect

surveys. The survey methodology used both targeted survey and transect surveys and exceeded the minimum survey effort requirements. Similarly, the nearby Crosbie Nature Conservation Reserve that represents an HDM area of 80% and above suitable habitat for the Swift Parrot was used as a reference site with targeted transect completed as part of the survey effort.

Survey area (Muskerry North and South)

The potential habitat for Swift Parrot included the road reserve native vegetation that extended in to the study area. The survey effort focused on locations with flowering eucalypts. The survey was carried out by vehicle, stopping intermittently, and undertaking 5min 50m searches on foot. Surveys were undertaken over 2hrs at dawn and dusk.

The transects followed the best representative habitat for the Swift Parrot. The transect started at the intersection of Axedale-Toolleen Road and Murphy's Lane heading north on Murphy's Lane. The transect followed Murphy's Lane onto Muskerry East School Road which is the eastern boundary of Muskerry South and changes to the western boundary of Muskerry North. The transect finished at the northern point of Muskerry North at Toolleen Angle Road. The transect was completed by vehicle travelling at 10-15km hr with intermittent searches on foot. Refer to Figure 4-29 and Figure 4-30 for location of survey area.

The transects in the study area were inter-dispersed patches of remnant woodland vegetation and individual scattered trees in areas containing both flowering eucalypts and non-flowering eucalypt species. The transect surveys were timed after the dawn surveys were completed. Transects were traversed by foot and by vehicle. Refer to Figure 4-29 and Figure 4-30 for location of transect survey areas.

Reference Site survey

Crosbie Nature Conservation Reserve was used as a reference site for preferred Swift Parrot foraging habitat as an additional targeted survey site using methodology outlined above.

Striped Legless Lizard (*Delma impar)*

A habitat assessment was completed for the Striped Legless Lizard to determine if there was any potential habitat present. The Striped Legless Lizard's preferred habitat contains surface rock and cracking soils associated with a ground layer of native grasses.

The initial habitat assessment determined the extent and quality of habitat across the entire site. The survey areas were guided by previous native vegetation assessment for the study area (completed by NGH 2020), VBA records and Habitat Distribution Modelling (Naturekit 2.0). This information subsequently determined where, if any, suitable habitat occurred or assist in identifying areas that may be impacted by the proposed development.

NGH ecologists undertook the habitat assessment for Striped Legless Lizard as part of survey session 1. NGH mapped and recorded marginal and moderate habitat for Striped Legless Lizard in Muskerry North. Further steps were taken to avoid the moderate habitat and subsequently determined no further targeted surveys for the Striped Legless Lizard were required. The results are discussed in Section 4.6.3 of this report.

The determination of habitat quality was assessed and mapped using the following criteria:

High	Natural area dominated by a complex of ground layer of native grassland with signification reduce history or absence of grazing with suitable surface rock and/or invertebrate burrow refugia or soil cracks. Likely to meet EPBC threatened ecological community criteria. Usually not grazed by stock.

Moderate	Area of native vegetation containing a low to moderate (at least 25%) non-complex cover of native grasses with either suitable surface rock and/or invertebrate burrow refugia or soil cracks. May be grazed.
Low	Primarily low coverage of native grasses (at minimum 25% cover) of low complexity. May be grazed

If further surveys for Striped Legless Lizard are required to determine the presence and likely utilisation of the site, the surveys will need to follow the recognised guidelines for the species and include the following:

- Survey guidelines for Australia's threatened reptiles- Guidelines for detecting reptiles listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999*

3.3.7. Incidental Observations

During the site assessments, incidental fauna observations were recorded. These observations included habitat features observed on site as well fauna activity such as sightings, scats, burrows, warrens, hollows, logs, and rocky areas. Pest animal activity or sightings were included in this assessment. In addition, some habitat features such as logs and sheets of tin were turned, and species detected noted.

3.4. SURVEY LIMITATIONS

Survey timing, seasonality and duration limits the possibility of observing or recording all flora and fauna species across the study area. Flora and fauna surveys were carried out in from 2020- 2022 and the surveys are considered sufficient to determine the habitat requirements for any threatened entities that may occur in the locality. The threatened fauna recorded on site during fauna surveys were Lace Monitor and Brush-tailed Phascogale and these two species have further consideration in the mitigation measures. The targeted surveys included mitigation for the Swift Parrot and Striped Legless Lizard. The Swift Parrot was not recorded during the 2022 survey and their southerly migration, however as a precaution mitigation measures have been included. The moderate habitat for the Striped Legless Lizard has been avoided, and no targeted surveys were completed based on this habitat assessment, therefore mitigation measures are included as a precautionary measure. Further information can be found in Section 4.6.3.

3.5. MAPPING

The site assessment was undertaken with the use of aerial imagery created using Quantum GIS. Features were mapped on site using a Samsung Android using QField. All data layers were sourced from the layers publicly available from the Victorian Government. Mapping accuracy is within a few metres.

4. RESULTS

The results of the site assessment including defining and mapping ecological vegetation classes (EVCs), mapping and documentation of large and scattered trees, site observations of flora and fauna and assessment of habitat within the study area for threatened flora and fauna is provided in the following sections.

4.1. ECOLOGICAL VEGETATION CLASSES (EVCS) ON SITE

The Pre-European EVC modelling determined that the four EVCs on site were:

Table 4-1 EVC's on site

EVC Number	EVC Name	Location	Habitat Zones	Hectares Retained	Hectares Removed	Hectares Total
61	Box Ironbark Forest	Muskerry South	Habitat Zone 5	8.74	0.00	8.74
68	Creek line Grassy Woodland	Muskerry North and Muskerry South	Habitat Zones 2 and 9	46.9	0.00	46.9
175_61	Grassy Woodland	Muskerry North, Easement and Muskerry South	Habitat Zones 1, 4, 6, 7, 10 and 11	65.03	4.86	69.89
803	Plains Woodland	Muskerry South	Habitat Zone 8	0.758	0.004	0.76
810	Floodway Pond Herbland	Muskerry North and Muskerry South	Habitat Zone 3	2.41	0.90	3.31
			Total	**123.83**	**5.76**	**129.60**

A detailed description of each EVC is provided below and EVC mapping is shown on Figure 4-23 to Figure 4-25. A full flora species list from the site assessment can be found in Appendix A.

4.1.1. Box Ironbark Forest (EVC 61)

EVC 61 Box Ironbark Forest grows to 20 metres with an open canopy of Eucalypts consisting of Grey Box (*Eucalyptus microcarpa*), Red Ironbark (*Eucalyptus tricarpa*), Red Box (*Eucalyptus polyanthemos*) and Yellow Gum (*Eucalyptus leucoxylon*). It is found on a range of soil types, geology and usually there is Ironbark present. The shrub and ground storey are often sparsely vegetated.

Habitat Zone 5 (as shown in Figure 4-23 and Figure 4-24) is located in the southwest corner of Muskerry South and covers 8.74 hectares. The habitat zone is connected to a larger patch of vegetation in the neighbouring western properties separated by the boundary fence. Habitat Zone 5 is predominantly regenerating Eucalypts along the western fence boundary. There are only two large trees, and the ground cover is mainly leaf litter with some native and exotic grasses and herbs. There is no Box Ironbark in this patch, but Box Ironbark is present in the adjoining patch of vegetation on Dwyer Lane.

Figure 4-1. Habitat Zone 5

Figure 4-2. Habitat Zone 5

Figure 4-3. Habitat Zone 5

Figure 4-4. Habitat Zone 5

4.1.2. Creek line Grassy Woodland (EVC 68)

Creek line Grassy Woodland (EVC 68) reaches 15 metres in height with a Eucalypt canopy of River Red Gum (*Eucalyptus camaldulensis*) Grey Box, Yellow Gum, and Yellow Box. There are scattered shrubs and revegetation throughout the creek lines and the ground storey is a mix of native and exotic grasses and herbs. The creeks are Burke Creek and Back Creek and their tributaries. EVC 68 is divided into two habitat zones 2 and 9, based on vegetation condition.

Habitat Zones 2A (25.05 hectares), 2B (9.10 hectares) and 2C (12.75 hectares) vegetation quality is low-good (Figure 4-23 and Figure 4-24. These habitat zones have been split based on vegetation composition and structure differences. Habitat Zone 2A is Burke Creek which runs through the centre of Muskerry South. This creek line is fully fenced although it is currently grazed by sheep. The mature Eucalypts are mostly scattered but there is a cluster of mature Eucalypts in the centre of the Habitat Zone. The shrub layer consists of planted Eucalypts as part of revegetation on the banks of the creek. The groundstorey is mainly exotic with small clusters of native grasses and scattered herbs. Habitat Zone 2B is located on the northeast corner of Muskerry South. The creek line is Back Creek. This area is fully fenced and currently has no grazing. The vegetation quality here has higher floristic diversity through natural regeneration and replanting of Eucalypts and shrubs. The groundstorey is a mix of exotic and native grasses and hers. Habitat Zone 2C is located in Muskerry North and it is unfenced and grazed by sheep. The mature Eucalypts are scattered throughout the habitat zone. The shrub layer is more natural Eucalypt regeneration but some planted vegetation. The ground storey consists of some native grasses and herbs but dominated by exotic grasses. The vegetation quality is low to good.

Habitat Zone 9 (2.95 hectares) is part of the upper tributary Back Creek which is more of a low-lying floodplain (Figure 4-23 and Figure 4-24). This habitat zone has <a?> mature Eucalypt canopy of River Red Gum (*Eucalyptus camaldulensis*) and native ground storey vegetation. This habitat zone has good to moderate vegetation quality with large canopy trees, scattered shrubs, and a mixed understorey. Although currently grazed, there is a presence of leaf litter, logs and low high threat weed cover.

Figure 4-5. Habitat Zone 2A (Muskerry South)

Figure 4-6. Habitat Zone 2A (Muskerry South)

Figure 4-7. Habitat Zone 9 (Muskerry South)

Figure 4-8. Habitat Zone 9 (Muskerry South)

Figure 4-9. Habitat Zone 2C (Muskerry North)

4.1.3. Grassy Woodland EVC (175_61)

The Grassy Woodland EVC (175_61) covers most of the study area. Typically, this EVC is an open eucalypt woodland where the upper canopy reaches 15 metres with a sparse cover of shrubs, grasses, and herbs. In the Goldfields bioregion, this woodland occurs on sedimentary soils on lower slopes between the Plains Woodland and infertile woodlands of the sedimentary hills (DSE 2003). The habitat zones (1, 4, 6, 10, and 11) are scattered across the study area. These habitat zones vary in vegetation quality due to variation in habitat structure, composition, or floristic diversity. These attributes impact on the habitat hectare score.

Habitat Zone 1 is dominated by native grasses and rushes (see Figure 4-10). There is an absence of canopy trees and shrubs (cover <5%), logs and leaf litter. The vegetation quality and condition of this zone is low. To qualify as a patch of native vegetation, the groundcover must be perennial and cover more than 25%. There were many grassy patches scattered across the study area, but in locations where the cover is <25%; there is no permit or offset requirement. There are 45 areas of habitat Zone 1 which covers a total of 15.87 hectares within Muskerry North, easement and Muskerry South (See Figure 4-23 and Figure 4-24).

Habitat Zone 4 covers 13.26 hectares and includes 17 areas (Figure 4-23 and Figure 4-24). Habitat Zone 4 eucalypt canopy is dominated by Grey Box with an exotic understorey and an absence of shrubs (see Figure 4-11). These zones appear to be in areas where the stock camp which has contributed to the low vegetation quality.

Habitat Zone 6 covers 27 areas and 24.37 hectares (Figure 4-23 and Figure 4-24). Habitat Zone 6 has a small number of large trees but there is extensive Eucalypt regeneration. These regenerating Eucalypts contribute to the shrub layer in the habitat hectare scores. The ground storey is a mix of exotic herbs and grasses with some native grasses. The vegetation quality is low-good (see Figure 4-12).

Habitat Zone 7 covers 4.54 hectares (Figure 4-23 and Figure 4-24). This habitat zone is the unmade road reserves in Muskerry South and a small patch adjacent to Murphys Lane. The canopy vegetation consists of Grey Box and Yellow Gum and occasionally Yellow Box (Figure 4-13). There is sparse shrub cover and ground cover but the diversity in the ground cover has higher flora diversity than Habitat Zone 4.

Habitat Zone 10 on Muskerry East School Road covers 0.41 hectares. These habitat zones cover two areas (Option A and Option B) which is the proposed connection point between Muskerry North and Muskerry South. The habitat zone vegetation is a mix of native groundstorey vegetation and exotic pasture grasses, and canopy vegetation dominated by Eucalypts.

Habitat Zone 11 is the shrub regrowth covering 12.99 hectares (Figure 4-23 and Figure 4-24). This zone is located in Muskerry North. There are some scattered Grey Box mature trees with some Eucalypt regeneration. The shrub layer has extensive regeneration of Sifton bush (*Cassinia sifton*), and the ground storey was native grasses and exotic herbs (see Figure 4-14).

Figure 4-10. Habitat Zone 1

Figure 4-11. Habitat Zone 4

Figure 4-12. Habitat Zone 6

Figure 4-13 Habitat Zone 7

Figure 4-14. Habitat Zone 11

Figure 4-15. Habitat Zone 1 (Easement)

Figure 4-16 Habitat Zone 10 (Muskerry East School Road) Easement Option A

Figure 4-17. Habitat Zone 10 (Muskerry East School Road) Easement Option B

4.1.4. Plains Woodland (EVC 803)

Plains Woodland, EVC 803, covers a small area in the study area north of Dwyer Lane. There are four small zones in Habitat Zone 8 covering 0.76 hectares (Figure 4-23 and Figure 4-24). Plains Woodland can be found on flat or gently undulating plains on poorly draining fertile soils. Habitat Zone 8 is dominated by Grey Box in the understorey with an absence of shrubs and exotic herbs and grasses (see Figure 4-18).

Figure 4-18. Habitat Zone 8

4.1.5. Floodway Pond Herbland (EVC 810)

There is no Floodway Pond Herbland (EVC 810) for Goldfields Bioregion, but these small patches of vegetation and natural regeneration have occurred on the edge of the dams throughout the study area. Habitat Zone 3 covers 3.32 hectares and 14 different habitat zones (Figure 4-23 and Figure 4-24). The species diversity is quite low. Figure 4-19, Figure 4-20, Figure 4-21 and Figure 4-22 show photos of Zone 3.

Figure 4-19. Habitat Zone 3

Figure 4-20. Habitat Zone 3

Figure 4-21. Habitat Zone 3

Figure 4-22. Habitat Zone 3

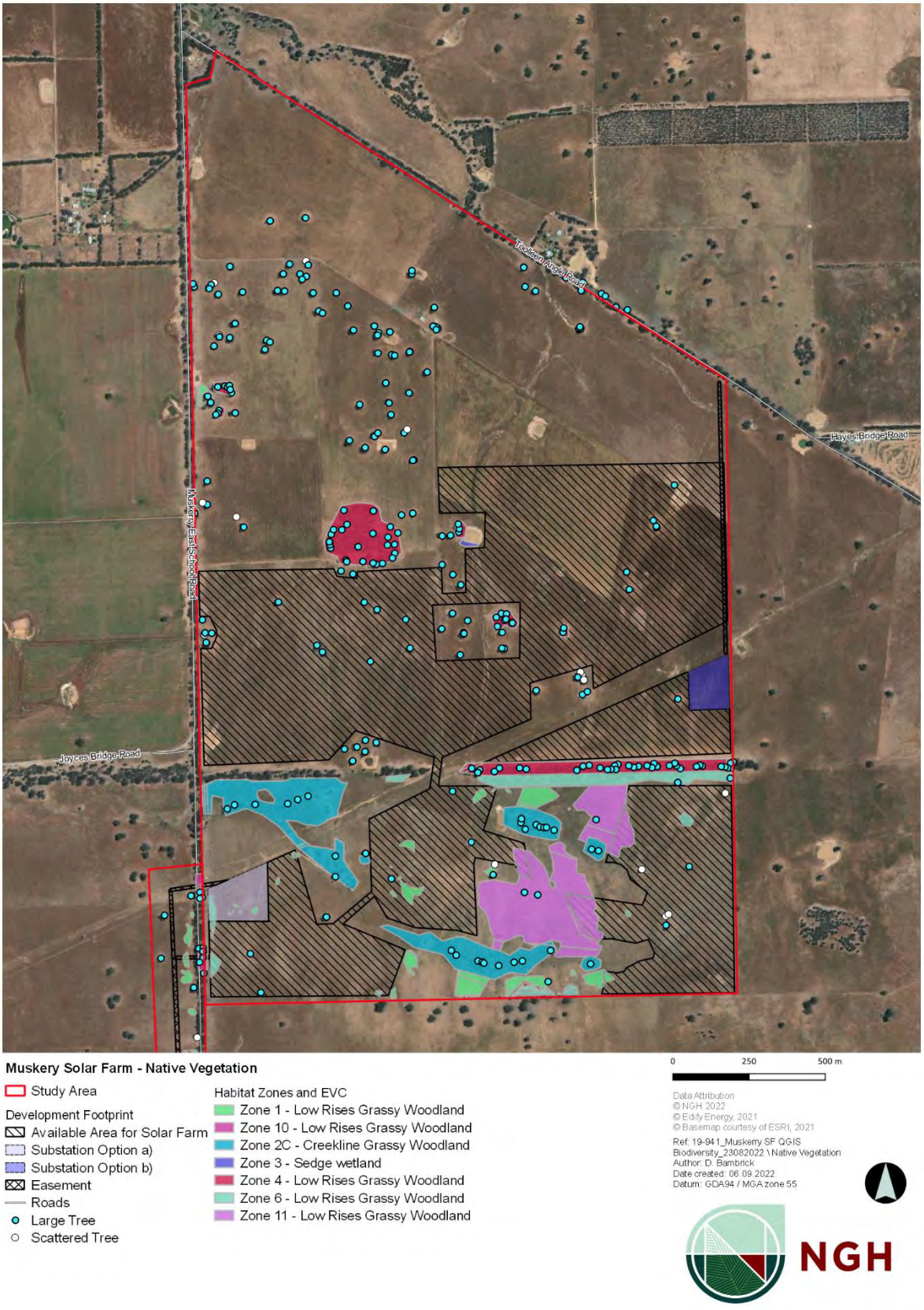

Figure 4-23 Habitat Zones and Scattered Trees in the study area (Muskerry North)

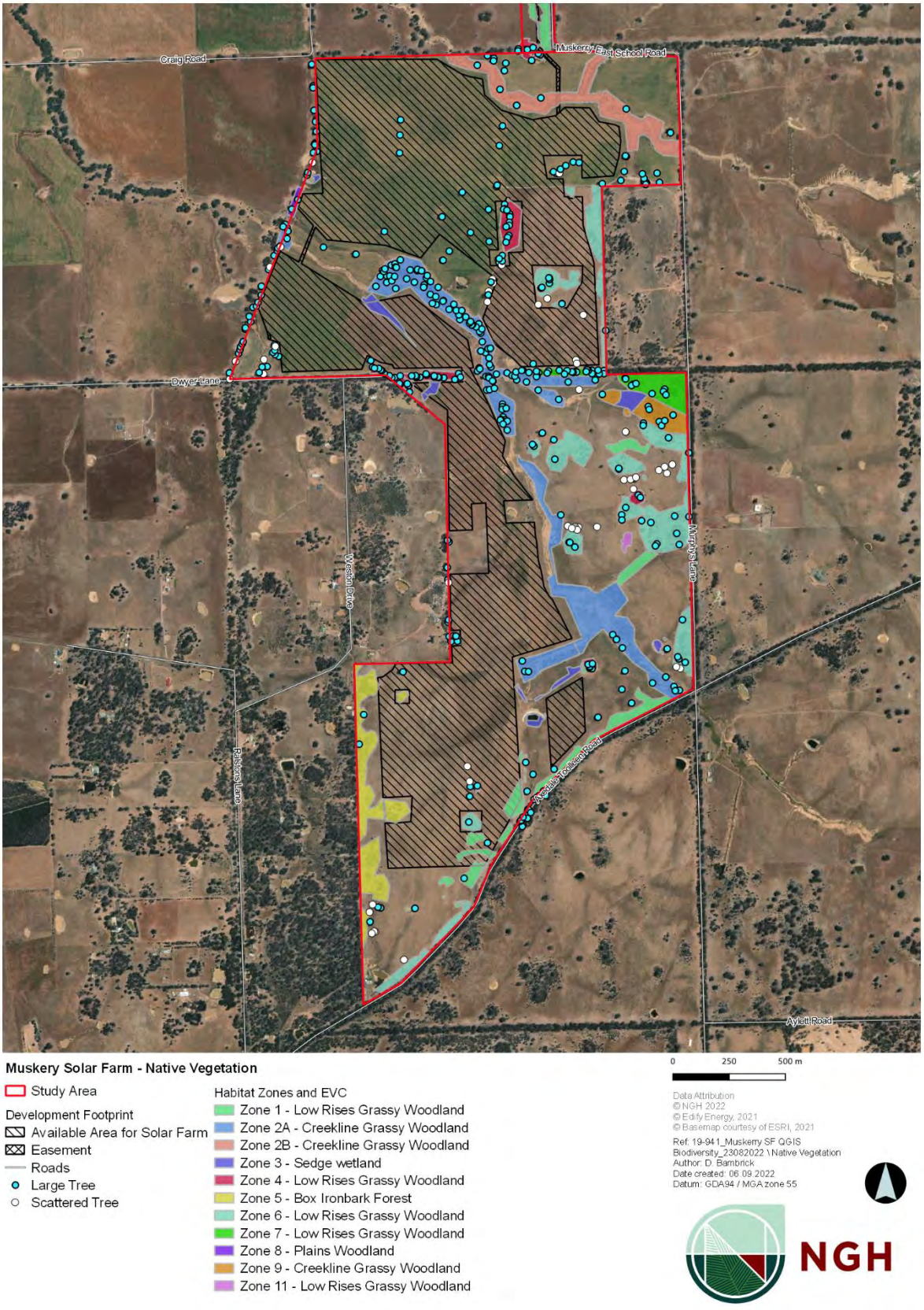

Figure 4-24. Habitat Zones and Scattered Trees in the study area Muskerry South

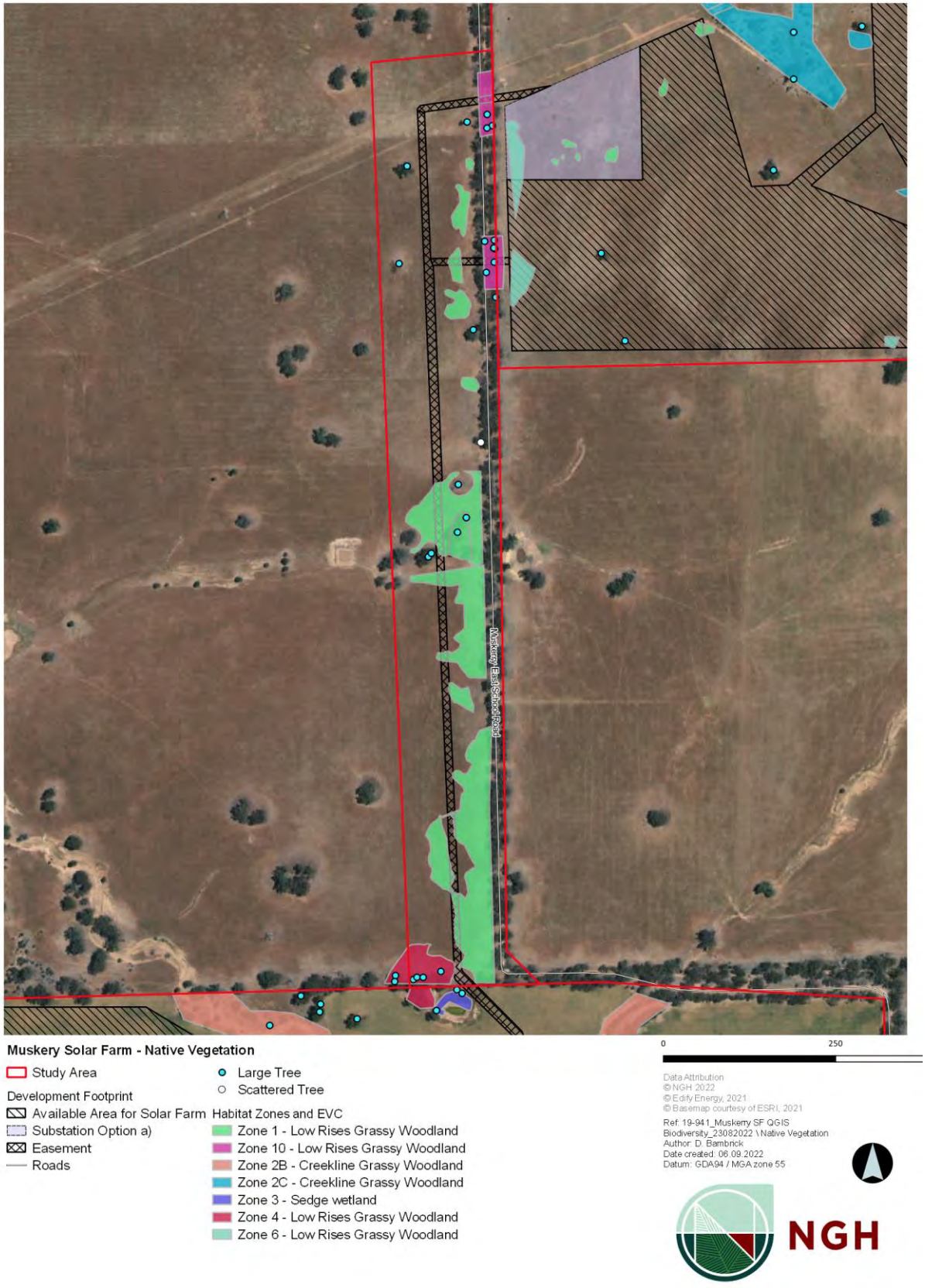

Figure 4-25 Habitat Zones and Scattered Trees in the study area Easement

4.2. HABITAT HECTARE RESULTS

Table 4-2 presents the habitat hectare results for habitat Zones 1-11.

Table 4-2 Habitat hectare scores for habitat Zones 1-12

Habitat Components	Score	Habitat Zone													
		1	2A	2B	2C	3	4	5	6	7	8	9	10b	10c	11
EVC		**175_61**	**68**	**68**	**68**	**810**	**175_61**	**61**	**175_61**	**175_61**	**803**	**68**	**175_61**	**175_61**	**175_61**
Large Trees	10	1	3	2	2	0	7	2	2	7	9	2	9	9	2
Tree Canopy Cover	5	0	4	2	2	0	2	2	4	2	4	2	2	2	0
Understorey	25	15	15	15	15	15	5	15	15	15	5	15	5	5	15
Lack of Weeds	15	6	6	6	6	9	6	7	7	11	6	6	9	6	9
Recruitment	10	3	3	6	6	6	0	3	3	5	0	3	1	1	3
Organic Litter	5	3	5	3	3	4	5	3	5	3	5	3	3	3	3
Logs	5	2	2	0	2	0	2	2	2	4	4	2	0	0	0
Standardiser	1	1	1	1	1	1.36	1	1	1	1	1	1	1	1	1
Habitat Components score		30	38	34	36	54.4	27	34	38	47	33	33	29	26	32
Landscape Context															

Patch Size	10	6	8	8	8	1	6	2	8	1	1	2	1	1	6
Neighbourhood	10	1	1	1	1	1	1	3	1	1	1	1	1	1	1
Distance to Core Area	5	1	1	1	1	0	1	1	1	1	1	1	1	1	1
Final Habitat Score		38	48	44	46	56.4	35	40	48	50	36	37	32	29	40
Percentile Score		**0.38**	**0.48**	**0.44**	**0.46**	**0.564**	**0.35**	**0.4**	**0.48**	**0.5**	**0.36**	**0.37**	0.32	0.29	**0.4**
Area (hectares)		10.33	25.05	9.10	12.76	3.32	12.84	8.75	24.38	4.54	0.76	2.95	0.19	0.22	12.99

4.3. LARGE TREES AND SCATTERED TREES

The EVC benchmark DBH for EVC 68 (the creek line) was 80 cm and the Woodlands (EVCs 61, 803 and 175_61) the benchmark DBH was 70cms.

Table 4-3 presents the large trees within the habitat zones and all small and large scattered trees within the study area. The total number of trees assessed was 707. The trees to be retained are 646 which are located on the boundary, the creek line, or the unmade road reserves. The trees proposed to be removed (49) are within the development footprint as shown on Figure 4-23 and Figure 4-24.

Table 4-3. Scattered and large tree summary

Tree data	Retain	Remove
Large scattered Eucalypts (including stags)	231	47
Large Eucalypts in Habitat Zones	411	2 (1 stag)
Total large trees proposed for removal	0	49 (as per EnSym Report)
Allocasuarina	2	0
Small Scattered Eucalypts	52	98
Sub-total	**696**	**210**
Total trees assessed		**906**

4.4. THREATENED COMMUNITIES

In the Goldfield Bioregion, each EVC has a bioregional conservation status. Table 4-4 lists the conservation status for each EVC found in the study area.

Table 4-4. Conservation status of each EVC in the study area

EVC Number	EVC Name	Conservation Status	Hectares Impacted
61	Box Ironbark Forest	Depleted	0.00
68	Creekline Grassy Woodland	Endangered	0.00
175_61	Grassy Woodland	Vulnerable	4.86
803	Plains Woodland	Endangered	0.004

EVC Number	EVC Name	Conservation Status	Hectares Impacted
810	Floodway Pond Herbland	Vulnerable	0.90

Based on the conservation status for each EVC, Box Ironbark Forest has 30-50% pre-European cover remaining. This EVC is not considered at risk. Grassy Woodland's conservation status is Vulnerable where it is estimated 10-30% of the pre-European cover of this EVC remains in the Goldfields Bioregion. Creekline Grassy Woodland and Plains Woodland EVCs conservation status is Endangered with only 10% of the pre-European cover remaining in the Goldfield Bioregion. Native vegetation for these two EVCs will be avoided as part of this development proposal. Areas of Grassy Woodland and Box Ironbark Forest are proposed to be removed as part of this Solar Power Station development. Further assessments of these EVCs and their threatened status under the *Flora and Fauna Guarantee Act 1988 (FFG)* and EPBC Acts are considered further. The FFG threatened communities are assessed below and EPBC threatened communities are assessed in Section 4.7.

The two FFG threatened vegetation communities which may be impacted from the proposed development include Creekline Grassy Woodland (Goldfields) Community and Victorian Temperate Woodland Bird Community.

Creekline Grassy Woodland (Goldfields) Community

As outlined in the threatened community profiles (DSE no date), the Creek line Grassy Woodland (Goldfields) Community occurs as small remnants within the box-ironbark ecosystems of Victoria. The woodland community occurs on shallow or ephemeral drainage lines on the lower slopes of box-ironbark forests. The riparian vegetation can also be found on permanent streams on the alluvial plains. There are two sub-communities. The Eucalypts of one sub-community includes River Red Gum (*Eucalyptus camaldulensis*) forming open overstorey canopy with larger old trees. Yellow Box (*Eucalyptus melliodora*) and Grey Box (*Eucalyptus microcarpa*) occur in one of the sub-communities as the other canopy species.

The sub-communities groundcover is a dense layer of grasses and sedges including Weeping Grass (Microlaena stipoides = M. stipoides var. stipoides), Tall Sedge (*Carex appressa*), rushes (*Juncus spp*.), Wirilda (*Acacia retinodes = Acacia provincialis*), Black Wattle (*Acacia mearnsii*), and Rough-barked Honey-myrtle (*Melaleuca parvistaminea*). Broome (*Bromus spp*.), Quaking-grass (*Briza spp*.) and Fescue (*Vulpia sp*p.) are commonly present weed species. Or characteristically dominated by Common Tussock-grass (Poa *labillardierei = P. labillardierei var. labillardierei*) and Kangaroo Grass (*Themeda triandra*).

Relevance to the Proposed Solar Power Station

The canopy species present on the creek lines were River Red Gum, Yellow Box and Grey Box. The River Red Gum was sparse in the study area and the Yellow Gum and Grey Box dominated the ephemeral creek lines. The dominant Eucalypts for the sub-communities do not match the canopy description of the Creek Line Grassy Woodland Community.

Furthermore, the groundstorey species for both sub-communities were largely absent but the understorey in the study area was highly modified from many years of grazing pressure.

No Creekline vegetation will be impacted as a result of this proposed Solar Power Station.

Victorian Temperate Woodland Bird Community

As outlined in the threatened community profiles (DSE no date), The Victorian Temperate Woodland Bird Community includes 24 bird species found in drier woodlands on the slopes and plains north of the Great Dividing Range. Bird numbers have declined since European settlement as the Woodlands have been cleared for agriculture. The remnant Woodlands are fragmented, degraded and this greatly reduces resources and habitat available to these woodland birds. Other threats for these woodland birds are predation by cats and foxes.

The woodlands and bird distribution includes the drier woodlands in northern Victorian. These woodlands dominated by Eucalyptus such as Box, Stringybark, Ironbark, Yellow Gum, or River Red Gum, or by Buloke or Cypress-Pine.

From 24 species, the following 10 species have been recorded within 10km of the study area. In this group are the Bush Stone-curlew (*Burhinus grallarius*), Swift Parrot (*Lathamus discolor*), Barking Owl (*Ninox connivens*), Speckled Warbler (*Chthonicola sagittata*), Regent Honeyeater (*Anthochaera* = *Xanthomyza phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (*Melanodryas cucullata*), Grey-crowned Babbler (*Pomatostomus temporalis*), Ground Cuckoo-shrike (*Coracina maxima*) and Diamond Firetail (*Stagonopleura guttata*). Section 4.5 details the likelihood of these species occurring within the study area and a flora assessment table is provided in Appendix D.1.

Relevance to the Solar Power Station Proposal

Further targeted surveys were undertaken to understand the proposed impacts of the proposed Solar Power Station and the Woodland Birds in this locality. None of the Woodland birds listed above were recorded during the bird surveys possibly due to the absence of mid-storey vegetation (shrubs). Any future revegetation or rehabilitation plans in the study area should include mid-storey vegetation diversity and connectivity.

4.5. FLORA

4.5.1. Flora Observations

The results of the list of flora species identified whilst on site, are listed in Appendix A. The flora observations documented a total of 94 plant species. There were 52 native and 42 exotic plants which included ten high threat weed species.

4.5.2. Threatened Flora Records

From the Victorian Biodiversity Atlas results and the matters of National Significance search there were 12 flora species previously recorded within 10kms of the study area.

None of these species were detected during the site visits. It is highly unlikely these species occur within the study area due to removal of native vegetation and pasture improvement practices. The land management practices have resulted in exotic pasture grasses dominating the ground cover across the study area (Appendix D.1) presents the threatened flora records within 10kms of the study area).

4.5.3. High and Medium Likelihood Flora

There were no flora with a high or medium likelihood of being present within the study area. See Appendix D.1 for details of the threatened flora assessment.

4.5.4. Noxious weeds identified on site

The noxious weeds found on site are listed in Table 4-5.

Table 4-5 Declared noxious weeds in the study area.

Scientific Name	Common Name	Classification
African Box thorn	*Lycium ferocissimum*	Regionally Controlled
Artichoke thistle	*Cynara cardunculus*	Regionally Controlled
Bathurst Burr	*Xanthium spinosum*	Regionally Controlled
Briar Rose	*Rosa rubiginosa*	Regionally Controlled
Bridal creeper	*Asparagus asparagoides*	Restricted
Horehound	*Marrubium vulgare*	Regionally Controlled
Paterson's Curse	*Echium plantagineum*	Regionally Controlled
Soursob	*Oxalis pes-caprae*	Restricted
Spear thistle	*Cirsium vulgare*	Restricted
St John's wort	*Hypericum perforatum*	Regionally Controlled

4.5.5. Management of Weeds and Pest Animals

Under the *CaLP Act, 1994*, control of declared noxious weeds and pest animals will be ongoing management requirement prior, during and post construction. Weed and pest animal management should consider best practice methods.

A weed management plan should consider any new and emerging weeds and any necessary prevention methods.

Appropriately qualified contractors should be engaged to undertake weed (Accredited Chemical Users Permit (ACUP)) and pest animal control (1080 and PAPP).

Hygiene practices for reducing and spreading weeds and pathogens should be included in any Construction Environmental Management Plan.

4.6. FAUNA

The following sections detail threatened fauna records for 10km surrounding the study area and the results of further targeted fauna surveys.

4.6.1. Fauna Habitat Features

The habitat features identified within the study area were:

- Hollow bearing trees
- Large Eucalypts with overlapping canopy
- Scattered large Eucalypts distributed across paddocks.
- Large logs, leaf litter

- Revegetation in creek lines
- Creeks providing ephemeral aquatic habitat.
- Remnant grasslands
- Woodlands on surrounding roadside
- Stags with hollows and slits for microbats

The large Eucalypts along the creek lines and scattered on fence lines and in open paddocks are mapped in Figure 4-23 and Figure 4-24

4.6.2. Threatened Fauna Records

From the Victorian Biodiversity Atlas results and the Matters of National Environmental Significance search results, there were 49 species that were either recorded within 10km of the study area or are likely to occur in the locality as shown in Appendix D.2, this table support the decision to conduct targeted surveys for the species listed. These species included 30 birds (including migratory), three mammals (including Platypus), three amphibians, two invertebrates, four fish (1 possible, 3 unlikely due to unsuitable habitat) and two reptiles.

The likelihood of these species occurring at the site is evaluated in Appendix D.2. In summary, Platypus (which has been recently listed as vulnerable), and three fish species are present in rivers within the locality. The Platypus and three fish have been excluded as being unlikely to use habitat within the development footprint.

From the remaining 41 species – two species are considered to have a high likelihood of occurring on site as these two species were recorded during the targeted fauna surveys. 11 have a medium likelihood and further targeted surveys were undertaken to determine the presence of these species on site. The remaining 27 fauna species are considered to have a low likelihood of occurring onsite.

Appendix D presents the threatened fauna records within 10kms of the study area.

4.6.3. Fauna Survey Results

Eight walking/driving survey transects were set up for two survey periods. The transects are listed in Table 4-7. The first round of fauna surveys were undertaken 27-29 January and the second round was 22-24 February 2021.

The weather for the two surveys is included in Table 4-6:

Table 4-6. Weather details for survey periods.

Date	Temp Minimum (Degrees Celsius)	Temp Maximum (degrees Celsius)	Rainfall (mm)	Wind
27/01/2021	10.5	26.7	0	SSE 30km/hr
28/01/2021	14.6	24.5	0	SE 9km/hr
29/01/2021	15.8	19.4	10.2	NE 4km/hr
22/02/2021	12.1	25.4	0	SSW 20km/hr

23/02/2021	6.2	21.2	0	SSW 15km/hr
24/02/2021	5.9	23.4	0	SSE 11km/hr

There was a total of 57 fauna species recorded during the site surveys. The threatened species recorded were Brush-tailed Phascogale (*Phascogale tapoatafa*) and Lace Monitor (*Varanus varius)*.

The other species recorded were:

- 3 reptiles
- 33 birds
- 18 mammals
- 4 introduced mammals

The results of the species recorded are included in Appendix C.

4.6.4. Spotlighting

The following table details the nocturnal spotlighting transects undertaken at Muskerry. The surveys were conducted from a vehicle driving at 5-8 km per hour along access road with a spotlight shining into adjacent habitat. Surveys took from 8:30pm until 00:30 am. The location of transects is shown on Figure 4-32 and Figure 4-33.

Table 4-7. Fauna nocturnal spotlighting transects using vehicle/walking.

Transect Number	Transect Location (distance kms)	Survey Period		Species Recorded (over both survey periods)
		Night 1	Night 2	
	Muskerry North			
1	Toolleen Angle Road (2km)	27 January 2021	23 February 2021	Microbat species
2	Muskerry East School Road (3km)	27 January 2021	23 February 2021	Microbat species White-striped Freetail Bat Krefft's Glider European Rabbit Eastern Ring-tailed Possum
3	Remnant Patch (0.5km)	27 January 2021	23 February 2021	White-striped Freetail Bat Eastern Ring-tailed Possum

4	Power Easement track (1.2 km)	27 January 2021	23 February 2021	White-striped Freetail Bat Eastern Ring-tailed Possum
Muskerry South				
5	Dwyer Lane West (0.5 km)	27 January 2021	23 February 2021	White-striped Freetail Bat Eastern Grey Kangaroo Eastern Ring-tailed Possum
6	Murphy's Lane (2.6 km)	28 January 2021	22 February 2021	White-striped Freetail Bat Krefft's Glider European Rabbit Microbat species Tawny Frogmouth Eastern Ring-tailed Possum
7	Dwyer Lane East (1km)	28 January 2021	22 February 2021	White-striped Freetail Bat European Rabbit Microbat species Red Fox Tawny Frogmouth Eastern Ring-tailed Possum
8	Axedale-Toolleen Road (2.1 km)	28 January 2021	22 February 2021	White-striped Freetail Bat Krefft's Glider Microbat species Red Fox Brash-tailed Phascogale Tawny Frogmouth Common Brush-tailed Possum Eastern Ring-tailed Possum

4.6.5. Camera Trapping

Table 4-8 includes the camera locations and the dates the camera was in the installed at that location.

Results of the camera trapping are shown in Table 4-8. Further results can be found in the Wildlife and Ecology fauna report in Fauna Survey Report Appendix C.

Table 4-8 Camera trapping results

Location	Transect	Cameras	Duration	Species detected
Muskerry East School Road	2	1, 2, 4	29 January – 24 February 2021	Brash-tailed Phascogale Krefft's Glider Yellow-footed Antechinus
Remnant Patch	3	3	27 January – 22 February 2021	Australian Magpie Australian Raven White-winged Chough
Row of trees east of the power easement	4	5	27 January – 22 February 2021	Australian Magpie Yellow-footed Antechinus
Muskerry East School Road and Murphy's Lane	6	6 and 7	28 January – 23 February 2021 22-24 February 2021	White-winged Chough Brash-tailed Phascogale Yellow-footed Antechinus
Dwyer Lane 'East' (S)	7	8	28 January – 23 February 2021	Brash-tailed Phascogale Krefft's Glider Australian Magpie
Yellow Gums along Murphy's Lane	(near transect 6)	9	28 January – 23 February 2021	No results
Burke Creek, downstream of Axedale-Toolleen Road	Near transect 8	10	28 January – 23 February 2021	Noisy Miner Krefft's Glider
Axedale – Toolleen Road (1)	8	11 and 12	22-24 February 2021	No results

(Source: Wildlife and Ecology 2021)

4.6.6. Call Playback

Calls for Powerful Owl and Barking Owl were played, and no response was detected for either species over call playback events across Muskerry.

4.6.7. Anabat detector

Anabat detector surveys were conducted in accordance with methods described in Section 3.3.4. From the Anabat results, no threatened microbats were recorded. However, there was a high volume of calls which were determined to be eight microbat taxa and three other genera which could not be determined to species level. The Anabat detector locations are shown on Figure 4-32 and Figure 4-33 and the species recorded can be found in the Wildlife and Ecology fauna report in Appendix C.

Table 4-9. Anabat detector results

Anabat No.	Location	Location	Duration	Species detected
1	Remnant patch	Northern section	27-29 January 2021	Eastern Falsistrellus Forest Bat species Little Forest Bat Long-eared Bat species Southern Freetail bat White-striped Freetail Bat Chocolate Wattled Bat
2	Dam near power easement	Northern section	29 January – 22 February 2021	Eastern Falsistrellus Forest Bat species Freetail Bat species Gould's Wattled Bat Inland Broad nosed Bat Large Forest Bat Little Forest Bat Long-eared Bat species Southern Freetail bat White-striped Freetail Bat Chocolate Wattled Bat
3	Murphy's Lane (Muskerry East School Road)	Southern section	27-29 January 2021	Chocolate Wattled Bat Eastern Falsistrellus Forest Bat species Southern Freetail bat White-striped Freetail Bat
4	Dwyer Lane 'east'	Southern section	29 January – 24 February 2021	Chocolate Wattled Bat Forest Bat species Freetail Bat species Gould's Wattled Bat Inland Broad nosed Bat Large Forest Bat Long-eared Bat species Southern Freetail bat White-striped Freetail Bat
5	Axedale – Toolleen Road	Southern section	22-24 February 2021	Freetail Bat species Gould's Wattled Bat Southern Freetail bat White-striped Freetail Bat

(Source: Wildlife and Ecology 2021)

4.6.8. Diurnal Bird Surveys

There were 32 birds recorded during the bird surveys. No threatened birds were recorded. Table 4-10 lists the survey dates for each transect.

The incidental birds recorded and the bird survey results can be found in the Wildlife and Ecology fauna report in Fauna Survey Report Appendix C. The diurnal bird surveys were conducted in accordance with the methodology provided in section 3.3.5.

The transect locations can be found in Figure 4-32 and Figure 4-33.

Table 4-10. Diurnal bird survey transects.

Location	Survey 1		Survey 2	
	AM	PM	AM	PM
North				
Transect 1 (Toolleen Angle Road)	**27 January 2021**	**28 January 2021**	**23 February 2021**	**24 February 2021**
Distance	2kms	2kms	2kms	2kms
Time	15 mins	20 mins	16 mins	12 mins
Vehicle/Foot	Vehicle	Vehicle	Vehicle	Vehicle
Transect 2 (Muskerry School East)	**27 January 2021**	**28 January 2021**	**23 February 2021**	**24 February 2021**
Distance	3kms	3kms	3kms	3kms
Time	40 mins	31 mins	19 mins	17 mins
Vehicle/Foot	Vehicle	Vehicle	Vehicle	Vehicle
Transect 3 (Remnant patch in paddock)	**27 January 2021**	**28 January 2021**	**23 February 2021**	**24 February 2021**
Distance	500ms	500ms	500ms	500ms
Time	35 mins	18 mins	21 mins	15 mins
Vehicle/Foot	Foot	Foot	Foot	Foot
Transect 4 (Power easement)	**27 January 2021**	**28 January 2021**	**23 February 2021**	**24 February 2021**
Distance	1.2kms	1.2kms	1.2kms	1.2kms
Time	40 mins	23 mins	32 (mins)	37 mins
Vehicle/Foot	Vehicle	Vehicle	Vehicle	Vehicle
Transect 5 (Dwyers Road west)	**27 January 2021**	**28 January 2021**	**23 February 2021**	**24 February 2021**

Location	Survey 1		Survey 2	
	AM	PM	AM	PM
Distance	520ms	520ms	520ms	520ms
Time	7 mins	No time	7 mins	12 mins
Vehicle/Foot	Vehicle		Vehicle	Vehicle
Transect 6 (Murphys Lane)	**29 January 2021**	**27 January 2021**	**24 February 2021**	**22 February 2021**
Distance	1.1kms	1.1kms	1.1kms	1.1kms
Time	24 mins	25 mins	18 mins	35 mins
Vehicle/Foot	Vehicle	Vehicle	Vehicle	Vehicle
Transect 7 (Dwyers Lane East)	**29 January 2021**	**27 January 2021**	**24 February 2021**	**22 February 2021**
Distance	1kms	1kms	1kms	1kms
Time	21 mins	18 mins	27 mins	28 mins
Vehicle/Foot	Vehicle/Foot	Vehicle/Foot	Vehicle/Foot	Vehicle/Foot
Transect 8 (Axedale-Toolleen Road)	**29 January 2021**	**27 January 2021**	**24 February 2021**	**22 February 2021**
Distance	2.1kms	2.1kms	2.1kms	2.1kms
Time	18mins	10 mins	17 mins	15 mins
Vehicle/Foot	Vehicle	Vehicle	Vehicle	Vehicle

4.6.9. Swift Parrot Surveys

A targeted survey was completed by NGH ecologists during August 2022 over three individual survey sessions during the following:

- Session 1 1-3 August 2022
- Session 2 8-10 August 2022
- Session 3 17-19 August 2022

Scheduling surveys across three separate sessions was designed to improve the chances of observing the Swift Parrot. The species is highly nomadic and responds to the available winter flowering of Eucalypts as it is their primary food source. Surveys undertaken during August were

expected to have high chance of detection of the Swift Parrot as the birds are likely to be migrating south to Tasmania during this period in preparation for the September/October breeding season.

Survey Effort

Survey effort was undertaken to meet the national recommended 20hr search survey guidelines for the Swift Parrot (DEWHA 2010) outlined in section 3.3.6. Survey effort exceeded minimum requirements. Table 4-11 provides a summary of the survey effort completed during all three survey sessions.

A total of 66 hrs of accumulated survey effort was completed over three sessions across a total of 9 days exceeding the minimum survey requirements to detect the Swift Parrot. A total of 42 hours including both dawn and dusk targeted survey (24hrs) as well as transect surveys (18) were completed for the study area. A total of 24 hrs of dawn and dusk targeted survey effort was completed for the reference site.

Table 4-11 Survey Effort (accumulated from 2 observers over three survey periods)

Survey Sessions	Targeted Survey Dawn (hrs)	Targeted Survey Dusk (hrs)	Transect Survey (hrs)
Session 1			
Project Site	4	4	6
Reference Site	4	4	
Session 1			
Project Site	4	4	6
Reference Site	4	4	
Session 1			
Project Site	4	4	6
Reference Site	4	4	
Totals	**24**	**24**	**18**

Habitat values

Foraging habitat for the Swift Parrot was primarily attributed to the occurrence winter/early spring flowering eucalypts. The Eucalypts were flowering in the study area and reference site at Crosbie Nature Conservation Reserve. Table 4-12 below provides observations to the available flowering eucalypts during the three survey sessions completed with estimates to the number canopy trees flowering. It was also noted the two very small patches of Green Mallee (*Eucalyptus viridis),* in heavy bud, on two small rises in the Muskerry South.

Golden Wattle (*Acacia pycnantha)* was in flower for all three surveys (Figure 4-26). The occurrence Swift Parrots, whilst the significance of this remains unknown, has been found to be linked to the intensity of flowering Golden Wattle (McNally, 2000).

Figure 4-26 Images showing Golden Wattle in flower (left) adjacent study area along Muskerry East School Road and (Right) in Crosbie Nature Conservation Reserve.

Table 4-12 List of winter flowering eucalypts and status during targeted survey sessions.

Flowering Eucalypt Species		**Project Site – Est. No. flowering**	**Reference Site – Est. No. Flowering**
Session 1 1-3 August 2022			
Red Ironbark	*Eucalyptus tricarpa*	None	1:10
White Box	*Eucalyptus albens*	1:10	1:10
Grey Box	*Eucalyptus microcarpa*	None	None
Yellow Box	*Eucalyptus melliodora*	None	None
Yellow Gum	*Eucalyptus leucoxylon*	1:10	1:10
Session 2 8-10 August 2022			
Red Ironbark	*Eucalyptus tricarpa*	None	1:10
White Box	*Eucalyptus albens*	1:10	1:10
Grey Box	*Eucalyptus microcarpa*	None	None
Yellow Box	*Eucalyptus melliodora*	None	None
Yellow Gum	*Eucalyptus leucoxylon*	1:5	1:8

Session 3	**17-19 August 2022**		
Red Ironbark	*Eucalyptus tricarpa*	None	1:8
White Box	*Eucalyptus albens*	1:10	1:10
Grey Box	*Eucalyptus microcarpa*	None	None
Yellow Box	*Eucalyptus melliodora*	None	None
Yellow Gum	*Eucalyptus leucoxylon*	1:5	1:8

The survey timing was optimal to observe Swift Parrot as there was an abundance of suitable flowering eucalypts in and adjacent to the study area and reference site. There was a dominance of flowering Yellow Gum with scattered White box and Red Ironbark (Figure 4-27). The potential to detect the Swift Parrot based on foraging habitat was considered moderate to high.

Figure 4-27 Image (left) of flowering Yellow Gum (*Eucalyptus leucoxylon)* within study area and (right) Red Ironbark (*Eucalyptus tricarpa)* dominated forest in reference area.

Occurrence of Swift Parrot

No Swift Parrots were detected either within the project site or reference site during the 3 surveys session completed. A full list of species observed for all three sessions can be found in Appendix E.

A total of 40 species were observed in and adjacent the study area. A small guild of nectivorous species (Musk Lorikeet, Little Lorikeet, Purple-crowned, Little Friarbird, Noisy Friarbird, Red Wattlebird) were regularly observed during targeted survey along road reserve feeding on flowering Yellow Gum and White Box. This was replicated in a small number of locations within the study area with individual trees in blossom. The majority of species found occurred as common species guilds associated with anthropomorphic altered farmland environments as open paddock foragers (e.g., Sulphur-crested Cockatoo, Eastern Rosella, Red-rumped Parrots, Australian Magpie) and waterfowl guild utilising farm dams and drainage lines. This diversity was different to that found in the reference

site. The total number of species, given additional survey, was not likely to significant increase given the small number of new species detected in the second and third survey sessions.

The presence of both sedentary and nomadic nectarivores (honeyeaters) such as Noisy and Little Friarbirds suggest that their observed association with Swift Parrot foraging ((McNally, 2000) was moderate with the flowering eucalypts available within and adjacent the project site.

A total of 40 species were observed in the reference site dominated by a nectivorous species guild of both honeyeaters and lorikeets. Additional survey effort is likely to have yielded a much higher diversity given that the number of new species detected during the third survey session was relatively high (12) with a total accumulation number of observed species yet to be reached. Similarly, a small number of species in the reference site observed such as the Brown Treecreeper and Hooded Robin, both components of the threatened woodland bird community of which the Swift Parrot is part of, provide support to the use of Crosbie Nature Conservation Reserve as a suitable reference site for Swift Parrot presence. The diversity of nectivorous bird guide was greater for the reference site as expected. A notable observation was the present of the Olive-backed Oriole. Nomadic nectivores (Noisy Friarbird, Little Friarbirds) were also present.

Whilst no Swift Parrots were detected during the survey it is not unreasonable to expect they would on an intermittent and opportunistic basis utilise winter/early spring flowering eucalypts within and adjacent the study area. However, it is more likely that they would be associated with the much larger remnant reserves at Crosbie Nature Conservation Reserve, Heathcote-Greytown National Park east of Heathcote, Whroo Nature Conservation Park south of Rushworth, Warby Ranges National Park and Chiltern-Mt Pilot National Park foraging in large remnant Ironbark, Yellow Gum, Yellow Box, White box woodlands providing more extensive resources available within a reduced competitive environment with other nectivorous species. Foraging in small, fragmented habitat areas and individual trees associated with disturbed farming area indicative of the study area occupied by Noisy Miners are likely to be avoided and only utilised opportunistically.

All potential foraging habitat for the Swift Parrot larger the 1ha have been avoided by the development footprint and retained in the study area. Given this, impacts to the Swift Parrot and Swift Parrot habitat are considered highly unlikely.

4.6.10. Striped Legless Lizard (SLL)

A habitat assessment for the Striped Legless Lizard was undertaken by NGH ecologists on 1-3 August 2022. The initial assessment of the area assessed included the location of mapped native grass dominated EVCs as well as Habitat Importance Maps (HIMs) and Habitat Distribution Models (HDMs) for the Striped Legless Lizard in NatureKit 2.0 (DEWLP, 2021).

No HIM areas were located in either the development footprint or study area.

A total of 3.5 (225m resolution blocks) of HDM areas of equal or less than 30% habitat suitable for the SLL were found to be located in the study area. None of these were in areas mapped as remnant native vegetation where native is equal to or greater that 25% cover.

Striped Legless Lizard Habitat Assessment

Two small patches of moderate habitat were identified and mapped. These areas where characterised by areas of greater that 25% native grasses (low diversity) with the addition of intermittent soil cracking providing potential refugia for SLL. There was very little surface rock that where present existed as small loose fragment unsuitable as cover for dependent fauna including SLL. Areas identified is shown in Figure 4-32. These areas lacked established canopy tree cover and interspersed with regenerating Spreading Wattle (*Acacia genistifolia)* and Drooping Cassinia *(Cassinia arcuata).* Surrounding areas were not connected to any other extensive patches of native grassland providing habitat connectivity to support SLL populations. Areas immediately surrounding

the moderate habitat areas identified were mapped as low-quality habitat based solely on the presence of native grasses (low diversity) with no cracking soils and unsuitable small scattered loose surface stones and rock. All areas mapped as habitat were currently grazed.

The presence and structure of moderate habitat was very limited and not connected to any other suitable habitat for the SLL. However, the incidental observations of the Fat-tailed Dunnart (*Sminthopsis crassicaudata),* Little Whip Snake (*Suta flagellum)*, and Olive Legless Lizard (*Delma inornata)*, that were found either within or next the mapped moderate habitat areas for SLL, support a reasonable assumption to the presence of the SLL with a low – moderate likelihood of occurrence. These three species all have a preference native grassland dominated habitat.

It was recommended that no further targeted survey was required to detect the SLL given that the proposed development footprint avoids and will not impact all mapped moderate habitat for the SLL.

Figure 4-28 Image (left) showing heavily grazed introduced pasture that dominated the study area, and (right) image of area observed as moderate habitat for the SLL with cracking soil resources.

Incidental observations

The following species were detected during incidental observations over the fauna survey periods in January and February 2021:

- Marbled Gecko (*Christinus marmoratus)*
- Boulenger's Skink (*Morethia boulengeri)*

The following species were detected during incidental observations over the targeted fauna survey period in August 2022

- Boulenger's Skink (*Morethia boulengeri)*
- Coastal Bearded Dragon (*Pogona barbatus)*
- Fat- tailed Dunnart (*Sminthopsis crassicaudata)*
- Eastern Grey Kangaroo (*Macropus giganteus)*
- Black/Swamp Wallaby (*Wallabia bicolor)*

- Little Whip Snake (*Suta flagellum)*
- Olive Legless Lizard (*Delma inornata)*
- Eastern Banjo Frog (*Limnodynastes dumerilii)*

These were detected by turning logs and looking in areas of suitable reptile habitat e.g., under tin.

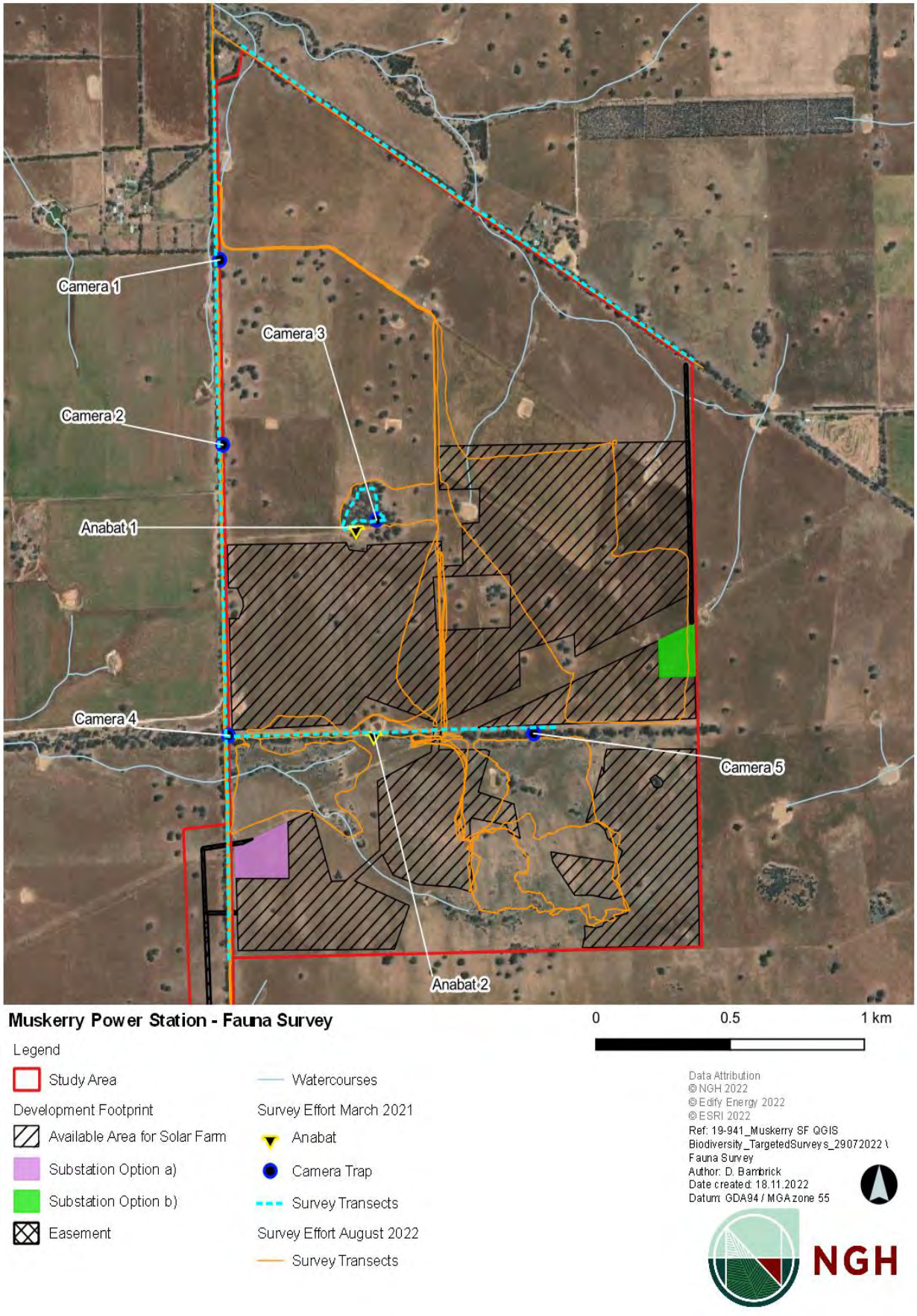

Figure 4-29 Fauna Survey for Muskerry North

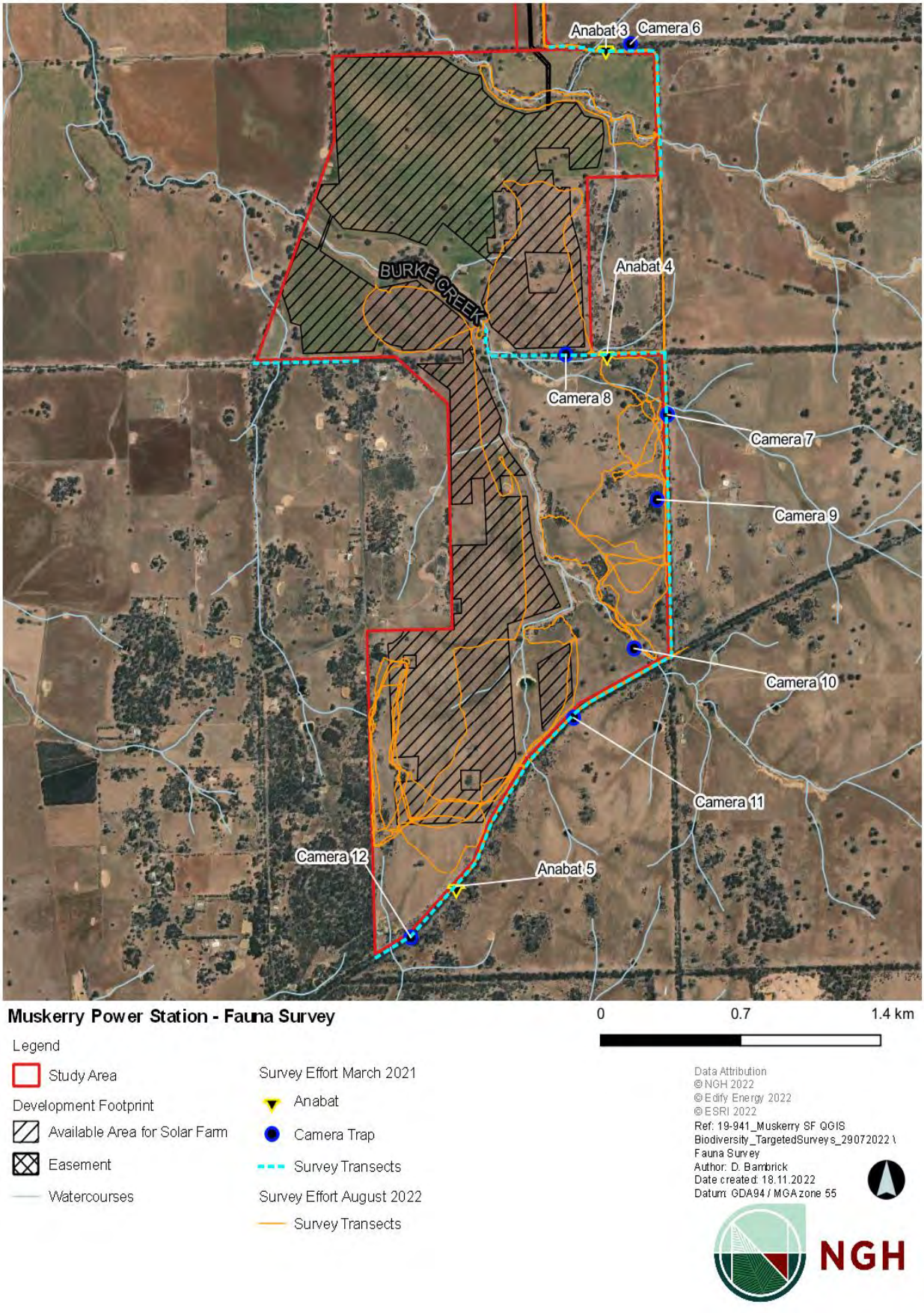

Figure 4-30 Fauna Survey for Muskerry South

Figure 4-31 Fauna Survey (Easement)

4.6.11. Threatened Fauna considerations

The results of the fauna survey have concluded that the following threatened fauna species are likely to be impacted by the proposed development and require the following consideration.

Bush-tailed Phascogale

The Brush-tailed Phascogale (*Phascogale tapoatafa*) has a high likelihood of occurring on site as five sightings were recorded on Camera 1 and Camera 4 on Muskerry East School Road, Camera 7 and Camera 8 on Murphy's Lane and Spotlighting on Toolleen Axedale Road. There was a low number of recent records within 10kms of the study area of the Brush-tailed Phascogale. The phascogale habitat requirements include hollow bearing trees with connecting canopy. Presence of this species in roadside vegetation shows promising numbers within the landscape with sufficient resources and hollow bearing trees to support the local population. Creek lines and roadside vegetation are important connective corridors, and these areas are not to be impacted by the proposed Solar Power Station.

Mitigation measures have been included in Section 6 of this report. Mitigation measures consider pre-clearance assessment of any hollow bearing trees prior to removal and avoid vegetation removal during the breeding periods for the Phascogale (Mid May to July).

The creekline vegetation canopy is quite patchy with many immature Eucalypts; some further consideration for a Biodiversity Management Plan includes:

- Installation of nest boxes
- Continue tree canopy species revegetation along the creek lines by planting to connect tree canopy between the Creekline and the roadside.
- Select local indigenous species for landscaping particularly adjacent to roadsides to extend the tree canopy corridors.

Lace Monitor

Lace Monitor (*Varanus varius)* is considered endangered under the *FFG Act* in Victoria. One individual was recorded in the roadside vegetation on Dwyer Lane in Muskerry South. This species has not been previously recorded within 10 kms of the study area and was detected in Transect 5 which was an incidental observation.

An indirect impact to this species includes installation of cyclone fencing during construction and for the duration of the Solar Power Station. Further considerations for the Lace Monitor to continue to move freely through the landscape should be included in a Biodiversity Management Plan.

Swift Parrot

The Swift Parrot was not recorded during the initial January/February survey period. It was noted that this is not a suitable timeframe to detect the species within the study area. The Swift Parrot breeds in Tasmania over spring-summer and flies north to Victoria, southern NSW, and ACT to forage autumn-winter. They feed mainly on flowering Eucalypts such as Grey Box, Ironbarks, White Box and Yellow Gum throughout northern and northeast Victoria (DSE 2004b). The records within 10kms of the study area show there are 35 records and the most recent sighting in 2018. An additional targeted survey was undertaken in August 2022 within the appropriate survey period for detecting the species in south-eastern Australia. No swift parrots were detected.

The proposed native vegetation removal includes 49 large trees which includes Grey Box, Yellow Box and Yellow Gum. Some of these trees are large and some are small regenerating trees. Overall, 689 trees in the Study Area will be retained and this includes large trees along watercourses, road

reserves and larger patches within the development footprint. The impact to this species is considered minimal, however given the survey period and the threatened status of this species, a precautionary approach includes the following mitigation:

- A fauna management plan for Swift Parrot mitigation measures if construction and/or tree removal works occurs during autumn-winter when the Swift Parrot migrates through south-eastern Australia. If tree clearance occurs during foraging migration (March to August) then pre-clearance surveys should be carried out by a suitably qualified Zoologist
- Staff Induction includes a species profile of the Swift Parrot to raise awareness of the presence of the species. The species profile should include species migration, preferred feed trees and an unexpected finds protocol.
- The unexpected finds protocol should include:
    - The procedure if the species is present during tree removal works
    - Minimise noise near the location where the species is present and allow natural migration away from impact areas by gradually increasing noise levels.
    - Contact details of the qualified Zoologist or Wildlife Handler if any birds are found injured or disturbed during tree removal works.
    - Any sighting should be recorded such as time, date, tree species, number of individuals, duration of presence in the study area.
- Inclusion of Grey Box, Yellow Box, Ironbarks, and Yellow Gum in any revegetation plans to replace the loss of local mature trees.

Striped Legless Lizard

The Striped Legless Lizard is a grassland specialist. Whilst the species has not been previously recorded either within the study area or surrounding area, an assessment of suitable habitat was undertaken. Two small patches of moderate habitat were located in the study area but outside the proposed development footprint (Figure 4-32). This moderate habitat was assigned primarily on the basis of presence of native grasses (non-complex) coupled with soil cracking that potentially provide refugia. These two patches were not connected to or in the vicinity of any other moderate to high value habitat areas either within or adjacent the study area.

Impacts to this species are considered minimal given that the proposed development footprint avoids areas mapped as moderate habitat, however, given the occurrence of a small area of suitable habitat adjacent the proposed development footprint a precautionary approach includes the following mitigation actions:

- A fauna management plan for Striped Legless Lizard mitigation measures if construction and/or vegetation removal works occurs within the vicinity of suitable moderate habitat. Pre-clearance surveys should be carried out by a suitably qualified Zoologist within and around areas of suitable moderate habitat.
- Staff Induction includes a species profile of the Striped Legless Lizard to raise awareness of the presence of the species. The species profile should include species preferred habitat requirements and an unexpected finds protocol.
- The unexpected finds protocol should include:
    - The procedure if the species is present during native grassland/vegetation removal works.
    - Minimise noise near the location where the species is present and allow natural migration away from impact areas by gradually increasing noise levels.
    - Contact details of the qualified Zoologist or Wildlife Handler if any individuals are found injured or disturbed during native grassland removal works.

- Any sighting should be recorded such as time, date, number of individuals, duration of presence in the study area.

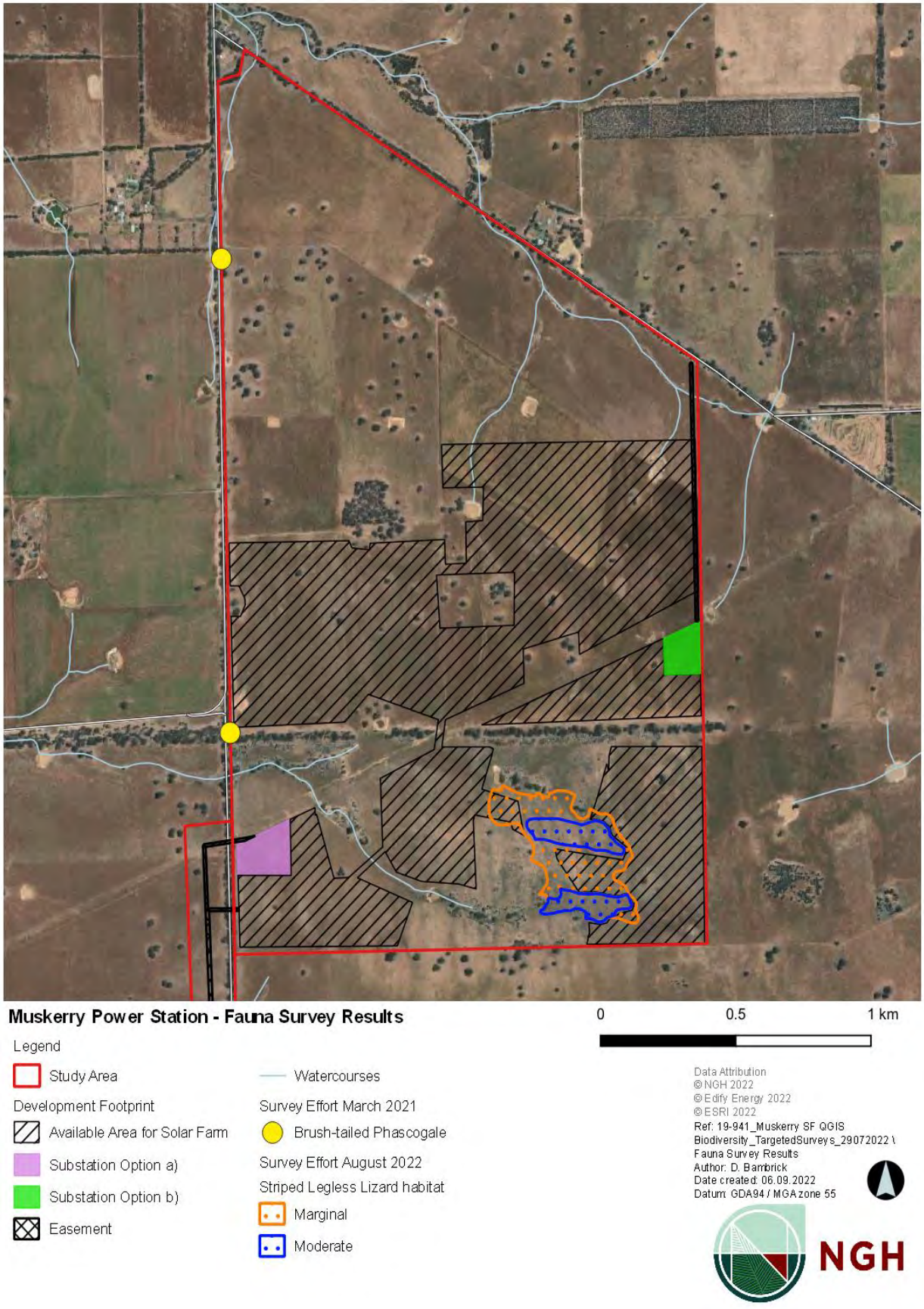

Figure 4-32 Fauna Survey Results (Muskerry North)

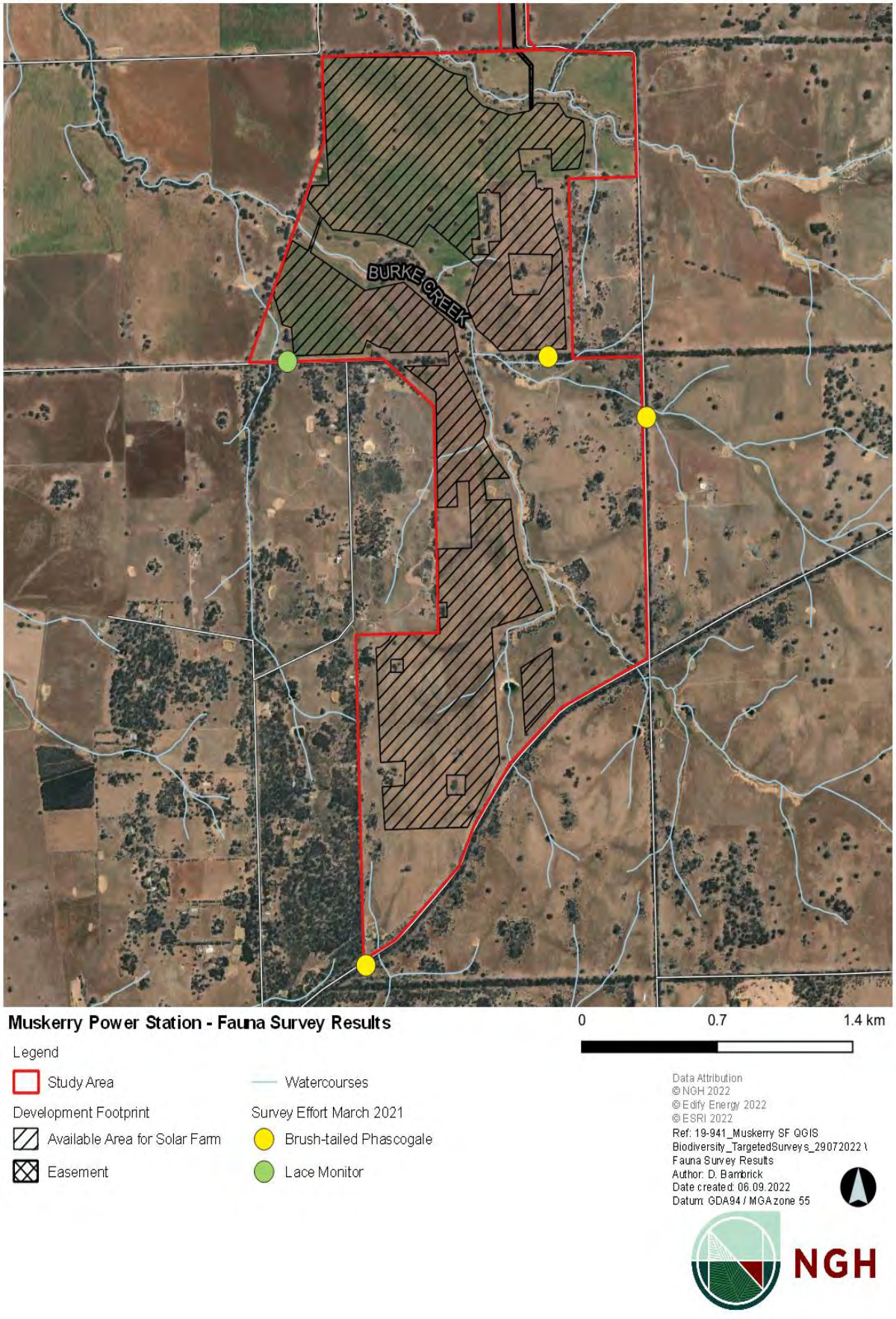

Figure 4-33 Fauna Surveys Results (Muskerry South)

Figure 4-34 Fauna Survey Results (Easement)

4.6.12. Declared Pest Animals

The following declared pest animals observed on site during the flora and fauna surveys:

- The Red Fox (*Vulpes vulpes*) – Observed Muskerry South during the day and during the spotlight in Transect 7 which is approximately the same location.
- European Rabbit (*Oryctolagus cuniculus*) – observed in spotlighting transects 2, 6 and 7.
- European Brown Hare (*Lepus europaeus)* – incidental observation in transect 5.

4.7. MATTERS OF NATIONAL SIGNIFICANCE ENVIRONMENTAL SIGNIFICANCE

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), actions that have, or are likely to have, a significant impact on a Matter of National Environmental Significance require approval from the Australian Government Minister for the Environment (the Minister). The Minister will decide whether assessment and approval is required under the EPBC Act.

The nine matters of national environmental significance protected under the EPBC Act are:

a) world heritage properties
b) national heritage places
c) wetlands of international importance (listed under the Ramsar Convention)
d) listed threatened species and ecological communities.
e) migratory species protected under international agreements.
f) Commonwealth marine areas
g) the Great Barrier Reef Marine Park
h) nuclear actions (including uranium mines)
i) a water resource, in relation to coal seam gas development and large coal mining development

The matter relevant to the site is (d) listed threatened species and ecological communities. These matters are discussed below.

4.7.1. Threatened Communities

There were four threatened ecological communities identified in the Matters of National Significance search. These communities are listed in Table 4-13.

Table 4-13. MNES search results for Threatened Communities

Community Name	Threatened Status	Occurrence	Presence/Absence within study area
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	Absent
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	Further assessment below.

Community Name	Threatened Status	Occurrence	Presence/Absence within study area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community may occur within area	Absent
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	Absent

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia may be present on site and further assessment of this threatened ecological community is provided below.

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

The EVCs that occur on site that can be associated with this EPBC threatened community are EVC 803 and EVC 175_61.

EVC 803 within the study area is dominated by Grey Box (*Eucalyptus microcarpa*) and patches of this Grassy Woodlands occur in the south western corner of Muskerry South (see Habitat Zone 8 in Figure 4-23). As per DSEWPC (2012b) Grey Box is the dominant canopy species but the understorey has no native species; therefore, these patches do not qualify as the EPBC listed Grey Box Grassy Woodlands.

EVC 175_61 is present in the study area of Muskerry North, the easement corridor and Muskerry South and the habitat zones include 4, 6, 7, 10 and 11. Muskerry North consists of habitat zones 4, 6 and 11 which are dominated by Grey Box. The Easement includes habitat zone 1 and 10. Habitat Zone 10b includes Option A, however the area that will be impacted has exotic and native grass but the native grass cover is <10%. Habitat Zone 10c (Option B on Muskerry East School Road) is covered by Grey Box canopy trees but the understorey is mainly exotic grasses. The native grass cover is 5%. Muskerry South includes habitat zones 4, 6 and 7 and the dominant canopy vegetation is Grey Box/Yellow Gum. These habitat zones have low floristic diversity in the understorey. The understorey vegetation included shrubs such as Golden Wattle (*Acacia pyncantha*) and Spreading Wattle (*Acacia genistifolia*). The understorey species such as Wallaby Grass (*Rytidosperma spp),* Spear Grass *(Austrostipa spp*.), Wheat Grass (*Anthosachne scabra*), Wattle Mat-rush (*Lomandra filiformis*), Smooth Solenogyne (*Solenogyne dominii*), and Nodding Saltbush (*Einadia nutans*).

Table 4-14 and Table 4-15 assesses whether these habitat zones qualify as the EPBC Grey Box Grassy Woodlands.

Figure 4-35 and Figure 4-36 show the Habitat Zones that have been assessed as potential EPBC Grey Box Grassy Woodlands.

Table 4-14. (DSEWPC 2012b Flow chart 1 p.23): Presence of EPBC listed Grey Box Grassy Woodlands in the study area.

EPBC Assessment	Habitat Zone 4	Habitat Zone 6	Habitat Zone 7	Habitat Zones 10b and 10c	Habitat Zone 11
Is the property within or near the area shown on the Grey Box Grassy Woodland distribution map on page 13 of the Guide?	Yes	Yes	Yes	Yes	Yes
Is at least 50% of the plant cover in the ground layer made up of perennial native species? **OR** **Is at least 10% of plant cover in ground layer made up of perennial native grass species?**	No, **Not the listed national ecological community**.	Yes,	Yes – Cover <50% but grass cover 16% so >10%	No– Option A and Option B <10% perennial native grass cover. **Not the listed national ecological community.**	Yes Grass cover 37%
Is (or was previously) the most common tree species (or group of species) one of the following? **grey box *Eucalyptus microcarpa***		Yes, Go to the Table 4.12 (Flowchart 2)	Yes, Go to the Table 4.12 (Flowchart 2)		Yes, Go to the Table 4.12 (Flowchart 2)

Table 4-15. (DSEWPC 2012b Flow chart 2 p.24) Further assessment of Grey Box Grassy Woodlands

EPBC Assessment	Habitat Zone 6	Habitat Zone 7	Habitat Zone 11
Is (or was previously) 1 the most common tree species Grey Box (*Eucalyptus microcarpa*)?	Yes	Yes	Yes
Is the patch at least 0.5 ha in size?	Yes	Yes	Yes
Do non-grass weeds make up more than 30% of the plant cover in the ground layer?	No – dominated by exotic grasses. Weed cover is 25-50%	No 5-25% cover	No
Do trees cover at least 10% of patch?	Yes	Yes	No – refer below
Is the patch bigger than 2 ha?	Yes, 27 patches in HZ6 within the development footprint. Muskerry South is dominated by extensive Yellow Gum regrowth and mature trees. There is a presence of Grey Box. The patch is a mixed of mature trees, regrowth, and native grasses. These areas with the connection to roadside vegetation the patch size is >2 hectares. 6B (2.24 ha) and 6C (5.4 ha) are the largest habitat zones. Muskerry North is dominated by Grey Box with some patches of regrowth next to mature Grey Box stands of Habitat Zone 4. 6R (3.04 ha) is the only habitat zones >2ha.	Yes,2 patches in HZ7. 7B (3.4 ha). The adjoining roadside vegetation makes this patch >2 hectare.	N/A
Are there at least 8 trees/ha:	No, there 25 large trees over 60 cms over 15.31	No, there are 9 trees (>60 DBH) in HZ7B	N/A

EPBC Assessment	Habitat Zone 6	Habitat Zone 7	Habitat Zone 11
a) that contain hollows; or b) have a diameter >60 cm at 1.3 m above ground level?	hectares resulting <2 trees/hectare. Some of the large tree do contain hollows but there is <8/ha.	which an average of 2.64 trees/ ha.	
Is at least 10% of the plant cover in the ground layer made up of perennial native grass species?	N/A	N/A	N/A
Are there at least 20 live trees/ha with a diameter >12 cm at 1.3 m above ground level?	Yes, there is significant number (more than 500) of trees with a DBH >12 cm in habitat zone 6.	Yes, there are 183 trees with a DBH >12 cm in habitat zone 7b.	N/A
Are there at least 8 **perennial native species in the mid and ground layers?)**	N/A	N/A	N/A
Is at least 50% of the plant cover in the ground layer made up of perennial native species?	No – the perennial native species cover is <50%. **Not the listed national ecological community**	No – the perennial native species cover is <50%. **Not the listed national ecological community**	N/A
Is there evidence1 that Grey Box trees were once common in the patch?	N/A	N/A	Yes
Are there at least 12 **perennial native species in the mid and ground layers?**	N/A	N/A	No **Not the listed national ecological community**

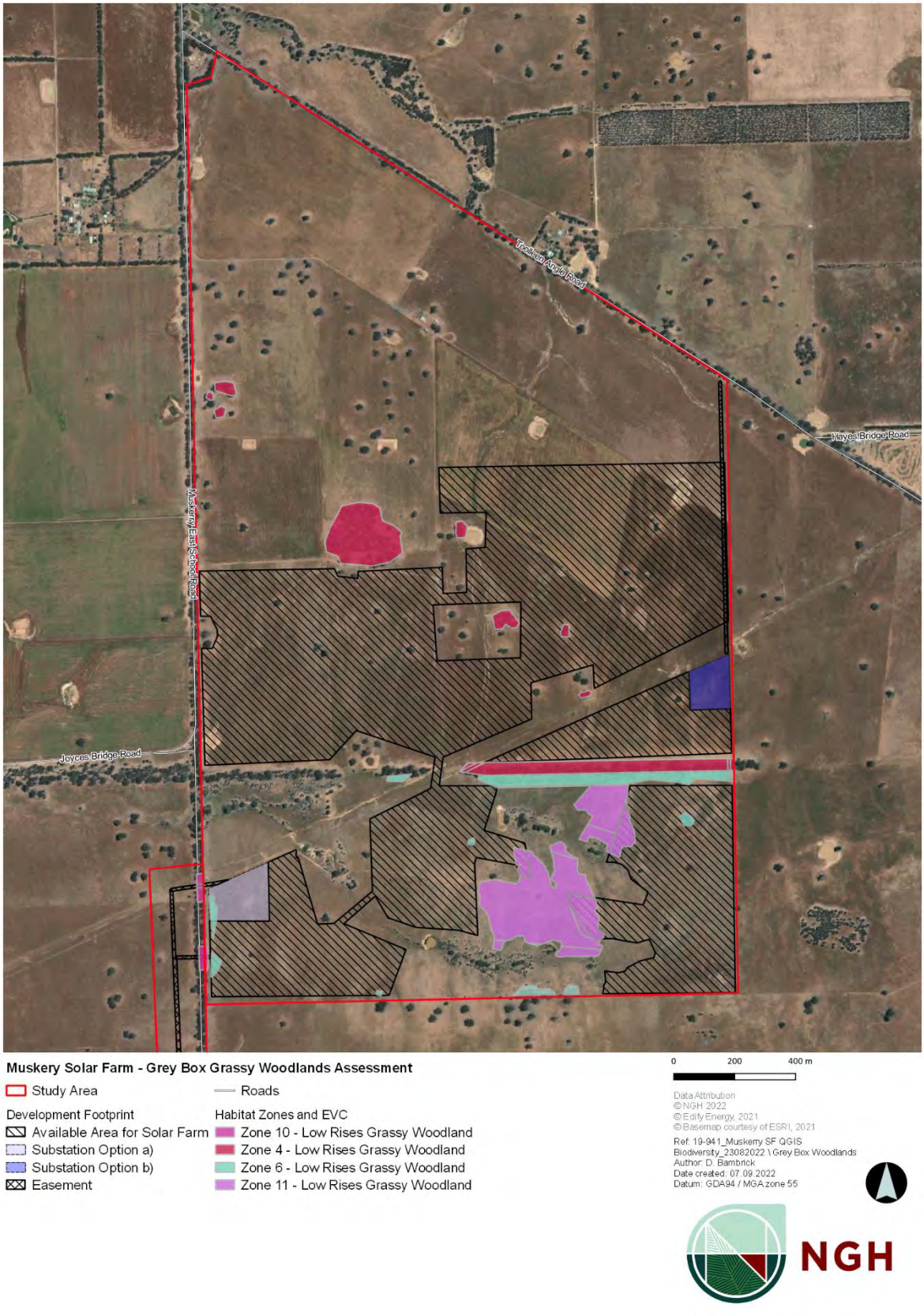

Figure 4-35 Potential EPBC Grey Box Grassy Woodlands (Muskerry North)

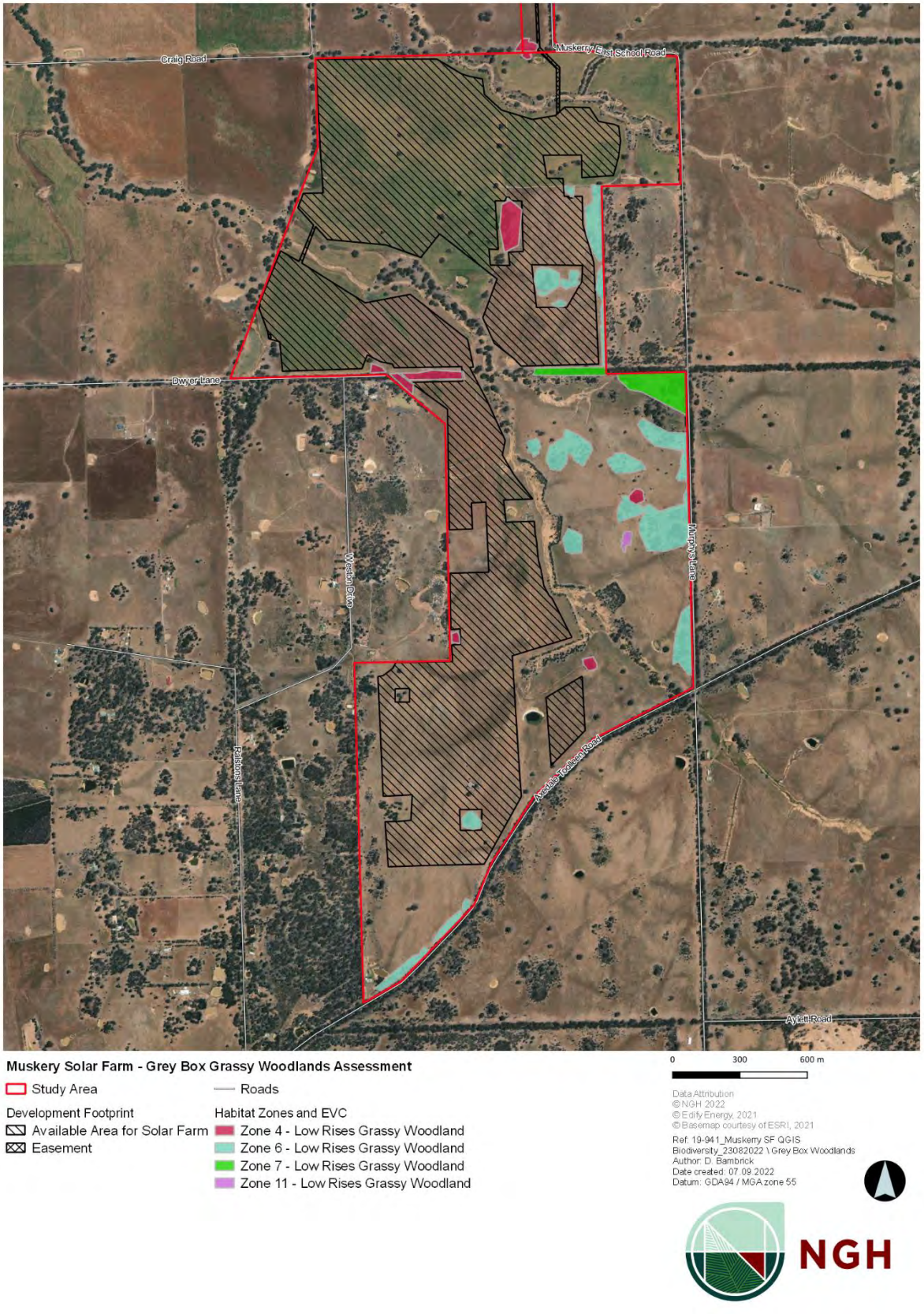

Figure 4-36 Potential EPBC Grey Box Grassy Woodlands (Muskerry South)

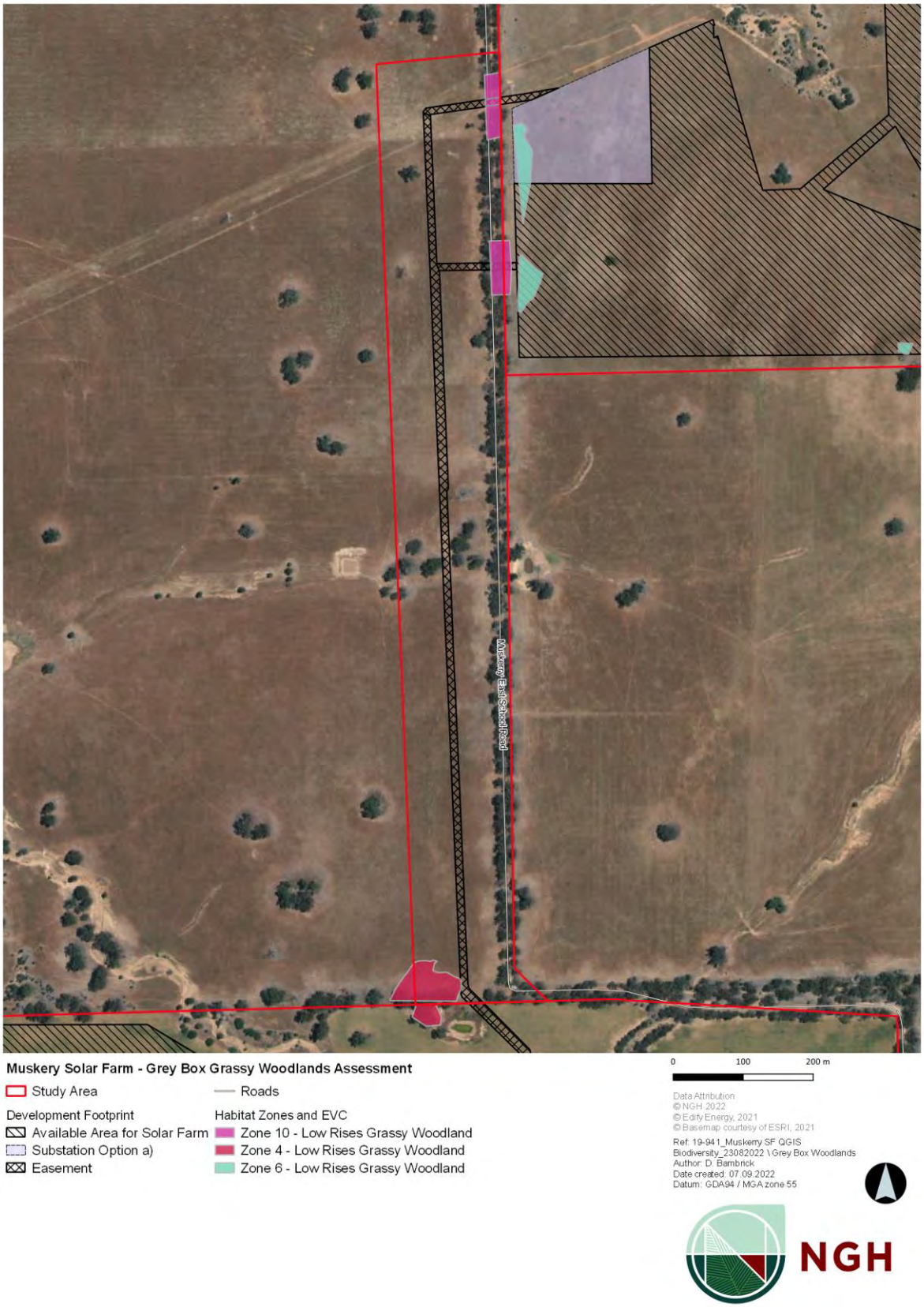

Figure 4-37 Potential EPBC Grey Box Grassy Woodlands (Easement)

4.7.2. EPBC Referral

Habitat Zones 4, 6, 7, and 11 do not qualify due to the following:

- Number of stem per hectare >60 cms DBH do not meet the required number.
- Perennial native species do not meet the required cover (>50%)
- Many of the habitat zones are <2 hectares.

Overall, these habitat zones are low native diversity and cover but connected to larger patches on the roadsides. Grey Box continues to dominate Muskerry North study area (Habitat Zones 4, 6, 7, and 11). Habitat Zone 4 is Grey Box stands with no native understorey. These habitat zones are too small to meet the patch criteria. The native species diversity is too low. No EPBC referral is required.

Habitat Zone 6 is present in Muskerry North and South. In Muskerry North these Habitat Zone 6 consists of small regenerating patches of Grey Box that are adjacent to mature Grey Box stands such as Habitat Zones 4. Habitat Zones 6 in Muskerry South are dominated by Yellow Gum and Grey Box. Most of the regeneration is Yellow Gum from the mature scattered trees. The perennial grass cover is too low to meet the EPBC Grey Box Grassy Woodland criteria. No EPBC referral is required.

Habitat Zone 7 consists of two patches 7A and 7B. Patch 7A is unmade road reserve and although surveyed it is considered crown land and therefore will not be impacted and excluded from further assessment. Habitat Zone 7B is located near Murphys Lane. The Habitat Zone is dominated by Grey Box and Yellow Gum with some Yellow Box but the perennial grass cover is too low to meet the EPBC requirement to qualify as Grey Box Grassy Woodland. No EPBC referral is required.

Habitat Zone 11 consists of three patches (two in Muskerry North and one in Muskerry South). These zones have a small number of scattered trees but mainly dominated by Cassinia and *Acacia genistifolia* regeneration and scattered native grasses. The perennial grass cover is too low to meet the EPBC Grey Box Grassy Woodland criteria. No EPBC referral is required.

4.7.3. RAMSAR wetlands

The closest RAMSAR wetland to the study area is Gunbower Forest which is approximately 50-100 kms. The proposed Muskerry Solar Power Station will not impact any RAMSAR wetlands.

4.7.4. Threatened Flora

The MNES search results show 11 flora species have the potential to occur within the 10 km buffer. None of these species were recorded on site and determined to have a low likelihood of occurring on site.

4.7.5. Threatened Fauna

From the MNES search results show the following fauna with the potential to occur within the 10km buffer:

- Birds (including migratory) – 21.
- Fish – 4
- Amphibians – 2
- Invertebrates – 1
- Mammals – 2
- Reptiles – 2

The species with a medium likelihood of occurring on site is the Swift Parrot.

This species have been addressed further in Section 4.6.11 and Appendix D.2.

All other MNES fauna species are considered to have a low likelihood of being impacted by the proposed Solar Power Station. See Appendix E for the full list of MNES species.

Swift Parrot (*Lathamus discolor)*

The Swift Parrot was considered to have a moderate likelihood of occurrence given the proximity of the site to large reserves of preferred foraging habitat containing a number of winter/spring flowering eucalypts, as well as a number of small patches of foraging habitat within the study area.

Multiple targeted survey were undertaken to detect this species (refer section 4.6.3). No Swift Parrots were detected during the targeted survey. Whilst there were small patches (>1ha) of potential foraging habitat within the study area and may be utilised by the species, the proposed development avoids these areas minimising impact. As a precautionary measure mitigation measures are recommended to minimise any impact to this species (refer sections 4.6.11 and 6).

Striped Legless Lizard (*Delma impar)*

The Striped Legless Lizard is a grassland specialist with nearby records located south of Bendigo. Whilst there are no previous records of this species either within or adjacent the study area, a targeted survey to determine the presence of suitable habitat was undertaken. Details to determining suitable habitat is outlined in Section 3.3.6. Two small patches of moderate habitat were located and mapped (refer section 4.6.3). This area was within the study area but located outside the proposed development footprint. Whilst it is considered to have a low likelihood of occurrence, the two small moderate areas of disconnected potential habitat has been avoided. As a precautionary measure mitigation measures are recommended to minimise any impact to this species (refer sections 4.6.11 and 6).

5. NATIVE VEGETATION IMPACT ASSESSMENT

The native vegetation impact assessment determines the offset requirements for the vegetation loss that cannot be avoided or minimised due to the proposed development.

The areas of the proposed Solar Power Station development that will be retained include large and small scattered native trees in low-lying wet areas, creek lines, erosion gullies, large patches of native trees, crown land within properties, boundary vegetation. The trees that are proposed to be removed are within the open paddocks within the proposed development footprint, areas of regeneration that are less than 10 years old and perennial groundstorey vegetation where the cover is >25%.

Through assessment of native vegetation impacts the following has been filled in to meet the requirements of Clause 52.17.

Table 5-1 Planning permit requirements for native vegetation removal.

Criteria	Assessment Pathway		Not a patch or a scattered tree	Report Section
	Basic/Intermediate Pathway	**Detailed Pathway**		
Has the assessment pathway and reason for the assessment pathway been determined? Has the location category of the native vegetation proposed to be removed identified?	N/A,	Yes, proposed removal is >0.5 hectares	49 large trees will be removed which are both scattered trees and large trees within a patch. 5.78 hectares of native vegetation is proposed to be removed.	Section 2.1
A description of the native vegetation to be removed	N/A	Yes	Yes	Section 5
Maps showing the native vegetation	N/A	Yes	Yes	Figure 4-23 and Figure 4-24
The offset requirement determined in accordance with section 5 of the Guidelines.	N/A	Yes	Yes	Section 5.3
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	N/A	Yes	Yes	Figure 1-1 and Figure 1-2

Criteria	Assessment Pathway		Not a patch or a scattered tree	Report Section
	Basic/Intermediate Pathway	**Detailed Pathway**		
areas, saline discharge areas, and areas of existing erosion, as appropriate.				
Recent, dated photographs of the native vegetation.	N/A	Yes	Yes	Figure 4-1 to Figure 4-22
Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged.	N/A	No recent planning permit application to remove of native vegetation	N/A	NA
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.	N/A	Yes	Yes	Section 5.1
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	N/A	N/A	N/A	N/A
Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.	N/A	N/A	N/A	N/A

Criteria	Assessment Pathway		Not a patch or a scattered tree	Report Section
	Basic/Intermediate Pathway	**Detailed Pathway**		
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 6.	N/A	N/A	N/A	N/A
An offset statement explaining that an offset that meets the offset requirements for the native vegetation to be removed has been identified and how it will be secured.	N/A	Yes	Yes	Section 5.3
A site assessment report of the native vegetation to be removed, completed by an accredited native vegetation assessor.	N/A	Yes	Yes	This report
Information about impacts on rare or threatened species habitat.	N/A	Yes	N/A	Section 4.4, 4.5, 4.6.2 and 4.7

5.1. AVOID AND MINIMISE STATEMENT

The native vegetation assessment was completed in May 2020 and determined the scattered trees and habitat zones in the study area. The development footprint was significantly reduced to ensure the native vegetation impacts were avoided as much as possible. Table 5-2 shows the reduction in native vegetation impacts from 2020 to August 2022.

Table 5-2. Steps undertaken to avoid impacts on native vegetation.

Native Vegetation	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)	Proposed Vegetation Removal (ha)	Vegetation to be retained (ha)
	October 2020		**March 2021**		**October 2021**		**September 2022**	
Extent of native vegetation removal	60.57	68.03	22.565	107.04	21.514	108.09	5.76	123.83
Total (hectares)								**129.60**
Number of large trees	346	361	65	642	63 (52 large and 11 small)	689	49 large trees 8 small trees	642
Total (number of trees)								**696**

The steps to avoid native vegetation impacts includes the following:

- The native vegetation impacts have been reduced from 60.57 ha (October 2020) to 5.76 ha (September 2022). This is a 90.49% reduction from the original infrastructure design.
- No native vegetation removal will occur in creek lines and erosion gullies. Some of these areas are fenced to exclude stock. The creek lines in Muskerry South have established revegetation (replanting and natural regeneration). Under boring of the creek line for the easement would occur to avoid impacts to the creek line and to native vegetation.
- Trees in unmade road reserves and on roadsides will be retained with the exception of a small number of trees on Muskerry East School Road where the transmission line will connect Muskerry North and South. Two small areas of roadside vegetation would be impacted (Option A and Option B).
- Roadside vegetation will be retained as much as possible to retain canopy connection for the Brush-tailed Phascogale.
- Large and small scattered trees and patches of native vegetation on boundaries will be avoided. A buffer has been included in the development footprint to protect these areas.
- The development footprint has avoided habitat zones in Muskerry South on Axedale-Toolleen Road, Habitat Zone 5, and the southwest corner (Axedale-Toolleen Road and Murphys Lane).
- The development footprint has been reduced in Muskerry North to retain the large scattered trees.
- A 30-metre buffer has been applied to the creeks
- Large patches of native vegetation or scattered trees have been retained to maintain the stepping-stones within the landscape to ensure habitat connectivity. This includes Habitat Zones 1, 4, 6 and 8.
- Habitat Zones with higher quality vegetation (Habitat Zones 7 and 9) have been retained.
- The bioregional conservation status of each EVC has been given further consideration and impacts have been avoided as much as possible. The habitat zones impacted are modified low condition vegetation.
- No EPBC vegetation communities will be impacted.
- All overhanging trees from the road reserve have a 15-metre buffer applied.
- Only the large trees impacted by the Solar Power Station development footprint are proposed to be removed. These trees will be appropriately offset within the site or as close to the site as possible.
- Larger patches of mature Eucalypts will be retained as per Figure 5-1 and Figure 5-2. The net gain of these areas can be improved through revegetation with shrubs.
- Mitigation measures to minimise the biodiversity loss includes:
    - Fauna salvage work for large trees within the development footprint.
    - Hollow bearing trees will be assessed prior to removal and hollows and logs reused within the site as much as practical.
    - Animal handling to be completed by appropriately qualified Zoologist or Wildlife handler.
    - Sediment Control measures for creek lines and erosion gullies during construction.
    - Mulch to be reused on site where possible, rather than new material being introduced to the site.
    - Rocks and logs reused on site and strategically placed in offset areas.
- Measures taken to mitigate impacts to vegetation associated with habitat for the Swift Parrot and Striped Legless Lizard include:
    - All areas of potential foraging habitat for the Swift parrot greater that 1 ha and some individual trees have been avoided by the development footprint including any disturbance to foraging habitat associated with the road reserve.

  - Areas identified as moderate habitat that provide basis to a low likelihood of occurrence within the study area have been avoided by the development footprint.
- Development of a Biodiversity Management Plan will include:
  - Revegetation on creek lines to improve landscape connectivity.
  - Select local indigenous species suitable for Swift Parrot and Temperate Woodland Birds to replace the loss of some large scattered trees.
  - ensure landscaping and revegetation selects locally indigenous species.
  - appropriately manage vegetation removal works prior to construction
  - Processes required to mitigate impacts to both the Swift Parrot and Striped Legless lizard should they be encountered opportunistically before and during construction activities.

5.2. NATIVE VEGETATION REMOVAL REPORT

The impacted native vegetation consists of 8.653 hectares including 49 large trees for the proposed Solar Power Station. A native vegetation removal report was completed on 28/08/2022. As this is a detailed assessment, the native vegetation removal report must be submitted to DELWP using scenario testing software called EnSym. DELWP release the Native Vegetation Removal Report which provided the following assessment pathway information in Table 5-3 and the offset requirements in

Table 5-4. The information provided in Table 5-3 outlines the offset requirements for the offset strategy. The offset strategy is discussed in the next section.

The areas of native vegetation that will be retained/removed are shown in Figure 5-1 and Figure 5-2:

Table 5-3. Assessment pathway

Assessment Pathway	Detailed Assessment Pathway
Extent of native vegetation removal	8.653 (hectares)
Extent of past removal	0 (hectares)
Extent of proposed removal	8.653 (hectares)
Number of large trees	49
Location category	Location 2

Table 5-4 Offset Requirements.

Offset Items	Offset Requirements
General offset amount	3.041 General Habitat Units
Vicinity	North Central Catchment Management Authority or Greater Bendigo City Council or Campaspe Shire
Minimum strategic biodiversity value score	0.454
Large trees	49

5.3. OFFSET STRATEGY

5.3.1. First Party Offsets

A first party offset is usually located within the study area and outside of the development footprint. Further details can be found in Section 9 of the native vegetation guidelines (DELWP 2017a). The study area meets the following minimum offset requirements:

- The study area has been assessed by an accredited assessor.

Based on Section 9.2 of the Native Vegetation Guidelines (DELWP 2017a), the area suitable for a first party offset must be freehold land. The first party offset site must be secured as an offset site with one of the three following security agreements:

1. An agreement with the Secretary to DELWP under section 69 of the Conservation Forest and Lands Act 1987.
2. An agreement with a responsible authority under section 173 of the Planning and Environment Act 1987.
3. An agreement with Trust for Nature to register an offset covenant under the Victorian Conservation Trust Act 1972.

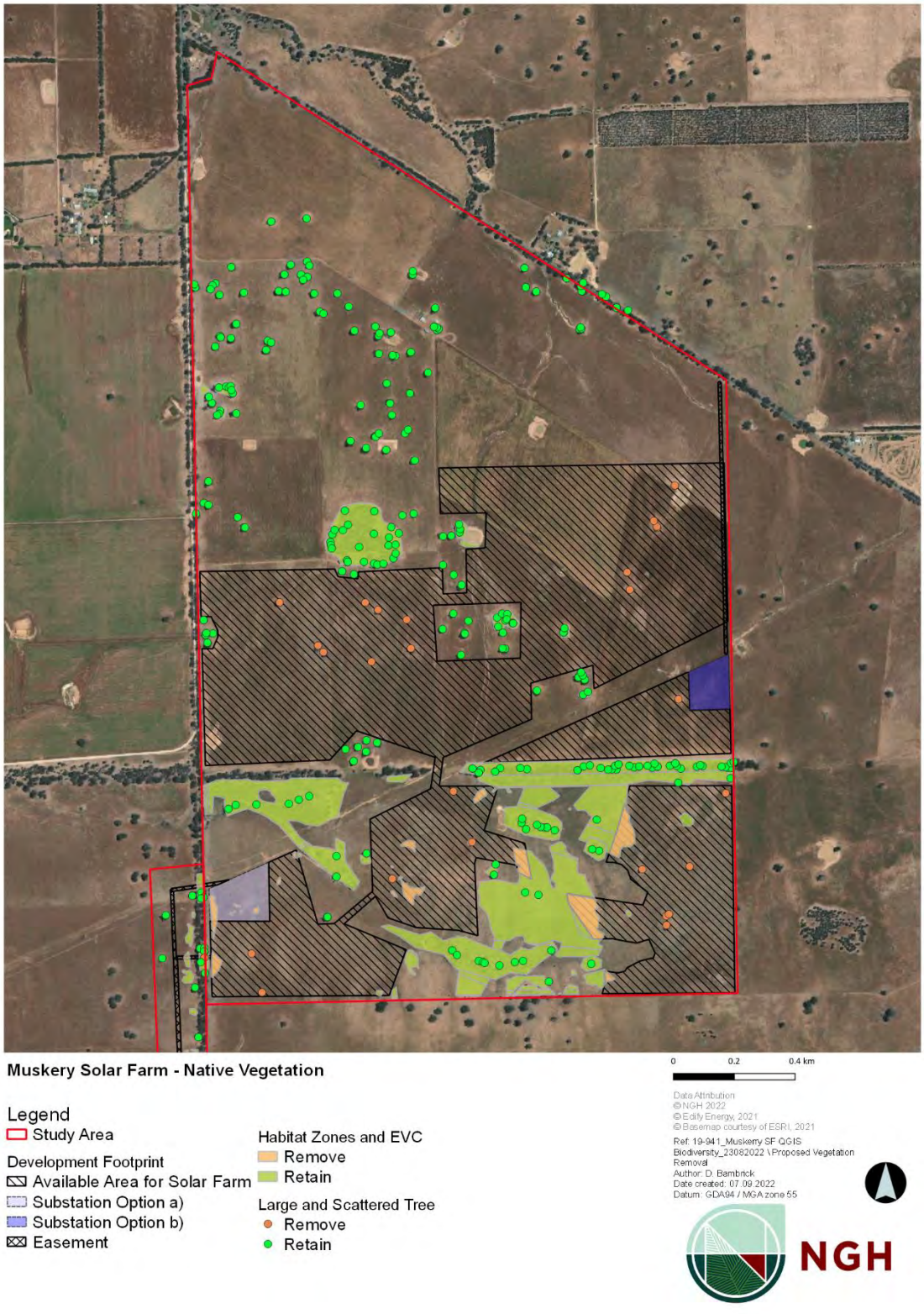

Figure 5-1 Proposed Vegetation Removal Muskerry North

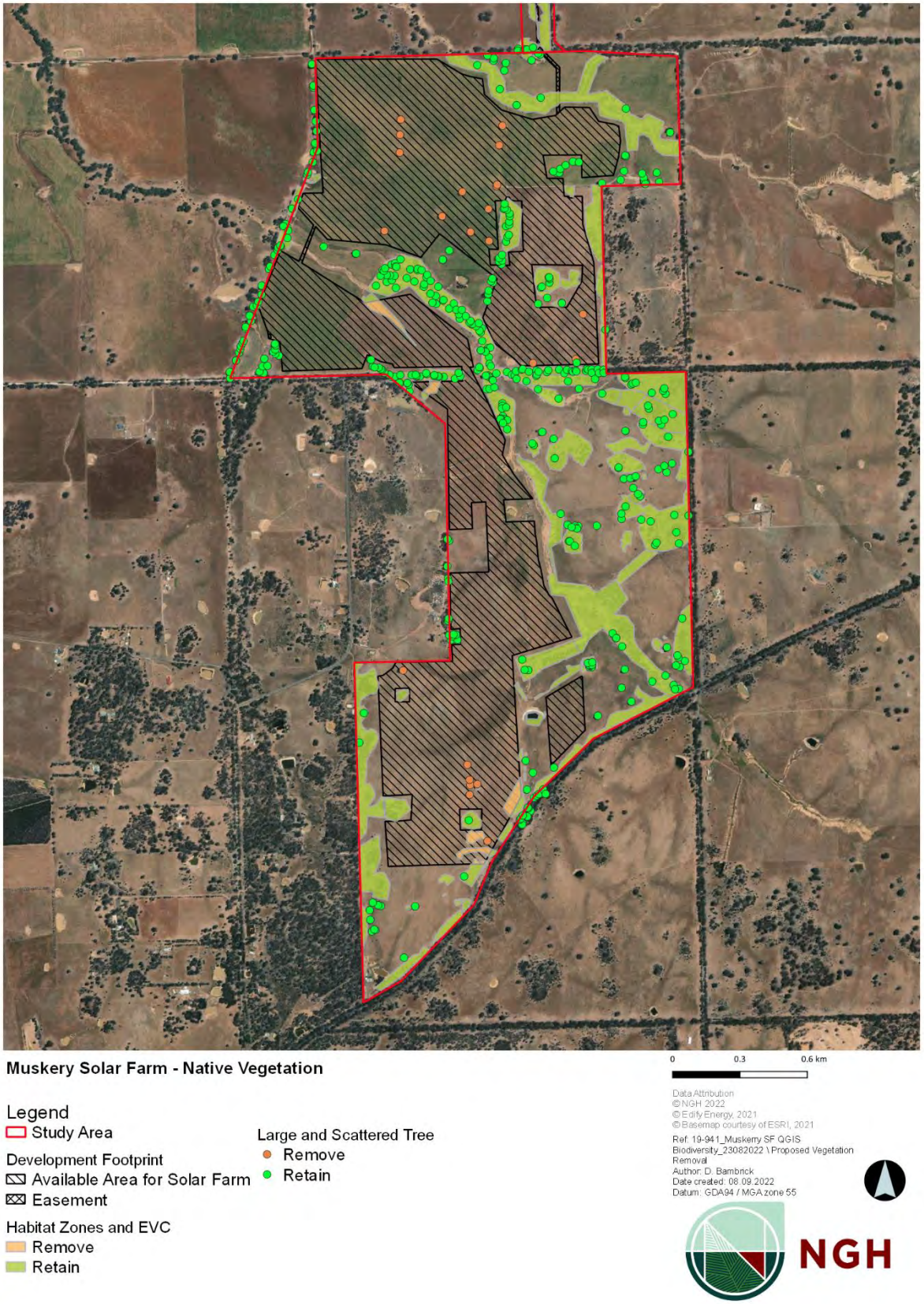

Figure 5-2. Proposed Native Vegetation Removal Muskerry South

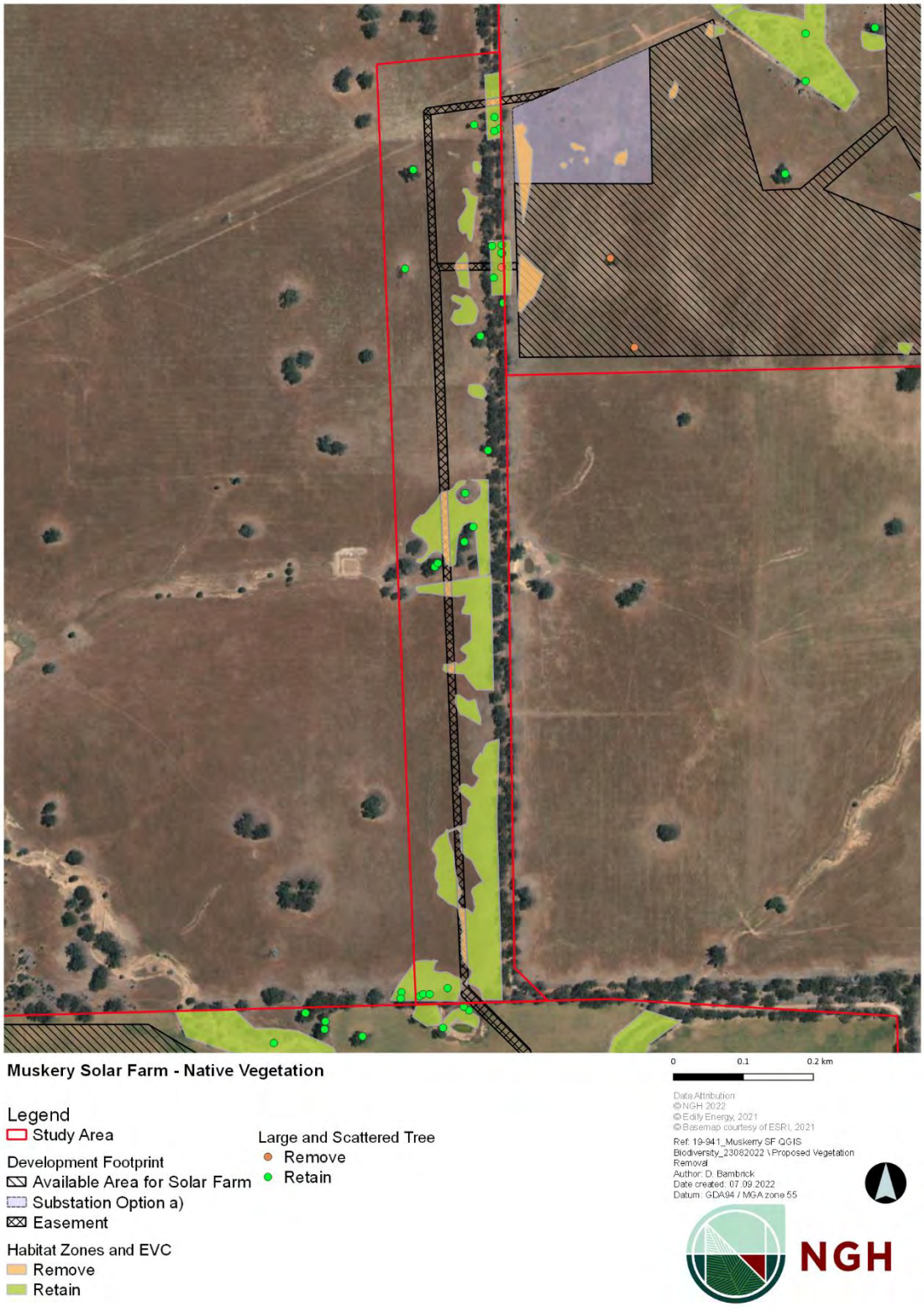

Figure 5-3 Proposed Native Vegetation Removal Easement

As outlined in Section 9.3 of the Native Vegetation Guidelines (DELWP 2017a), the land holder needs to commit to an offset management plan with the following minimum requirements within the proposed offset area:

- Retain all trees, including dead trees that are standing.
- Exclude stock and other threats.
- Ensure that weed cover does not increase beyond the current level.
- Monitor for new and emerging weeds and eliminate to less than one per cent.
- Retain all logs, fallen timber and organic litter.
- Control rabbits.
- For grassland vegetation types, biomass management may be a requirement.
- When the offset is scattered trees, at least five recruits need to regenerate, or be planted in the area around each protected scattered tree. The recruits must be native canopy tree species as specified in the relevant bioregional EVC benchmark. If the recruits die during the life of the 10-year management plan they must continue to be replaced until at least five recruits are established.
- For revegetation offsets, the revegetation must be in accordance with the minimum planting standards specified in the Native Vegetation Gain Scoring Manual, Version 2 (DEWLP 2017b).
- Report annually on management actions.

First Party Offset Site Eligibility

Under Clause 52.17, a habitat zone must have a minimum site condition score above 30 out of 75 to be eligible to be considered as an offset site. From the habitat hectare assessment, all habitat zones except habitat zone 4 have the potential to qualify as first party offset sites.

From an initial investigation for site eligibility for first party offsets, the following should be considered:

- Habitat Zones that are part of unmade road reserves would be considered ineligible.
- Habitat Zone 5 is not eligible as an offset site as most of this zone is on the fence line.
- Habitat zone 11 will be impacted by the development.
- Eligible habitat zones are 1, 2A, 2B, 2C, 5, 6, 7, 8 and 9.
- Habitat zones with large trees should be considered for large offsets including habitat zone 2 and 9 along creek lines.
- Habitat Zone 7 has areas which are unmade road reserves which do not qualify. Parts of Habitat Zone 7 on the Roney property would qualify.
- Habitat Zone 1 is a lot of small zones which would require considerable revegetation to connect to larger patches.
- Habitat Zone 3 is a treeless EVC and must have a minimum lack of weeds score of 7 out of 15. This score was 9 so it qualifies.

First party offset scenario tests have been completed for the native vegetation to be retained to determine site eligibility. The offset scenario tests have shown there is a sufficient number of large trees and habitat zones to meet the offset requirements for the proposed native vegetation removal either entirely or partially.

Any first party offset will need a completed offset management plan which includes landholder commitments and input.

5.3.2. Third Party Offsets

As above, as part of the planning permit application, evidence must be shown to the responsible authority that steps have been undertaken to ensure an offset is secured. If required, a third-party offset can be purchased through a credited broker (in the form of a third offset quote) and provided to the responsible authority as part of a planning permit application.

The offset requirements for 3.041 General Habitat Units must be located in North Central Catchment Management Authority or Greater Bendigo City Council or Campaspe Shire and have a minimum strategic biodiversity value score of 0.454 and include 49 large trees.

A third party offset quote was obtained from Vegetation Link and this is included in Appendix H.

If approval is granted for the native vegetation removal, the third party offset quote must be secured and the credit extract provided to the responsible authority i.e., the credit extract is provided to the applicant once the quote has been purchased.

Accredited credit brokers can be found here:

https://www.environment.vic.gov.au/native-vegetation/native-vegetation/offsets-for-the-removal-of-native-vegetation/i-need-to-secure-an-offset

6. MITIGATION MEASURES

A general summary of the key measures required to mitigate the impacts of the proposal is provided below. Mitigation measures proposed to manage impacts, including proposed techniques, timing, frequency, responsibility for implementing each measure are provided in Table 6-1.

Table 6-1 Mitigation measures proposed to avoid and minimise impacts on native vegetation and habitat.

Mitigation measure	Proposed techniques	Timing	Frequency	Responsibility	Risk of failure
Biodiversity Management Plan	A Biodiversity Management Plan should include the following: 1. Rehabilitation Plan for revegetation for Swift Parrot and FFG listed Victorian Temperate Woodland Bird Community. 2. Flora Management Plan including tree protection, exclusion zones and clearing protocols. 3. Determine if any wildlife permits are required. 4. Fauna management should be prepared by a suitably qualified Zoologist and will include: o Fauna Management Plan for Swift Parrot, Brish-tailed Phascogale, Lace Monitor and Striped Legless Lizard. o An unexpected finds protocol which includes measures for the management of Brush-tailed Phascogale, Swift Parrot and Lace Monitor during construction and operation. o Staff Induction should include a species profile and information hand-outs of the Brush-tailed Phascogale, Swift Parrot, Striped Legless Lizard, and Lace Monitor. o A suitably qualified Zoologist or Wildlife Handler needs to be present during tree clearing. o Any fauna relocation should be completed by a suitably qualified wildlife handler or Wildlife Victoria on (03) 9445 0310.	Pre-Construction and Construction	Regularly	Contractor	Moderate
Brush-tailed Phascogale.	• As part of a fauna management plan the following will be undertaken:	Pre-construction,	Regularly	Contractor	Moderate

	o Step 1 - Avoid tree removal from mid-May to July during the Brush-tailed Phascogales breeding season. o Step 2 – if Step 1 cannot be completed then a pre-clearance survey needs to be completed by a suitably qualified Zoologist o Salvaged hollows should be relocated in suitable habitat in consultation with a Zoologist.	Construction and Operation			
Swift Parrot	As part of a fauna management plan the following will be undertaken for the Swift Parrot during the autumn-winter migration: • Pre-clearance surveys carried out by a suitably qualified Zoologist. • Any sighting should be recorded such as time, date, tree species, number of individuals, duration of presence in the study area. • Inclusion in an unexpected finds protocol (including preferred feed trees) and a procedure if the species is present during tree removal. • Minimise noise near the location where the species is present and allow natural migration away from impact areas by gradually increasing noise levels. • Where appropriate temporary fence 'no-go' areas in close proximity to individual trees in flower and established patches of habitat greater than 1 ha between where construction activities occur between May and August. • An Authority to Control Wildlife (ATCW) authorisation issued under section 28A of the *Wildlife Act* 1975 may be required for Swift Parrot if wilful disturbance of	Pre-construction, Construction and Operation	Regularly	Contractor	Moderate

	wildlife (carrying out tree removal during March to August) during the annual migration is undertaken.				
Striped Legless Lizard	• As part of a fauna management plan the following will be undertaken for Striped Legless Lizard during construction in proximity to mapped moderate habitat areas, or any other area mapped as native grassland being removed as part of construction: o Pre-clearance surveys carried out by a suitably qualified Zoologist. o Any sighting should be recorded such as time, date, number of individuals, duration of presence in the study area. o Inclusion in an unexpected finds protocol (including habitat values) and a procedure if the species is present during vegetation removal. o Minimise noise and traffic near the location where the species is presumed to have likelihood of presence and allow natural migration away from impact areas by gradually increasing noise levels. o Where appropriate temporary fence 'no-go' areas in close proximity to moderate habitat areas during construction activities.	Pre-construction, Construction and Operation	Regularly	Contractor	Moderate
Lace Monitor	• As part of a fauna management plan the following will be undertaken for the Lace Monitor: o Unexpected finds protocol should include appropriate management and handling of the Lace Monitors. o Relocation needs to be completed by a suitably qualified Zoologist or wildlife handler. • Should translocation of threatened species, such as Lace Monitor, be required, a Translocation Permit for	Pre-construction, Construction and Operation	Regularly	Contractor	Moderate

	Threatened Species (TP TS) will need to be obtained from DELWP's Translocation Evaluation Panel (TEP)				
Wildlife Permits	Permits may be required for wildlife management and would be developed as part of each fauna management plan for Swift Parrot, Lace Monitor, Striped Legless Lizard and Brush-tailed Phascogale. The Biodiversity Management Plan will determine what permits and protocols are required. The development of the plans need to consider the following: • a plan including specifications for native fauna identification, monitoring, protection, salvage, and relocation measures to be implemented during removal of nature vegetation, in particular removal of large hollow bearing trees, and the construction by a licensed native fauna handler • A wildlife management plan should advise suitable measures to mitigate risks during construction and operation of the project, such as timing of tree removal. • An Authority to Control Wildlife (ATCW) authorisation issued under section 28A of the *Wildlife Act* 1975 may be required for Swift Parrot if wilful disturbance of wildlife (carrying out tree removal during March to August) during the annual migration is undertaken. • Should translocation of threatened species, such as Lace Monitor, be required, a Translocation Permit for Threatened Species (TP TS) will need to be obtained from DELWP's Translocation Evaluation Panel (TEP)	Pre-construction, Construction and Operation	Regularly	Contractor	Moderate
Relocate habitat features (fallen timber, hollow logs) from within the development site	• Tree-clearing procedure includes relocation of habitat features to adjacent areas for habitat enhancement.	Construction	Regularly	Contractor	Low
Completion of a Flora Management Plan	Prior to any tree removal, a flora management plan must be completed and include the following:	Pre-construction,	Regularly	Contractor	Moderate

	• Ensure the Flora Management Plan is completed and approved and forms part of the Biodiversity Management Plan. • Ensure necessary pre-clearance fauna surveys have been completed and identify management requirements for tree removal. • A Zoologist or suitably qualified Wildlife Handler is present during tree removal. • Identify trees to be retained or removed • An unexpected, threatened flora species finds. • Exclusion of vehicles through sensitive areas. • Determine Tree Protection Zones (TPZ) or Vegetation Protection Zones (VPZ).	Construction			
Tree Protection Zones or Vegetation Protection Zones	• Prior to construction the Tree Protection Fencing (TPZ) or Vegetation Protection Fencing (VPZ) must be set up. • The fencing can be cyclone fencing or parawebbing. • This fencing must have clear signage stating these areas are 'no-go zones.' • No-go zones must be identified in site inductions • The following cannot be undertaken in TPZ or VPZs: o No storage of machinery or equipment o No stockpiling or equipment, soil, debris, or rubbish. o No soil disturbance • Fencing to be checked by site supervisor during construction and maintained or repaired.	Pre-construction, Construction	Regularly	Contractor	Low
Construction Environmental Management Plan	A Construction Environmental Management Plan will include: • Management of noise, light, dust, fauna risk collision • Erosion and sediment control measures • Staff training and induction	Pre-construction, Construction	Regularly	Contractor	Moderate

	• Considerations of flora and fauna management outlined in the Biodiversity Management Plan. • Consider insulated wiring within PVC conduits to prevent access for birdlife and rodents. Native birds including Cockatoos and Corellas have been known to damage such equipment if unprotected. • Tree Protection Measures including 'go/no-go zones' • Landscaping or rehabilitation				
Noise and light impacts on fauna from construction and throughout operation	• Construction Environmental Management Plan will include measures such as: o Avoid noise encroachment on adjacent habitats o Avoid night works as much as possible. o Avoid light spill towards vegetation	Construction /Operation	Regularly	Contractor	Low
Adaptive dust monitoring programs to control air quality	• Dust monitoring included in the Construction Environmental Management Plan • Daily monitoring of dust generated by construction activities; and • Construction would cease if dust observed being blown from site until control measures were implemented; and • All activities relating to the proposal would be undertaken with the objective of preventing visible dust emissions from the development site.	Construction	Regularly	Contractor	Moderate
Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	• A Weed Management procedure would be developed for the proposal to prevent and minimise the spread of weeds. This would include: o Management protocol for declared priority weeds under the *Catchment and Land Protection Act, 1994* during and after construction. o Weed hygiene protocol in relation to plant, machinery, and fill.	Construction , Operation	Regular	Contractor	Moderate

	• Any occurrences of pathogens such as Myrtle Rust and Phytophthora would be monitored, treated, and reported; and • The weed management procedure would be incorporated into the Construction Environmental Management Plan.				
Implement Erosion and sediment controls	• An erosion and sediment control plan would be prepared in conjunction with the final design and implemented as part of the Construction Environmental Management Plan.	Construction	Regular	Contractor	Moderate
Sediment barriers and spill management procedures to control the quality of water runoff released from the site into the receiving environment	• An erosion and sediment control plan would be prepared in conjunction with the final design and implemented; and • Spill management procedures would be implemented and implemented as part of the Construction Environmental Management Plan.	Construction	Regular	Contractor	Moderate
Appropriate landscape plantings of local indigenous species to replace loss of planted vegetation	• Landscape plantings will be comprised of local indigenous species • Inclusion of Grey Box, Yellow Box, Ironbarks, and Yellow Gum in any revegetation plans to replace the loss of local mature trees for Swift Parrot. • Include any rehabilitation or revegetation in the Biodiversity Management Plan	Operation	Regular	Client	Moderate
Staff training and site briefings	• Staff training and site briefing to communicate environmental features to be protected and measures to be implemented during staff inductions and toolbox talks • Communicate impacts of traffic strikes on native fauna including awareness training during site inductions regarding enforcing site speed limits; and Site speed limits to be enforced to minimise fauna strike.	Construction and Operation	Regular	Contractor	Moderate

7. CONCLUSION

The proposed removal of native vegetation that will be impacted includes:

- 49 scattered trees
- 2 large trees within patches of native vegetation
- Removal of 0 hectares EVC 61 Box Ironbark Forest
- Removal of 0 hectares 68 Creek line Grassy Woodland
- Removal of 4.86 hectares 175_61 Grassy Woodland
- Removal of 0.004 hectares 803 Plains Woodland
- Removal of 0.90 hectares 810 Floodway Pond Herbland

To offset this loss of native vegetation the following offset requirements include:

- General offset amount 3.041 General Habitat Units
- Offsets within the vicinity of North Central Catchment Management Authority or Greater Bendigo City Council or Campaspe Shire
- Minimum strategic biodiversity value score of 0.454
- Large trees total is 49.

From the fauna surveys in 2021, the Brush-tailed Phascogale and Lace Monitor were observed. It is noted that the initial survey period was not within the preferred survey period for the Swift Parrot. These threatened species need to be considered in the Biodiversity Management Plan as part of any mitigation measures.

Further targeted surveys were undertaken in August 2022 for the Swift Parrot and Striped Legless Lizard. No Swift Parrots were detected over three surveys. There were two small areas of moderate habitat mapped for the Striped Legless Lizard and these areas have been avoided by the proposal. There are no further assessments required for these species, however as a precaution the species have been incorporated into the Biodiversity Management Plan. These measure aim to mitigate impacts prior to and during construction activities should individuals be encountered opportunistically.

No threatened FFG communities are present on site.

No EPBC referral is required based on the current assessment as all EPBC matters have been assessed and these ecological communities or habitat for threatened species have avoided.

If first party offsets are considered as the preferred offset strategy, a site assessment involving a habitat hectare assessment will be required which will form part of an Offset Management Plan. The areas in Habitat Zone 2 in the north and west of the property are likely to be eligible. The first part offset also requires on site perpetuity in the form of the following security agreements:

1. An agreement with the Secretary to DELWP under section 69 of the Conservation Forest and Lands Act 1987.
2. An agreement with a responsible authority under section 173 of the Planning and Environment Act 1987.
3. An agreement with Trust for Nature to register an offset covenant under the Victorian Conservation Trust Act 1972.

If the third-party offset is to be secured, the next steps involves contacting Vegetation Link to enter into a purchase agreement.

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APPENDIX A FLORA SPECIES LIST

Origin: denotes planted native vegetation; * denotes introduced vegetation

Common Name	Scientific Name	Status
Rough wattle	*Acacia aspera*	
Silver wattle	*Acacia dealbata*	
Spreading wattle	*Acacia genistifolia*	
Black wattle	*Acacia mearnsii*	
Blackwood	*Acacia melanoxylon*	
Hedge wattle	*Acacia paradoxa*	
Golden wattle	*Acacia pyncantha*	
Sheep's Burr	*Acaena ovina*	
Sheep sorrel	*Acetosella vulgaris*	*
Centaury plant	*Agave americana*	*
Hair grass	*Aira sp.*	
Wheat grass	*Anthosachne scabra*	
Capeweed	*Arctotheca calendula*	*
Bridal creeper	*Asparagus asparagoides*	Restricted
Berry Saltbush	*Atriplex semibaccata*	
Spear grass	*Austrostipa mollis*	
Spear grass	*Austrostipa scabra*	
Wild Oats	*Avena fatua*	*
Red-leg grass	*Bothriochloa macra*	
Large Quaking Grass	*Briza maxima*	*
Great Brome	*Bromus diandrus*	*
Sifton Bush	*Cassinia sifton*	
Windmill grass	*Chloris truncata*	
Spear thistle	*Cirsium vulgare*	Restricted

Common Name	Scientific Name	Status
Artichoke thistle	*Cynara cardunculus*	Regionally Controlled
Couch	*Cynodon dactylon*	*
Umbrella Drain Sedge	*Cyperus eragrostis*	*
Black-anther Flax-lily	*Dianella revoluta*	
Paterson's Curse	*Echium plantagineum*	Regionally Controlled
Panic Veldt -grass	*Ehrharta erecta*	*
Nodding Saltbush	*Einadia nutans*	
Common Spike-rush	*Eleocharis acuta*	
Ruby Saltbush	*Enchylaena tomentosa*	
Musky Stork's-bill	*Erodium moschatum*	*
River Red Gum	*Eucalyptus camaldulensis*	
Yellow gum	*Eucalyptus leucoxylon*	
Yellow box	*Eucalyptus melliodora*	
Grey box	*Eucalyptus microcarpa*	
Manna Gum	*Eucalyptus viminalis*	
Green Mallee	*Eucalyptus viridis*	
Caustic weed	*Euphorbia drummondii*	*
Petty spurge	*Euphorbia peplus*	*
Common eutaxia	*Eutaxia microphylla*	
Raspwort	*Gonocarpus tetragynus*	
Bushy Needlewood	*Hakea decurrens*	
Barley Grass	*Hordeum leporinum*	*
St John’s wort	*Hypericum perforatum*	Regionally Controlled
Cat’s ear	*Hypochaeris radicata*	*
Toad Rush	*Juncus bufonius*	*
Common Peppercress	*Lepidium africanum*	*
Perennial Ryegrass	*Lolium perenne*	*

Common Name	Scientific Name	Status
Wattle Mat-rush	*Lomandra filiformis*	
African Box thorn	*Lycium ferocissimum*	Regionally Controlled
Marshmallow	*Malva parviflora*	*
Horehound	*Marrubium vulgare*	Regionally Controlled
Weeping Grass	*Microlaena stipoides subsp. stipoides*	
Wood sorrel	*Oxalis perennans*	
Soursob	*Oxalis pes-caprae*	Restricted
Caterpillar Grass	*Paspalum dilatatum*	*
Slender Knotweed	*Perscaria decipens*	
Toowoomba Canary-grass	*Phalaris aquatica*	*
Red-ink weed	*Phytolaca octandra*	*
Buckhorn's plantain	*Plantago coronopus subsp. coronupus*	*
Ribwort	*Plantago lanceolata*	*
Wireweed	*Polygonium aviculare*	*
Pigweed	*Portulaca oleracea*	
Onion grass	*Romulea rosea var. australis*	*
Briar Rose	*Rosa rubiginosa*	Regionally Controlled
Slender Dock	*Rumex brownii*	
Brown-backed wallaby grass	*Rytidosperma duttonianum*	
Wallaby Grass	*Rytidosperma erianthum*	
Silvertop Wallaby-grass	*Rytidosperma pallidum*	
Wallaby grass	*Rytidosperma sp.*	
Wild sage	*Salvia verbenaca*	*
Peppercorn	*Schinus molle*	*
Black nightshade	*Solanum nigrum*	*
Smooth Solenogyne	*Solenogyne dominii*	
Sow thistle	*Sonchus oleraceus*	*

Common Name	Scientific Name	Status
Salsify	*Tragopogon porrifolius*	*
White Clover	*Trifolium repens*	*
Stinging nettle	*Urtica urens*	*
Ivy-leafed Violet	*Viola hederacea*	
Fuzzweed	*Vittadinia cuneata*	
Bluebell	*Wahlenbergia luteola*	
Bathurst Burr	*Xanthium spinosum*	Regionally Controlled

APPENDIX B TREE LIST

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
1	*Allocasuarina sp.*	Casuarina spp.	63	S	N	N	N	N	70	65	N	Retain
2	*Allocasuarina sp.*	Casuarina spp.	54	S	N	N	N	N	70	10	N	Retain
3	*Eucalyptus camaldulensis*	River Red Gum	160	L	Y	N	N	N	80	75	N	Retain
4	*Eucalyptus camaldulensis*	River Red Gum	72	L	Y	N	N	N	70	100	N	Retain
5	*Eucalyptus camaldulensis*	River Red Gum	161	L	Y	N	N	N	80	80	N	Retain
6	*Eucalyptus camaldulensis*	River Red Gum	89	L	Y	N	N	N	80	100	N	Retain
7	*Eucalyptus camaldulensis*	River Red Gum	84	L	Y	N	N	N	80	100	N	Retain
8	*Eucalyptus camaldulensis*	River Red Gum	89	L	Y	N	N	N	80	100	N	Retain
9	*Eucalyptus camaldulensis*	River Red Gum	80	L	Y	N	N	N	80	100	N	Retain
10	*Eucalyptus camaldulensis*	River Red Gum	81	L	Y	N	N	N	80	100	N	Retain
11	*Eucalyptus camaldulensis*	River Red Gum	102	L	Y	N	N	N	80	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
12	*Eucalyptus camaldulensis*	River Red Gum	90	L	Y	N	N	N	80	95	N	Retain
13	*Eucalyptus camaldulensis*	River Red Gum	87	L	Y	N	N	N	80	100	N	Retain
14	*Eucalyptus camaldulensis*	River Red Gum	100	L	Y	N	N	N	80	100	N	Retain
15	*Eucalyptus camaldulensis*	River Red Gum	88	L	Y	N	N	N	80	100	N	Retain
16	*Eucalyptus camaldulensis*	River Red Gum	83	L	Y	N	N	N	80	100	N	Retain
17	*Eucalyptus camaldulensis*	River Red Gum	118	L	Y	N	N	N	80	100	N	Retain
18	*Eucalyptus camaldulensis*	River Red Gum	95	L	Y	N	N	N	80	100	N	Retain
19	*Eucalyptus camaldulensis*	River Red Gum	95	L	Y	N	N	N	80	100	N	Retain
20	*Eucalyptus camaldulensis*	River Red Gum	91	L	Y	N	N	N	80	85	N	Retain
21	*Eucalyptus camaldulensis*	River Red Gum	150	L	Y	1	N	N	80	100	Y	Retain
22	*Eucalyptus camaldulensis*	River Red Gum	99	L	Y	N	N	N	80	100	N	Retain
23	*Eucalyptus camaldulensis*	River Red Gum	111	L	Y	N	N	N	80	100	N	Retain
24	*Eucalyptus camaldulensis*	River Red Gum	117	L	Y	1	N	N	80	100	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
25	*Eucalyptus camaldulensis*	River Red Gum	92	L	Y	N	N	N	80	100	N	Retain
26	*Eucalyptus camaldulensis*	River Red Gum	113	L	Y	1	N	N	80	100	Y	Retain
27	*Eucalyptus camaldulensis*	River Red Gum	95	L	Y	N	N	N	80	75	N	Retain
28	*Eucalyptus camaldulensis*	River Red Gum	67	S	N	N	N	N	80	100	N	Remove
29	*Eucalyptus camaldulensis*	River Red Gum	192	L	Y	1	N	N	80	85	Y	Retain
30	*Eucalyptus camaldulensis*	River Red Gum	111	L	Y	N	N	N	80	100	N	Retain
31	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	Low	No	70	100	N	Retain
32	*Eucalyptus luecoxylon*	Yellow Gum	94	L	N	N	Good	Noisy miner	70	100	N	Remove
33	*Eucalyptus luecoxylon*	Yellow Gum	111	L	N	N	Good	No	70	100	N	Remove
34	*Eucalyptus luecoxylon*	Yellow Gum	147	L	N	1	N	N	70	85	Y	Retain
35	*Eucalyptus luecoxylon*	Yellow Gum	227	L	N	1	N	N	70	55	Y	Retain
36	*Eucalyptus luecoxylon*	Yellow Gum	85	L	No	1	Y	N	70	80	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
37	*Eucalyptus luecoxylon*	Yellow Gum	129	L	N	N	N	N	70	100	N	Remove
38	*Eucalyptus luecoxylon*	Yellow Gum	99	L	N	N	N	N	70	65	N	Remove
39	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Remove
40	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Remove
41	*Eucalyptus luecoxylon*	Yellow Gum	93	L	Y	N	N	N	70	65	N	Retain
42	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	75	N	Retain
43	*Eucalyptus luecoxylon*	Yellow Gum	25	S	N	N	N	N	70	100	N	Retain
44	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Retain
45	*Eucalyptus luecoxylon*	Yellow Gum	10	S	N	N	N	N	70	100	N	Retain
46	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Retain
47	*Eucalyptus luecoxylon*	Yellow Gum	160	L	Y	N	N	N	70	60	N	Retain
48	*Eucalyptus luecoxylon*	Yellow Gum	25	S	N	N	N	N	80	100	N	Retain
49	*Eucalyptus luecoxylon*	Yellow Gum	250	L	Y	N	N	N	70	72	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
50	*Eucalyptus luecoxylon*	Yellow Gum	20	S	N	N	N	N	70	100	N	Remove
51	*Eucalyptus luecoxylon*	Yellow Gum	20	S	N	N	N	N	70	100	N	Remove
52	*Eucalyptus luecoxylon*	Yellow Gum	10	S	N	N	N	N	70	100	N	Remove
53	*Eucalyptus luecoxylon*	Yellow Gum	133	L	Y	N	N	N	70	100	N	Retain
54	*Eucalyptus luecoxylon*	Yellow Gum	82	L	Y	N	N	N	70	66	N	Retain
55	*Eucalyptus luecoxylon*	Yellow Gum	110	L	Y	N	N	N	70	65	N	Retain
56	*Eucalyptus luecoxylon*	Yellow Gum	92	L	Y	N	N	N	70	100	N	Retain
57	*Eucalyptus luecoxylon*	Yellow Gum	131	L	Y	N	N	N	70	75	N	Retain
58	*Eucalyptus luecoxylon*	Yellow Gum	134	L	Y	N	N	N	70	30	N	Retain
59	*Eucalyptus luecoxylon*	Yellow Gum	82	L	Y	N	N	N	70	75	N	Retain
60	*Eucalyptus luecoxylon*	Yellow Gum	116	L	Y	N	N	N	70	75	N	Retain
61	*Eucalyptus luecoxylon*	Yellow Gum	112	L	Y	N	N	N	70	75	N	Retain
62	*Eucalyptus luecoxylon*	Yellow Gum	87	L	Y	N	N	N	70	80	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
63	*Eucalyptus luecoxylon*	Yellow Gum	88	L	Y	N	N	N	70	72	N	Retain
64	*Eucalyptus luecoxylon*	Yellow Gum	121	L	Y	N	N	N	70	65	N	Retain
65	*Eucalyptus luecoxylon*	Yellow Gum	163	L	N	N	N	N	70	70	N	Retain
66	*Eucalyptus luecoxylon*	Yellow Gum	10	S	N	N	N	N	70	100	N	Retain
67	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Remove
68	*Eucalyptus luecoxylon*	Yellow Gum	144	L	Y	N	N	N	80	85	N	Retain
69	*Eucalyptus luecoxylon*	Yellow Gum	94	L	Y	N	N	N	80	75	N	Retain
70	*Eucalyptus luecoxylon*	Yellow Gum	98	L	Y	N	N	N	80	70	N	Retain
71	*Eucalyptus luecoxylon*	Yellow Gum	158	L	Y	N	N	N	80	65	N	Retain
72	*Eucalyptus luecoxylon*	Yellow Gum	150	L	Y	N	N	N	80	100	N	Retain
73	*Eucalyptus luecoxylon*	Yellow Gum	97	L	Y	N	N	N	80	90	N	Retain
74	*Eucalyptus luecoxylon*	Yellow Gum	106	L	Y	N	N	N	80	100	N	Retain
75	*Eucalyptus luecoxylon*	Yellow Gum	121	L	Y	N	N	N	80	65	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
76	*Eucalyptus luecoxylon*	Yellow Gum	84	L	Y	N	N	N	80	65	N	Retain
77	*Eucalyptus luecoxylon*	Yellow Gum	176	L	Y	N	N	N	80	65	N	Retain
78	*Eucalyptus luecoxylon*	Yellow Gum	120	L	Y	N	N	N	80	65	N	Retain
79	*Eucalyptus luecoxylon*	Yellow Gum	83	L	Y	N	N	N	70	75	Potential	Retain
80	*Eucalyptus luecoxylon*	Yellow Gum	72	L	Y	N	N	N	80	90	N	Retain
81	*Eucalyptus luecoxylon*	Yellow Gum	117	L	Y	N	N	N	70	70	Potential	Retain
82	*Eucalyptus luecoxylon*	Yellow Gum	104	L	Y	2	N	N	70	50	Y	Retain
83	*Eucalyptus luecoxylon*	Yellow Gum	114	L	Y	N	N	N	70	35	Y	Retain
84	*Eucalyptus luecoxylon*	Yellow Gum	120	L	Y	N	N	N	80	0	Y	Retain
85	*Eucalyptus luecoxylon*	Yellow Gum	105	L	Y	N	N	N	70	40	No	Retain
86	*Eucalyptus luecoxylon*	Yellow Gum	74	L	Y	N	N	N	80	80	N	Retain
87	*Eucalyptus luecoxylon*	Yellow Gum	85	L	Y	3	N	N	70	70	Y	Retain
88	*Eucalyptus luecoxylon*	Yellow Gum	71	L	Y	1	N	N	70	50	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
89	*Eucalyptus luecoxylon*	Yellow Gum	80	L	Y	N	N	N	80	60	N	Retain
90	*Eucalyptus luecoxylon*	Yellow Gum	91	L	Y	1	N	N	80	65	Y	Retain
91	*Eucalyptus luecoxylon*	Yellow Gum	153	L	Y	N	N	N	80	80	N	Retain
92	*Eucalyptus luecoxylon*	Yellow Gum	77	L	Y	N	N	N	80	85	N	Retain
93	*Eucalyptus luecoxylon*	Yellow Gum	118	L	Y	N	N	N	80	100	N	Retain
94	*Eucalyptus luecoxylon*	Yellow Gum	83	L	Y	N	N	N	80	70	N	Retain
95	*Eucalyptus luecoxylon*	Yellow Gum	182	L	Y	1	N	N	70	85	Potential	Retain
96	*Eucalyptus luecoxylon*	Yellow Gum	125	L	Y	1	N	N	70	85	Y	Retain
97	*Eucalyptus luecoxylon*	Yellow Gum	74	L	Y	N	N	N	70	75	N	Retain
98	*Eucalyptus luecoxylon*	Yellow Gum	133	L	Y	N	N	N	70	95	N	Retain
99	*Eucalyptus luecoxylon*	Yellow Gum	92	L	Y	N	N	N	70	95	N	Retain
100	*Eucalyptus luecoxylon*	Yellow Gum	80	L	Y	N	N	N	70	75	N	Retain
101	*Eucalyptus luecoxylon*	Yellow Gum	123	L	Y	N	N	N	80	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
102	*Eucalyptus luecoxylon*	Yellow Gum	132	L	Y	N	N	N	80	100	N	Retain
103	*Eucalyptus luecoxylon*	Yellow Gum	100	L	Y	N	N	N	80	75	Potential	Retain
104	*Eucalyptus luecoxylon*	Yellow Gum	184	L	Y	1	N	N	80	80	Y	Retain
105	*Eucalyptus luecoxylon*	Yellow Gum	110	L	Y	N	N	N	80	70	N	Retain
106	*Eucalyptus luecoxylon*	Yellow Gum	143	L	Y	1	N	N	70	50	Y	Retain
107	*Eucalyptus luecoxylon*	Yellow Gum	40	S	N	N	N	N	70	90	N	Retain
108	*Eucalyptus luecoxylon*	Yellow Gum	5	S	N	N	N	N	70	100	N	Retain
109	*Eucalyptus luecoxylon*	Yellow Gum	35	S	N	N	N	N	70	85	N	Retain
110	*Eucalyptus luecoxylon*	Yellow Gum	45	S	N	N	N	N	70	100	N	Retain
111	*Eucalyptus luecoxylon*	Yellow Gum	30	S	N	N	N	N	70	100	N	Retain
112	*Eucalyptus luecoxylon*	Yellow Gum	125	L	Y	N	N	N	70	20	N	Retain
113	*Eucalyptus luecoxylon*	Yellow Gum	22	S	N	N	N	N	70	100	N	Retain
114	*Eucalyptus luecoxylon*	Yellow Gum	20	S	N	N	N	N	70	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
115	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Retain
116	*Eucalyptus luecoxylon*	Yellow Gum	77	L	Y	N	N	N	70	100	N	Retain
117	*Eucalyptus luecoxylon*	Yellow Gum	82	L	Y	N	N	N	70	65	N	Retain
118	*Eucalyptus luecoxylon*	Yellow Gum	71	L	Y	N	N	N	70	95	N	Retain
119	*Eucalyptus luecoxylon*	Yellow Gum	77	L	Y	N	N	N	70	90	N	Retain
120	*Eucalyptus luecoxylon*	Yellow Gum	71	L	Y	N	N	N	70	75	N	Retain
121	*Eucalyptus luecoxylon*	Yellow Gum	80	L	Y	N	N	N	70	80	N	Retain
122	*Eucalyptus luecoxylon*	Yellow Gum	83	L	Y	N	N	N	70	95	N	Retain
123	*Eucalyptus luecoxylon*	Yellow Gum	89	L	Y	N	N	N	70	85	N	Retain
124	*Eucalyptus luecoxylon*	Yellow Gum	20	S	N	N	N	N	70	100	N	Retain
125	*Eucalyptus luecoxylon*	Yellow Gum	5	S	N	N	N	N	70	100	N	Retain
126	*Eucalyptus luecoxylon*	Yellow Gum	5	S	N	N	N	N	70	100	N	Retain
127	*Eucalyptus luecoxylon*	Yellow Gum	15	S	N	N	N	N	70	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
128	*Eucalyptus luecoxylon*	Yellow Gum	20	S	N	1	N	N	70	100	Y	Retain
129	*Eucalyptus luecoxylon*	Yellow Gum	10	S	N	N	N	N	70	100	N	Retain
130	*Eucalyptus luecoxylon*	Yellow Gum	2	S	N	N	N	N	70	100	N	Retain
131	*Eucalyptus luecoxylon*	Yellow Gum	92	L	Y	N	N	N	70	80	N	Retain
132	*Eucalyptus luecoxylon*	Yellow Gum	203	L	Y	N	N	N	70	100	Potential	Retain
133	*Eucalyptus luecoxylon*	Yellow Gum	103	L	Y	N	N	N	70	100	N	Retain
134	*Eucalyptus luecoxylon*	Yellow Gum	78	L	Y	1	N	N	70	90	Y	Retain
135	*Eucalyptus luecoxylon*	Yellow Gum	118	L	Y	N	N	N	70	100	N	Retain
136	*Eucalyptus luecoxylon*	Yellow Gum	10	S	N	N	N	N	70	100	N	Retain
137	*Eucalyptus luecoxylon*	Yellow Gum	13	S	N	N	N	N	70	100	N	Retain
138	*Eucalyptus luecoxylon*	Yellow Gum	76	L	Y	N	N	N	70	90	N	Retain
139	*Eucalyptus luecoxylon*	Yellow Gum	74	L	Y	1	N	N	70	95	Y	Retain
140	*Eucalyptus luecoxylon*	Yellow Gum	124	L	Y	N	N	N	80	100	Potential	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
141	*Eucalyptus luecoxylon*	Yellow Gum	96	L	Y	N	N	N	70	85	N	Retain
142	*Eucalyptus luecoxylon*	Yellow Gum	74	L	Y	1	N	N	70	90	Y	Retain
143	*Eucalyptus luecoxylon*	Yellow Gum	87	L	Y	N	N	N	70	100	N	Retain
144	*Eucalyptus luecoxylon*	Yellow Gum	30	S	N	N	N	N	70	90	N	Retain
145	*Eucalyptus luecoxylon*	Yellow Gum	85	L	N	1	N	N	70	0	Y	Retain
146	*Eucalyptus luecoxylon*	Yellow Gum	119	L	N	N	N	N	70	95	N	Retain
147	*Eucalyptus luecoxylon*	Yellow Gum	87	L	N	1	N	N	70	95	Y	Retain
148	*Eucalyptus luecoxylon*	Yellow Gum	121	L	N	N	N	N	70	95	N	Retain
149	*Eucalyptus luecoxylon*	Yellow Gum	96	L	N	N	N	N	70	60	N	Retain
150	*Eucalyptus luecoxylon*	Yellow Gum	75	L	Y	1	N	N	70	75	Potential	Retain
151	*Eucalyptus luecoxylon*	Yellow Gum	151	L	Y	1	N	N	70	90	Potential	Retain
152	*Eucalyptus luecoxylon*	Yellow Gum	78	L	Y	1	N	N	80	65	Potential	Retain
153	*Eucalyptus luecoxylon*	Yellow Gum	92	L	Y	N	N	N	80	85	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
154	*Eucalyptus luecoxylon*	Yellow Gum	112	L	N	1	N	N	70	60	Y	Remove
155	*Eucalyptus luecoxylon*	Yellow Gum	173	L	Y	N	N	N	80	60	N	Retain
156	*Eucalyptus luecoxylon*	Yellow Gum	82	L	Y	N	N	N	80	30	N	Retain
157	*Eucalyptus luecoxylon*	Yellow Gum	185	L	Y	1	N	N	80	80	Y	Retain
158	*Eucalyptus luecoxylon*	Yellow Gum	135	L	Y	N	N	N	80	50	N	Retain
159	*Eucalyptus luecoxylon*	Yellow Gum	92	L	Y	N	N	N	80	70	N	Retain
160	*Eucalyptus luecoxylon*	Yellow Gum	83	L	Y	N	N	N	80	90	N	Retain
161	*Eucalyptus luecoxylon*	Yellow Gum	88	L	Y	N	N	N	80	70	N	Retain
162	*Eucalyptus luecoxylon*	Yellow Gum	76	L	Y	N	N	N	70	20	N	Retain
163	*Eucalyptus luecoxylon*	Yellow Gum	98	L	Y	Y	Stick nest	N	70	60	N	Retain
164	*Eucalyptus luecoxylon*	Yellow Gum	110	L	Y	1	N	N	70	85	Y	Retain
165	*Eucalyptus melliodora*	Yellow Box	101	L	N	N	N	N	70	40	N	Remove
166	*Eucalyptus melliodora*	Yellow Box	142	L	Y	N	N	N	80	65	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
167	*Eucalyptus melliodora*	Yellow Box	113	L	Y	N	N	N	80	100	N	Retain
168	*Eucalyptus melliodora*	Yellow Box	100	L	Y	N	N	N	80	100	N	Retain
169	*Eucalyptus melliodora*	Yellow Box	120	L	Y	N	N	N	80	100	N	Retain
170	*Eucalyptus melliodora*	Yellow Box	100	L	Y	N	N	N	80	75	N	Retain
171	*Eucalyptus melliodora*	Yellow Box	102	L	Y	N	N	N	80	65	N	Retain
172	*Eucalyptus melliodora*	Yellow Box	200	L	Y	N	N	N	80	100	N	Retain
173	*Eucalyptus melliodora*	Yellow Box	112	L	Y	N	N	N	80	100	N	Retain
174	*Eucalyptus melliodora*	Yellow Box	94	L	Y	N	N	N	80	65	N	Retain
175	*Eucalyptus melliodora*	Yellow Box	130	L	Y	N	N	N	80	85	N	Retain
176	*Eucalyptus melliodora*	Yellow Box	129	L	Y	N	N	N	80	100	N	Retain
177	*Eucalyptus melliodora*	Yellow Box	106	L	Y	N	N	N	80	55	N	Retain
178	*Eucalyptus melliodora*	Yellow Box	85	L	Y	N	N	N	80	55	N	Retain
179	*Eucalyptus melliodora*	Yellow Box	166	L	Y	N	N	N	80	85	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
180	*Eucalyptus melliodora*	Yellow Box	97	L	Y	N	N	N	80	85	N	Retain
181	*Eucalyptus melliodora*	Yellow Box	80	L	Y	N	N	N	80	100	N	Retain
182	*Eucalyptus melliodora*	Yellow Box	103	L	Y	N	N	N	80	75	N	Retain
183	*Eucalyptus melliodora*	Yellow Box	100	L	Y	N	N	N	80	100	N	Retain
184	*Eucalyptus melliodora*	Yellow Box	270	L	N	1	N	N	80	75	Y	Retain
185	*Eucalyptus melliodora*	Yellow Box	86	L	N	N	N	N	80	100	N	Retain
186	*Eucalyptus melliodora*	Yellow Box	88	L	N	1	N	N	80	75	Y	Retain
187	*Eucalyptus melliodora*	Yellow Box	5	S	N	N	N	N	80	100	N	Retain
188	*Eucalyptus melliodora*	Yellow Box	170	L	Y	1	N	N	80	100	Y	Retain
189	*Eucalyptus melliodora*	Yellow Box	91	L	Y	N	N	N	80	95	N	Retain
190	*Eucalyptus melliodora*	Yellow Box	85	L	Y	N	N	N	80	60	N	Retain
191	*Eucalyptus melliodora*	Yellow Box	85	L	Y	1	N	N	70	65	Y	Retain
192	*Eucalyptus melliodora*	Yellow Box	82	L	Y	N	N	N	70	70	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
193	*Eucalyptus melliodora*	Yellow Box	130	L	Y	N	N	N	80	90	N	Retain
194	*Eucalyptus melliodora*	Yellow Box	115	L	Y	N	N	N	80	90	N	Retain
195	*Eucalyptus melliodora*	Yellow Box	128	L	Y	N	N	N	80	70	N	Retain
196	*Eucalyptus melliodora*	Yellow Box	83	L	Y	N	N	N	80	75	N	Retain
197	*Eucalyptus melliodora*	Yellow Box	91	L	Y	N	N	N	80	85	N	Retain
198	*Eucalyptus melliodora*	Yellow Box	110	L	Y	1	N	N	80	90	Potential	Retain
199	*Eucalyptus melliodora*	Yellow Box	138	L	Y	1	N	N	70	50	Potential	Retain
200	*Eucalyptus melliodora*	Yellow Box	77	L	Y	N	N	N	70	40	N	Retain
201	*Eucalyptus melliodora*	Yellow Box	105	L	Y	1	N	N	70	85	Y	Retain
202	*Eucalyptus melliodora*	Yellow Box	100	L	Y	N	N	N	70	60	N	Retain
203	*Eucalyptus melliodora*	Yellow Box	11	S	N	N	N	N	70	100	N	Retain
204	*Eucalyptus melliodora*	Yellow Box	25	S	N	N	N	N	70	100	N	Retain
205	*Eucalyptus melliodora*	Yellow Box	97	L	Y	N	N	N	80	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
206	*Eucalyptus melliodora*	Yellow Box	102	L	Y	N	N	N	80	100	N	Retain
207	*Eucalyptus melliodora*	Yellow Box	121	L	Y	N	N	N	70	100	Y	Retain
208	*Eucalyptus melliodora*	Yellow Box	83	L	N	1	N	N	70	85	Potential	Retain
209	*Eucalyptus melliodora*	Yellow Box	65	S	N	N	N	N	70	85	N	Retain
210	*Eucalyptus melliodora*	Yellow Box	25	S	N	N	N	N	70	95	N	Retain
211	*Eucalyptus melliodora*	Yellow Box	122	L	N	1	N	N	70	95	Potential	Retain
212	*Eucalyptus melliodora*	Yellow Box	55	S	N	N	N	N	70	50	N	Retain
213	*Eucalyptus melliodora*	Yellow Box	151	L	Y	N	N	N	80	95	N	Retain
214	*Eucalyptus melliodora*	Yellow Box	157	L	N	N	N	N	80	75	N	Retain
215	*Eucalyptus melliodora*	Yellow Box	236	L	N	1	N	N	80	95	Potential	Retain
216	*Eucalyptus melliodora*	Yellow Box	191	L	N	1	N	N	70	40	Potential	Retain
217	*Eucalyptus melliodora*	Yellow Box	94	L	Y	N	N	N	80	40	N	Retain
218	*Eucalyptus melliodora*	Yellow Box	117	L	Y	N	N	N	80	40	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
219	*Eucalyptus melliodora*	Yellow Box	142	L	Y	1	N	N	80	80	Y	Retain
220	*Eucalyptus melliodora*	Yellow Box	146	L	N	N	N	N	70	85	N	Retain
221	*Eucalyptus melliodora*	Yellow Box	118	L	Y	N	N	N	70	100	N	Retain
222	*Eucalyptus melliodora*	Yellow Box	165	L	N	N	N	N	70	75	N	Remove
223	*Eucalyptus melliodora*	Yellow Box	86	L	Y	N	N	N	80		N	Retain
224	*Eucalyptus melliodora*	Yellow Box	80	L	Y	N	N	N	80	100	N	Retain
225	*Eucalyptus melliodora*	Yellow Box	82	L	Y	N	N	N	80	75	N	Retain
226	*Eucalyptus microcarpa*	Grey Box	86	L	Y	1	Great	No	70	68	Y	Retain
227	*Eucalyptus microcarpa*	Grey Box	143	L	Y	1	N	N	70	65	N	Retain
228	*Eucalyptus microcarpa*	Grey Box	93	L	Y	N	N	N	70	70	Potential	Retain
229	*Eucalyptus microcarpa*	Grey Box	87	L	Y	N	N	N	70	71	N	Retain
230	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	75	N	Retain
231	*Eucalyptus microcarpa*	Grey Box	72	L	Y	N	N	N	70	85	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
232	*Eucalyptus microcarpa*	Grey Box	81	L	Y	1	Great	Active hollow	70	80	Y	Retain
233	*Eucalyptus microcarpa*	Grey Box	137	L	N	1	Yes	No	70	100	Y	Retain
234	*Eucalyptus microcarpa*	Grey Box	182	L	N	N	N	No	70	100	No	Retain
235	*Eucalyptus microcarpa*	Grey Box	136	L	N	1	Y	Magpie	70	75	Y	Retain
236	*Eucalyptus microcarpa*	Grey Box	128	L	N	1	N	N	70	75	Y	Retain
237	*Eucalyptus microcarpa*	Grey Box	95	L	Y	N	N	N	70	30	N	Retain
238	*Eucalyptus microcarpa*	Grey Box	117	L	N	N	N	N	70	70	N	Remove
239	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	80	85	N	Retain
240	*Eucalyptus microcarpa*	Grey Box	120	L	Y	N	N	N	80	70	N	Retain
241	*Eucalyptus microcarpa*	Grey Box	157	L	Y	N	N	Eastern rosella	80	65	N	Retain
242	*Eucalyptus microcarpa*	Grey Box	150	L	Y	N	N	N	80	65	N	Retain
243	*Eucalyptus microcarpa*	Grey Box	100	L	Y	N	N	N	80	55	N	Retain
244	*Eucalyptus microcarpa*	Grey Box	93	L	Y	N	N	N	80	85	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
245	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	80	65	N	Retain
246	*Eucalyptus microcarpa*	Grey Box	206	L	Y	N	N	N	70	85	N	Retain
247	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	45	N	Retain
248	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	55	N	Retain
249	*Eucalyptus microcarpa*	Grey Box	134	L	Y	N	N	N	70	55	N	Retain
250	*Eucalyptus microcarpa*	Grey Box	74	L	Y	N	N	N	70	35	N	Retain
251	*Eucalyptus microcarpa*	Grey Box	74	L	Y	N	N	N	70	25	N	Retain
252	*Eucalyptus microcarpa*	Grey Box	106	L	Y	N	N	N	70	45	N	Retain
253	*Eucalyptus microcarpa*	Grey Box	107	L	Y	N	N	N	70	55	N	Retain
254	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	70	N	Retain
255	*Eucalyptus microcarpa*	Grey Box	87	L	Y	N	N	N	70	75	N	Retain
256	*Eucalyptus microcarpa*	Grey Box	97	L	Y	N	N	N	70	65	N	Retain
257	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	80	70	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
258	*Eucalyptus microcarpa*	Grey Box	200	L	Y	1	N	N	80	75	Y	Retain
259	*Eucalyptus microcarpa*	Grey Box	121	L	y	N	N	N	80	100	N	Retain
260	*Eucalyptus microcarpa*	Grey Box	150	L	Y	N	N	N	80	85	N	Retain
261	*Eucalyptus microcarpa*	Grey Box	116	L	Y	N	N	N	80	31-70	No	Retain
262	*Eucalyptus microcarpa*	Grey Box	115	L	Y	N	N	N	80	31-70	No	Retain
263	*Eucalyptus microcarpa*	Grey Box	94	L	Y	N	N	N	70	60	N	Retain
264	*Eucalyptus microcarpa*	Grey Box	93	L	Y	N	N	N	70	65	N	Retain
265	*Eucalyptus microcarpa*	Grey Box	10u	L	Y	N	N	N	70	31-70	N	Retain
266	*Eucalyptus microcarpa*	Grey Box	96	L	Y	N	N	N	70	25	N	Retain
267	*Eucalyptus microcarpa*	Grey Box	104	L	Y	N	N	N	70	65	N	Retain
268	*Eucalyptus microcarpa*	Grey Box	82	L	Y	N	N	N	70	60	N	Retain
269	*Eucalyptus microcarpa*	Grey Box	137	L	N	1	N	N	70	65	N	Retain
270	*Eucalyptus microcarpa*	Grey Box	134	L	N	N	N	N	70	69	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
271	*Eucalyptus microcarpa*	Grey Box	111	L	No	N	N	N	70	75	N	Retain
272	*Eucalyptus microcarpa*	Grey Box	69	S	No	N	N	N	70	65	N	Retain
273	*Eucalyptus microcarpa*	Grey Box	90	L	No	N	N	N	70	75	N	Retain
274	*Eucalyptus microcarpa*	Grey Box	84	L	No	N	N	N	70	65	N	Retain
275	*Eucalyptus microcarpa*	Grey Box	137	L	No	N	N	N	70	60	N	Retain
276	*Eucalyptus microcarpa*	Grey Box	132	L	Y	N	N	N	70	65	N	Retain
277	*Eucalyptus microcarpa*	Grey Box	114	L	N	N	N	N	70	71	N	Retain
278	*Eucalyptus microcarpa*	Grey Box	89	L	N	N	N	N	70	75	N	Retain
279	*Eucalyptus microcarpa*	Grey Box	200	L	Y	N	N	N	80	95	N	Retain
280	*Eucalyptus microcarpa*	Grey Box	119	L	Y	N	N	N	80	75	N	Retain
281	*Eucalyptus microcarpa*	Grey Box	145	L	Y	N	N	N	70	50	N	Retain
282	*Eucalyptus microcarpa*	Grey Box	116	L	Y	N	N	N	70	72	N	Retain
283	*Eucalyptus microcarpa*	Grey Box	126	L	Y	N	N	N	70	75	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
284	*Eucalyptus microcarpa*	Grey Box	163	L	Y	N	N	N	70	70	N	Retain
285	*Eucalyptus microcarpa*	Grey Box	112	L	N	N	N	N	70	70	N	Retain
286	*Eucalyptus microcarpa*	Grey Box	33	S	N	1	N	N	70	75	Y	Retain
287	*Eucalyptus microcarpa*	Grey Box	67	S	N	N	N	N	70	100	N	Retain
288	*Eucalyptus microcarpa*	Grey Box	82	L	N	N	N	N	70	65	N	Retain
289	*Eucalyptus microcarpa*	Grey Box	77	L	N	N	N	N	70	65	N	Retain
290	*Eucalyptus microcarpa*	Grey Box	140	L	N	N	N	N	70	65	N	Retain
291	*Eucalyptus microcarpa*	Grey Box	65	S	N	N	N	N	70	60	N	Retain
292	*Eucalyptus microcarpa*	Grey Box	92	L	N	N	N	N	70	65	N	Retain
293	*Eucalyptus microcarpa*	Grey Box	53	S	N	N	N	N	70	100	N	Retain
294	*Eucalyptus microcarpa*	Grey Box	98	L	N	N	N	N	70	75	N	Retain
295	*Eucalyptus microcarpa*	Grey Box	82	L	N	N	N	N	70	95	N	Retain
296	*Eucalyptus microcarpa*	Grey Box	46	S	N	N	N	N	70	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
297	*Eucalyptus microcarpa*	Grey Box	74	L	N	N	N	N	70	0	N	Retain
298	*Eucalyptus microcarpa*	Grey Box	88	L	Y	N	N	N	70	75u	N	Retain
299	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	75	N	Retain
300	*Eucalyptus microcarpa*	Grey Box	81	L	Y	N	N	N	70	100	N	Retain
301	*Eucalyptus microcarpa*	Grey Box	105	L	Y	N	N	N	70	100	N	Retain
302	*Eucalyptus microcarpa*	Grey Box	82	L	N	N	N	N	70	100	N	Retain
303	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	100	N	Retain
304	*Eucalyptus microcarpa*	Grey Box	101	L	Y	N	N	N	70	72	N	Retain
305	*Eucalyptus microcarpa*	Grey Box	126	L	N	N	N	N	70	75	Potential	Retain
306	*Eucalyptus microcarpa*	Grey Box	77	L	N	N	N	N	70	100	N	Retain
307	*Eucalyptus microcarpa*	Grey Box	168	L	N	Possible	N	N	70	90	N	Retain
308	*Eucalyptus microcarpa*	Grey Box	83	L	N	N	N	N	70	70	N	Retain
309	*Eucalyptus microcarpa*	Grey Box	101	L	N	N	N	N	70	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
310	*Eucalyptus microcarpa*	Grey Box	69	S	N	N	N	N	70	65	N	Retain
311	*Eucalyptus microcarpa*	Grey Box	150	L	Y	N	N	N	80	90	N	Retain
312	*Eucalyptus microcarpa*	Grey Box	108	L	Y	N	N	N	80	100	N	Retain
313	*Eucalyptus microcarpa*	Grey Box	103	L	Y	N	N	N	80	65	N	Retain
314	*Eucalyptus microcarpa*	Grey Box	82	L	Y	N	N	N	80	60	N	Retain
315	*Eucalyptus microcarpa*	Grey Box	100	L	Y	N	N	N	70	100	N	Retain
316	*Eucalyptus microcarpa*	Grey Box	82	L	N	1	Y	Y	70	25	Y	Remove
317	*Eucalyptus microcarpa*	Grey Box	143	L	N	1	Y	Y	70	65	Y	Retain
318	*Eucalyptus microcarpa*	Grey Box	201	L	Y	N	N	N	80	85	Y	Retain
319	*Eucalyptus microcarpa*	Grey Box	108	L	N	1	Y	N	70	77	Y	Remove
320	*Eucalyptus microcarpa*	Grey Box	168	L	N	N	N	N	70	100	N	Retain
321	*Eucalyptus microcarpa*	Grey Box	114	L	Y	1	Y	Y	80	45	Y	Retain
322	*Eucalyptus microcarpa*	Grey Box	15	S	N	N	N	N	70	65		Remove

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
323	*Eucalyptus microcarpa*	Grey Box	191	L	N	1	Y	Y	70	45	Y	Remove
324	*Eucalyptus microcarpa*	Grey Box	73	L	Y	1	N	N	70	45	Y	Remove
325	*Eucalyptus microcarpa*	Grey Box	101	L	Y	N	N	N	80	100	N	Retain
326	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	80	65	N	Retain
327	*Eucalyptus microcarpa*	Grey Box	88	L	Y	N	N	N	80	100	N	Retain
328	*Eucalyptus microcarpa*	Grey Box	103	L	Y	N	N	N	70	40	Potential	Remove
329	*Eucalyptus microcarpa*	Grey Box	93	L	Y	1	N	Y	70	45	Y	Remove
330	*Eucalyptus microcarpa*	Grey Box	10	S	N	N	N	N	70	100	N	Remove
331	*Eucalyptus microcarpa*	Grey Box	10	S	N	N	N	N	70	100	N	Remove
332	*Eucalyptus microcarpa*	Grey Box	172	L	N	N	N	N	N	55	N	Remove
333	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	70	75	N	Retain
334	*Eucalyptus microcarpa*	Grey Box	108	L	Y	1	Y	N	70	55	Y	Retain
335	*Eucalyptus microcarpa*	Grey Box	10	S	N	N	N	N	70	100	N	Remove

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
336	*Eucalyptus microcarpa*	Grey Box	81	L	Y	N	N	N	70	100	N	Retain
337	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	100	N	Retain
338	*Eucalyptus microcarpa*	Grey Box	72	L	Y	N	N	N	70	31-70	N	Retain
339	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	65	N	Retain
340	*Eucalyptus microcarpa*	Grey Box	92	L	Y	N	N	N	70	65	N	Retain
341	*Eucalyptus microcarpa*	Grey Box	95	L	Y	N	N	N	70	65	N	Retain
342	*Eucalyptus microcarpa*	Grey Box	107	L	Y	1	N	N	70	65	Y	Retain
343	*Eucalyptus microcarpa*	Grey Box	82	L	Y	N	N	N	70	65	N	Retain
344	*Eucalyptus microcarpa*	Grey Box	164	L	Y	1	N	N	70	65	Y	Retain
345	*Eucalyptus microcarpa*	Grey Box	112	L	Y	1	N	N	70	65	Y	Retain
346	*Eucalyptus microcarpa*	Grey Box	90	L	Y	N	N	N	70	65	N	Retain
347	*Eucalyptus microcarpa*	Grey Box	71	L	Y	N	N	N	70	65	N	Retain
348	*Eucalyptus microcarpa*	Grey Box	114	L	Y	1	N	N	70	65	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
349	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	70	65	N	Retain
350	*Eucalyptus microcarpa*	Grey Box	119	L	Y	1	N	N	70	65	Y	Retain
351	*Eucalyptus microcarpa*	Grey Box	112	L	Y	1	N	N	70	65	Y	Retain
352	*Eucalyptus microcarpa*	Grey Box	110	L	Y	1	N	N	70	65	Y	Retain
353	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	65	N	Retain
354	*Eucalyptus microcarpa*	Grey Box	93	L	Y	Y	Y	Antechinus???	70	65	Y	Retain
355	*Eucalyptus microcarpa*	Grey Box	83	L	Y	N	N	N	70	65	N	Retain
356	*Eucalyptus microcarpa*	Grey Box	114	L	Y	1	N	N	70	65	Y	Retain
357	*Eucalyptus microcarpa*	Grey Box	97	L	Y	N	N	N	70	65	N	Retain
358	*Eucalyptus microcarpa*	Grey Box	94	L	Y	N	N	N	70	65	N	Retain
359	*Eucalyptus microcarpa*	Grey Box	99	L	Y	N	N	N	70	65	N	Retain
360	*Eucalyptus microcarpa*	Grey Box	99	L	Y	N	N	N	70	65	N	Retain
361	*Eucalyptus microcarpa*	Grey Box	90	L	Y	N	N	N	70	65	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
362	*Eucalyptus microcarpa*	Grey Box	90	L	Y	N	N	N	70	65	N	Retain
363	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	70	65	N	Retain
364	*Eucalyptus microcarpa*	Grey Box	98	L	Y	N	N	N	70	65	N	Retain
365	*Eucalyptus microcarpa*	Grey Box	77	L	Y	N	N	N	70	65	N	Retain
366	*Eucalyptus microcarpa*	Grey Box	79	L	Y	N	N	N	70	65	N	Retain
367	*Eucalyptus microcarpa*	Grey Box	72	L	Y	N	N	N	70	65	N	Retain
368	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	65	N	Retain
369	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	65	N	Retain
370	*Eucalyptus microcarpa*	Grey Box	87	L	Y	N	N	N	70	65	N	Retain
371	*Eucalyptus microcarpa*	Grey Box	94	L	Y	N	N	N	70	65	N	Retain
372	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	65	N	Retain
373	*Eucalyptus microcarpa*	Grey Box	96	L	Y	N	N	N	70	65	N	Retain
374	*Eucalyptus microcarpa*	Grey Box	93	L	Y	N	N	N	70	65	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
375	*Eucalyptus microcarpa*	Grey Box	79	L	Y	N	N	N	70	65	N	Retain
376	*Eucalyptus microcarpa*	Grey Box	87	L	Y	N	N	N	70	65	N	Retain
377	*Eucalyptus microcarpa*	Grey Box	154	L	Y	N	N	N	70	65	N	Retain
378	*Eucalyptus microcarpa*	Grey Box	111	L	Y	N	N	N	70	60	N	Retain
379	*Eucalyptus microcarpa*	Grey Box	92	L	Y	N	N	N	70	75	N	Retain
380	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	85	N	Retain
381	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	50	N	Retain
382	*Eucalyptus microcarpa*	Grey Box	96	L	Y	N	N	N	70	60	N	Retain
383	*Eucalyptus microcarpa*	Grey Box	87	L	Y	1	N	N	70	65	Potential	Retain
384	*Eucalyptus microcarpa*	Grey Box	104	L	Y	1	N	N	70	60	Potential	Retain
385	*Eucalyptus microcarpa*	Grey Box	182	L	Y	1	N	N	70	75	Potential	Retain
386	*Eucalyptus microcarpa*	Grey Box	107	L	Y	N	N	N	70	50	No	Retain
387	*Eucalyptus microcarpa*	Grey Box	90	L	Y	1	N	N	70	65	Potential	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
388	*Eucalyptus microcarpa*	Grey Box	95	L	Y	N	N	N	70	60	Y	Retain
389	*Eucalyptus microcarpa*	Grey Box	76	L	Y	1	N	N	80	10	Potential	Retain
390	*Eucalyptus microcarpa*	Grey Box	103	L	Y	N	N	N	80	80	N	Retain
391	*Eucalyptus microcarpa*	Grey Box	105	L	Y	N	N	N	70	95	N	Retain
392	*Eucalyptus microcarpa*	Grey Box	113	L	Y	1	N	N	70	80	Potential	Retain
393	*Eucalyptus microcarpa*	Grey Box	85	L	Y	1	N	N	70	75	Potential	Retain
394	*Eucalyptus microcarpa*	Grey Box	95	L	Y	N	N	N	70	80	N	Retain
395	*Eucalyptus microcarpa*	Grey Box		L	Y	1	N	N	70	80	Potential	Retain
396	*Eucalyptus microcarpa*	Grey Box	120	L	Y	N	N	N	70	75	N	Retain
397	*Eucalyptus microcarpa*	Grey Box	82	L	Y	N	N	N	70	90	N	Retain
398	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	75	N	Retain
399	*Eucalyptus microcarpa*	Grey Box	78	L	Y	1	N	N	70	55	Potential	Retain
400	*Eucalyptus microcarpa*	Grey Box	79	L	Y	N	N	N	70	55	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
401	*Eucalyptus microcarpa*	Grey Box	102	L	N	N	N	N	70	90	N	Retain
402	*Eucalyptus microcarpa*	Grey Box	96	L	Y	N	N	N	80	75	N	Retain
403	*Eucalyptus microcarpa*	Grey Box	96	L	Y	N	N	N	80	90	N	Retain
404	*Eucalyptus microcarpa*	Grey Box	107	L	Y	1	N	N	80	80	Potential	Retain
405	*Eucalyptus microcarpa*	Grey Box	78	L	Y	N	N	N	80	100	N	Retain
406	*Eucalyptus microcarpa*	Grey Box	206	L	Y	N	N	N	70	100	N	Retain
407	*Eucalyptus microcarpa*	Grey Box	88	L	N	1	N	N	70	55	Potential	Retain
408	*Eucalyptus microcarpa*	Grey Box	105	L	Y	1	N	N	70	50	Y	Retain
409	*Eucalyptus microcarpa*	Grey Box	82	L	Y	N	N	N	70	65	N	Retain
410	*Eucalyptus microcarpa*	Grey Box	139	L	Y	1	N	N	70	80	Potential	Retain
411	*Eucalyptus microcarpa*	Grey Box	109	L	Y	1	N	N	70	100	Y	Retain
412	*Eucalyptus microcarpa*	Grey Box	98	L	Y	1	N	N	70	100	Potential	Retain
413	*Eucalyptus microcarpa*	Grey Box	86	L	Y	N	N	N	70	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
414	*Eucalyptus microcarpa*	Grey Box	109	L	Y	1	N	N	70	45	Y	Retain
415	*Eucalyptus microcarpa*	Grey Box	152	L	Y	1	N	N	70	100	Y	Retain
416	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	100	N	Retain
417	*Eucalyptus microcarpa*	Grey Box	83	L	Y	N	N	N	70	100	N	Retain
418	*Eucalyptus microcarpa*	Grey Box	186	L	N	1	N	N	70	100	Y	Retain
419	*Eucalyptus microcarpa*	Grey Box	131	L	Y	N	N	N	80	100	Potential	Retain
420	*Eucalyptus microcarpa*	Grey Box	70	L	Y	N	N	N	70	85	N	Retain
421	*Eucalyptus microcarpa*	Grey Box	157	L		1	N	N	70	90	Y	Retain
422	*Eucalyptus microcarpa*	Grey Box	50	S	N	N	N	N	70	75	N	Retain
423	*Eucalyptus microcarpa*	Grey Box	185	L	N	N	N	N	70	90	N	Retain
424	*Eucalyptus microcarpa*	Grey Box	135	L	Y	1	N	N	70	75	Y	Retain
425	*Eucalyptus microcarpa*	Grey Box	102	L	N	N	N	N	70	80	N	Retain
426	*Eucalyptus microcarpa*	Grey Box	70	L	N	N	N	N	70	80	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
427	*Eucalyptus microcarpa*	Grey Box	95	L	N	N	N	N	70	80	N	Retain
428	*Eucalyptus microcarpa*	Grey Box	80	L	N	N	N	N	70	100	N	Retain
429	*Eucalyptus microcarpa*	Grey Box	75	L	N	N	N	N	70	90	N	Retain
430	*Eucalyptus microcarpa*	Grey Box	81	L	N	N	N	N	70	80	N	Retain
431	*Eucalyptus microcarpa*	Grey Box	75	L	N	N	N	N	70	75	N	Retain
432	*Eucalyptus microcarpa*	Grey Box	70	L	N	N	N	N	70	70	N	Retain
433	*Eucalyptus microcarpa*	Grey Box	87	L	N	N	N	N	70	65	N	Retain
434	*Eucalyptus microcarpa*	Grey Box	90	L	N	N	N	N	70	65	N	Retain
435	*Eucalyptus microcarpa*	Grey Box	70	L	N	N	N	N	70	55	N	Retain
436	*Eucalyptus microcarpa*	Grey Box	98	L	N	N	N	N	70	95	N	Retain
437	*Eucalyptus microcarpa*	Grey Box	86	L	Y	N	N	N	70	90	N	Retain
438	*Eucalyptus microcarpa*	Grey Box	74	L	Y	N	N	N	80	85	N	Retain
439	*Eucalyptus microcarpa*	Grey Box	126	L	Y	N	N	N	80	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
440	*Eucalyptus microcarpa*	Grey Box	89	L	N	N	N	N	70	95	N	Remove
441	*Eucalyptus microcarpa*	Grey Box	129	L	N	N	N	N	70	75	N	Remove
442	*Eucalyptus microcarpa*	Grey Box	138	L	N	1	N	N	70	75	Y	Remove
443	*Eucalyptus microcarpa*	Grey Box	130	L	N	N	N	N	70	90	N	Remove
444	*Eucalyptus microcarpa*	Grey Box	132	L	N	N	N	N	70	85	N	Retain
445	*Eucalyptus microcarpa*	Grey Box	114	L	N	N	N	N	70	75	N	Retain
446	*Eucalyptus microcarpa*	Grey Box	150	L	N	N	N	N	70	60	N	Remove
447	*Eucalyptus microcarpa*	Grey Box	115	L	N	1	N	N	70	30	Y	Remove
448	*Eucalyptus microcarpa*	Grey Box	116	L	N	N	N	N	70	100	N	Remove
449	*Eucalyptus microcarpa*	Grey Box	128	L	N	N	N	N	70	55	N	Remove
450	*Eucalyptus microcarpa*	Grey Box	121	L	N	N	N	N	70	100	Potential	Remove
451	*Eucalyptus microcarpa*	Grey Box	119	L	N	1	N	N	70	100	Y	Remove
452	*Eucalyptus microcarpa*	Grey Box	146	L	N	N	N	N	70	100	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
453	*Eucalyptus microcarpa*	Grey Box	114	L	N	N	N	N	70	95	N	Retain
454	*Eucalyptus microcarpa*	Grey Box	101	L	N	N	N	N	70	70	N	Retain
455	*Eucalyptus microcarpa*	Grey Box	100	L	N	N	N	N	70	90	N	Retain
456	*Eucalyptus microcarpa*	Grey Box	123	L	N	N	N	N	70	75	N	Retain
457	*Eucalyptus microcarpa*	Grey Box	136	L	N	N	N	N	70	65	N	Retain
458	*Eucalyptus microcarpa*	Grey Box	85	L	N	N	N	N	70	55	N	Retain
459	*Eucalyptus microcarpa*	Grey Box	106	L	N	1	N	N	70	100	Y	Retain
460	*Eucalyptus microcarpa*	Grey Box	106	L	N	1	N	N	70	100	Y	Retain
461	*Eucalyptus microcarpa*	Grey Box	93	L	N	N	N	N	70	100	N	Retain
462	*Eucalyptus microcarpa*	Grey Box	106	L	N	N	N	N	70	100	N	Retain
463	*Eucalyptus microcarpa*	Grey Box	116	L	N	1	N	N	70	85	Y	Retain
464	*Eucalyptus microcarpa*	Grey Box	107	L	N	N	N	N	70	100	N	Retain
465	*Eucalyptus microcarpa*	Grey Box	100	L	N	1	Y	N	70	90	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
466	*Eucalyptus microcarpa*	Grey Box	88	L	N	1	N	N	70	40	Y	Retain
467	*Eucalyptus microcarpa*	Grey Box	125	L	N	1	N	N	70	95	Potential	Retain
468	*Eucalyptus microcarpa*	Grey Box	183	L	Y	1	N	N	80	100	Potential	Retain
469	*Eucalyptus microcarpa*	Grey Box	121	L	Y	1	N	N	80	60	Potential	Retain
470	*Eucalyptus microcarpa*	Grey Box	276	L	Y	1	N	N	80	75	Potential	Retain
471	*Eucalyptus microcarpa*	Grey Box	108	L	Y	N	N	N	80	50	N	Retain
472	*Eucalyptus microcarpa*	Grey Box	85	L	Y	N	N	N	80	80	N	Retain
473	*Eucalyptus microcarpa*	Grey Box	92	L	Y	N	N	N	80	40	N	Retain
474	*Eucalyptus microcarpa*	Grey Box	137	L	Y	1	N	N	80	55	Y	Retain
475	*Eucalyptus microcarpa*	Grey Box	87	L	Y	N	N	N	80	70	N	Retain
476	*Eucalyptus microcarpa*	Grey Box	97	L	Y	N	N	N	80	80	N	Retain
477	*Eucalyptus microcarpa*	Grey Box	94	L	Y	N	N	N	70	80	N	Retain
478	*Eucalyptus microcarpa*	Grey Box	81	L	Y	N	N	N	70	65	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
479	*Eucalyptus microcarpa*	Grey Box	157	L	N	1	Yes	N	70	100	Potential	Retain
480	*Eucalyptus microcarpa*	Grey Box	198	L	N	N	N	N	70	50	Y	Retain
481	*Eucalyptus microcarpa*	Grey Box	99	L	N	1	N	N	70	75	Potential	Retain
482	*Eucalyptus microcarpa*	Grey Box	109	L	N	1	N	N	70	60	Y	Retain
483	*Eucalyptus microcarpa*	Grey Box	75	L	N	1	N	N	70	65	Y	Retain
484	*Eucalyptus microcarpa*	Grey Box	75	L	N	N	N	N	70	35	N	Retain
485	*Eucalyptus microcarpa*	Grey Box	126	L	N	1	N	N	70	90	Y	Retain
486	*Eucalyptus microcarpa*	Grey Box	106	L	N	N	N	N	70	55	N	Retain
487	*Eucalyptus microcarpa*	Grey Box	79	L	N	1	N	N	70	40	Potential	Retain
488	*Eucalyptus microcarpa*	Grey Box	83	L	N	N	N	N	70	20	N	Retain
489	*Eucalyptus microcarpa*	Grey Box	117	L	N	N	N	N	70	75	N	Retain
490	*Eucalyptus microcarpa*	Grey Box	140	L	N	1	N	N	70	75	Potential	Retain
491	*Eucalyptus microcarpa*	Grey Box	145	L	N	N	N	N	70	60	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
492	*Eucalyptus microcarpa*	Grey Box	107	L	N	N	N	N	70	95	N	Retain
493	*Eucalyptus microcarpa*	Grey Box	132	L	N	N	N	N	70	90	N	Retain
494	*Eucalyptus microcarpa*	Grey Box	200	L	N	N	N	N	70	85	N	Retain
495	*Eucalyptus microcarpa*	Grey Box	148	L	N	1	N	N	70	50	Y	Retain
496	*Eucalyptus microcarpa*	Grey Box	118	L	N	1	N	N	70	100	Y	Retain
497	*Eucalyptus microcarpa*	Grey Box	109	L	N	1	N	N	70	95	Potential	Retain
498	*Eucalyptus microcarpa*	Grey Box	103	L	N	1	N	N	70	100	Y	Retain
499	*Eucalyptus microcarpa*	Grey Box	110	L	N	N	N	N	70	90	N	Retain
500	*Eucalyptus microcarpa*	Grey Box	133	L	N	N	N	N	70	100	N	Retain
501	*Eucalyptus microcarpa*	Grey Box	159	L	N	N	N	N	70	90	N	Retain
502	*Eucalyptus microcarpa*	Grey Box	145	L	N	N	N	N	70	Grey box	N	Retain
503	*Eucalyptus microcarpa*	Grey Box	126	L	N	1	N	N	70	70	Y	Retain
504	*Eucalyptus microcarpa*	Grey Box	103	L	N	N	N	N	70	50	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
505	*Eucalyptus microcarpa*	Grey Box	138	L	N	N	N	Bird activity on all scattered trees on this site	70	100	N	Retain
506	*Eucalyptus microcarpa*	Grey Box	170	L	N	1	N	N	70	90	Y	Retain
507	*Eucalyptus microcarpa*	Grey Box	195	L	N	N	N	N	70	70	N	Retain
508	*Eucalyptus microcarpa*	Grey Box	97	L	N	N	N	N	70	60	N	Retain
509	*Eucalyptus microcarpa*	Grey Box	98	L	N	N	N	N	70	60	N	Retain
510	*Eucalyptus microcarpa*	Grey Box	170	L	N	N	N	N	70	80	N	Retain
511	*Eucalyptus microcarpa*	Grey Box	155	L	N	1	N	N	70	60	Potential	Retain
512	*Eucalyptus microcarpa*	Grey Box	66	S	N	N	N	N	70	80	N	Retain
513	*Eucalyptus microcarpa*	Grey Box	158	L	N	1	N	N	70	85	Potential	Retain
514	*Eucalyptus microcarpa*	Grey Box	84	L	N	N	N	N	70	80	N	Retain
515	*Eucalyptus microcarpa*	Grey Box	78	L	Y	N	N	N	70	75	N	Retain
516	*Eucalyptus microcarpa*	Grey Box	86	L	Y	N	N	N	70	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
517	*Eucalyptus microcarpa*	Grey Box	112	L	Y	N	N	N	70	65	N	Retain
518	*Eucalyptus microcarpa*	Grey Box	99	L	Y	N	N	N	70	80	N	Retain
519	*Eucalyptus microcarpa*	Grey Box	95	L	Y	1	N	N	70	60	Y	Retain
520	*Eucalyptus microcarpa*	Grey Box	101	L	Y	N	N	N	70	90	N	Retain
521	*Eucalyptus microcarpa*	Grey Box	102	L	Y	N	N	N	70	75	N	Retain
522	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	80	N	Retain
523	*Eucalyptus microcarpa*	Grey Box	93	L	Y	N	N	N	70	70	N	Retain
524	*Eucalyptus microcarpa*	Grey Box	77	L	Y	N	N	N	70	65	N	Retain
525	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	70	N	Retain
526	*Eucalyptus microcarpa*	Grey Box	105	L	Y	N	N	N	70	40	N	Retain
527	*Eucalyptus microcarpa*	Grey Box	88	L	Y	N	N	N	70	40	N	Retain
528	*Eucalyptus microcarpa*	Grey Box	98	L	Y	N	N	N	70	40	N	Retain
529	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	70	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
530	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	60	N	Retain
531	*Eucalyptus microcarpa*	Grey Box	85	L	Y	N	N	N	70	85	N	Retain
532	*Eucalyptus microcarpa*	Grey Box	78	L	Y	1	N	N	70	65	Potential	Retain
533	*Eucalyptus microcarpa*	Grey Box	129	L	Y	N	N	N	70	90	N	Retain
534	*Eucalyptus microcarpa*	Grey Box	78	L	Y	N	N	N	70	50	N	Retain
535	*Eucalyptus microcarpa*	Grey Box	78	L	Y	N	N	N	70	60	N	Retain
536	*Eucalyptus microcarpa*	Grey Box	76	L	Y	1	N	N	70	70	Y	Retain
537	*Eucalyptus microcarpa*	Grey Box	106	L	N	1	N	N	70	50	Potential	Retain
538	*Eucalyptus microcarpa*	Grey Box	70	L	N	N	N	N	70	70	N	Retain
539	*Eucalyptus microcarpa*	Grey Box	122	L	N	N	N	N	70	90	N	Retain
540	*Eucalyptus microcarpa*	Grey Box	126	L	N	N	N	N	70	90	N	Retain
541	*Eucalyptus microcarpa*	Grey Box	93	L	N	N	N	N	70	95	N	Retain
542	*Eucalyptus microcarpa*	Grey Box	77	L	N	1	N	N	70	80	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
543	*Eucalyptus microcarpa*	Grey Box	78	L	N	N	N	N	70	100	N	Retain
544	*Eucalyptus microcarpa*	Grey Box	118	L	Y	N	N	N	70	100	N	Retain
545	*Eucalyptus microcarpa*	Grey Box	73	L	Y	N	N	N	70	60	N	Retain
546	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	75	N	Retain
547	*Eucalyptus microcarpa*	Grey Box	146	L	N	N	N	N	70	90	N	Retain
548	*Eucalyptus microcarpa*	Grey Box	80	L	Y	N	N	N	70	75	N	Retain
549	*Eucalyptus microcarpa*	Grey Box	165	L	Y	1	N	N	70	90	Potential	Retain
550	*Eucalyptus microcarpa*	Grey Box	141	L	Y	N	N	N	70	95	N	Retain
551	*Eucalyptus microcarpa*	Grey Box	97	L	Y	1	N	N	70	80	Y	Retain
552	*Eucalyptus microcarpa*	Grey Box	81	L	Y	N	N	N	70	15	N	Retain
553	*Eucalyptus microcarpa*	Grey Box	106	L	Y	N	N	N	70	100	N	Retain
554	*Eucalyptus microcarpa*	Grey Box	141	L	N	N	N	N	70	100	N	Retain
555	*Eucalyptus microcarpa*	Grey Box	147	L	N	1	N	N	70	100	Potential	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
556	*Eucalyptus microcarpa*	Grey Box	109	L	N	1	N	N	70	90	Potential	Retain
557	*Eucalyptus microcarpa*	Grey Box	68	S	N	1	N	N	70	64	Y	Retain
558	*Eucalyptus microcarpa*	Grey Box	70	L	N	N	N	N	70	70	N	Retain
559	*Eucalyptus microcarpa*	Grey Box	87	L	N	1	N	N	70	85	Y	Retain
560	*Eucalyptus microcarpa*	Grey Box	57	S	N	N	N	N	70	80	N	Retain
561	*Eucalyptus microcarpa*	Grey Box	95	L	N	1	N	N	70	90	Potential	Retain
562	*Eucalyptus microcarpa*	Grey Box	74	L	N	N	N	N	70	90	N	Retain
563	*Eucalyptus microcarpa*	Grey Box	134	L	N	N	N	N	70	80	N	Retain
564	*Eucalyptus microcarpa*	Grey Box	108	L	N	N	N	N	70	90	N	Retain
565	*Eucalyptus microcarpa*	Grey Box	114	L	N	N	N	N	70	100	N	Retain
566	*Eucalyptus microcarpa*	Grey Box	143	L	N	N	N	N	70	95	N	Retain
567	*Eucalyptus microcarpa*	Grey Box	85	L	N	N	N	N	70	100	N	Retain
568	*Eucalyptus microcarpa*	Grey Box	92	L	N	N	N	N	70	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
569	*Eucalyptus microcarpa*	Grey Box	111	L	N	N	N	N	70	100	N	Retain
570	*Eucalyptus microcarpa*	Grey Box	117	L	N	N	N	N	70	100	N	Retain
571	*Eucalyptus microcarpa*	Grey Box	62	S	N	N	N	N	70	90	N	Retain
572	*Eucalyptus microcarpa*	Grey Box	85	L	N	1	N	N	70	80	Y	Retain
573	*Eucalyptus microcarpa*	Grey Box	84	L	N	N	N	N	70	80	N	Retain
574	*Eucalyptus microcarpa*	Grey Box	80	L	N	N	N	N	70	95	N	Retain
575	*Eucalyptus microcarpa*	Grey Box	83	L	N	N	N	N	70	70	N	Retain
576	*Eucalyptus microcarpa*	Grey Box	128	L	N	N	N	N	70	85	N	Retain
577	*Eucalyptus microcarpa*	Grey Box	86	L	N	1	N	N	70	85	Y	Retain
578	*Eucalyptus microcarpa*	Grey Box	112	L	N	N	N	N	70	100	N	Retain
579	*Eucalyptus microcarpa*	Grey Box	122	L	N	N	N	N	70	90	N	Retain
580	*Eucalyptus microcarpa*	Grey Box	91	L	N	N	N	N	70	85	N	Retain
581	*Eucalyptus microcarpa*	Grey Box	76	L	N	N	N	N	70	85	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
582	*Eucalyptus microcarpa*	Grey Box	159	L	N	1	N	N	70	85	Potential	Retain
583	*Eucalyptus microcarpa*	Grey Box	151	L	N	N	Yes, magpie stick nest	Y	70	75	N	Remove
584	*Eucalyptus microcarpa*	Grey Box	91	L	N	N	N	N	70	65	N	Remove
585	*Eucalyptus microcarpa*	Grey Box	87	L	N	N	N	N	70	50	N	Remove
586	*Eucalyptus microcarpa*	Grey Box	118	L	N	N	N	N	70	45	N	Remove
587	*Eucalyptus microcarpa*	Grey Box	134	L	N	N	N	N	70	20	N	Remove
588	*Eucalyptus microcarpa*	Grey Box	95	L	N	1	N	N	70	40	Y	Remove
589	*Eucalyptus microcarpa*	Grey Box	128	L	N	N	N	N	70	60	N	Remove
590	*Eucalyptus microcarpa*	Grey Box	136	L	Y	N	N	N	70	70	N	Retain
591	*Eucalyptus microcarpa*	Grey Box	101	L	Y	1	N	N	70	75	Potential	Retain
592	*Eucalyptus microcarpa*	Grey Box	117	L	N	N	N	N	70	90	N	Retain
593	*Eucalyptus microcarpa*	Grey Box	51	S	N	N	N	N	70	60	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
594	*Eucalyptus microcarpa*	Grey Box	129	L	N	N	N	N	70	85	N	Retain
595	*Eucalyptus microcarpa*	Grey Box	65	S	N	N	N	N	70	55	N	Retain
596	*Eucalyptus microcarpa*	Grey Box	125	L	N	N	N	N	70	90	N	Retain
597	*Eucalyptus microcarpa*	Grey Box	110	L	Y	N	N	N	70	70	N	Retain
598	*Eucalyptus microcarpa*	Grey Box	90	L	Y	N	N	N	70	60	N	Retain
599	*Eucalyptus microcarpa*	Grey Box	103	L	Y	N	N	N	70	90	N	Retain
600	*Eucalyptus microcarpa*	Grey Box	117	L	N	N	N	N	70	60	N	Retain
601	*Eucalyptus microcarpa*	Grey Box	143	L	N	N	N	N	70	60	N	Retain
602	*Eucalyptus microcarpa*	Grey Box	140	L	N	N	N	N	70	75	N	Retain
603	*Eucalyptus microcarpa*	Grey Box	86	L	Y	N	N	N	70	55	N	Retain
604	*Eucalyptus microcarpa*	Grey Box	98	L	Y	N	N	N	70	60	N	Retain
605	*Eucalyptus microcarpa*	Grey Box	83	L	Y	N	N	N	70	80	N	Retain
606	*Eucalyptus microcarpa*	Grey Box	98	L	Y	N	N	N	70	75	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
607	*Eucalyptus microcarpa*	Grey Box	83	L	Y	1	N	N	70	70	Potential	Retain
608	*Eucalyptus microcarpa*	Grey Box	79	L	Y	N	N	N	70	70	N	Retain
609	*Eucalyptus microcarpa*	Grey Box	81	L	Y	N	N	N	70	65	N	Retain
610	*Eucalyptus microcarpa*	Grey Box	90	L	Y	N	N	N	70	90	N	Retain
611	*Eucalyptus microcarpa*	Grey Box	89	L	Y	N	N	N	70	50	N	Retain
612	*Eucalyptus microcarpa*	Grey Box	92	L	N	N	N	N	70	100	N	Retain
613	*Eucalyptus microcarpa*	Grey Box	118	L	N	N	N	N	70	90	N	Retain
614	*Eucalyptus microcarpa*	Grey Box	155	L	N	N	N	N	70	90	N	Retain
615	*Eucalyptus microcarpa*	Grey Box	110	L	N	N	N	N	70	95	N	Retain
616	*Eucalyptus microcarpa*	Grey Box	113	L	N	N	N	N	70	90	N	Retain
617	*Eucalyptus microcarpa*	Grey Box	101	L	N	N	N	N	70	65	N	Retain
618	*Eucalyptus microcarpa*	Grey Box	90	L	N	N	N	N	70	10	N	Retain
619	*Eucalyptus microcarpa*	Grey Box	118	L	N	N	N	v	70	75	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
620	*Eucalyptus microcarpa*	Grey Box	159	L	N	N	N	N	70	90	N	Retain
621	*Eucalyptus microcarpa*	Grey Box	85	L	N	N	N	N	70	80	N	Retain
622	*Eucalyptus microcarpa*	Grey Box	114	L	Y	N	N	N	70	75	N	Retain
623	*Eucalyptus microcarpa*	Grey Box	84	L	Y	N	N	N	70	50	N	Retain
624	*Eucalyptus microcarpa*	Grey Box	76	L	Y	N	N	N	70	75	N	Retain
625	*Eucalyptus microcarpa*	Grey Box	102	L	N	N	N	N	70	85	N	Retain
626	*Eucalyptus microcarpa*	Grey Box	103	L	N	N	N	N	70	85	N	Retain
627	*Eucalyptus microcarpa*	Grey Box	153	L	N	N	N	N	70	70	N	Remove
628	*Eucalyptus microcarpa*	Grey Box	187	L	N	1	N	N	70	70	Y	Retain
629	*Eucalyptus microcarpa*	Grey Box	107	L	N	N	N	N	70	80	N	Retain
630	*Eucalyptus microcarpa*	Grey Box	158	L	N	N	N	N	70	80	N	Retain
631	*Eucalyptus microcarpa*	Grey Box	189	L	N	1	N	N	70	80	Potential	Retain
632	*Eucalyptus microcarpa*	Grey Box	116	L	N	N	N	N	70	90	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
633	*Eucalyptus microcarpa*	Grey Box	181	L	N	N	N	N	70	15	N	Retain
634	*Eucalyptus microcarpa*	Grey Box	178	L	N	N	N	N	70	85	N	Remove
635	*Eucalyptus microcarpa*	Grey Box	164	L	N	N	N	N	70	40	N	Remove
636	*Eucalyptus microcarpa*	Grey Box	143	L	N	1	N	N	70	70	Y	Remove
637	*Eucalyptus microcarpa*	Grey Box	137	L	N	N	N	N	70	85	Y	Remove
638	*Eucalyptus microcarpa*	Grey Box	150	L	N	N	N	N	70	85	N	Retain
639	*Eucalyptus microcarpa*	Grey Box	46	S	N	N	N	N	70	60	N	Retain
640	*Eucalyptus microcarpa*	Grey Box	77	L	N	N	N	N	70	70	N	Retain
641	*Eucalyptus microcarpa*	Grey Box	83	L	N	N	N	N	70	50	N	Retain
642	*Eucalyptus microcarpa*	Grey Box	101	L	Y	1	N	N	70	65	Y	Retain
643	*Stag*	Stag	101	L	N	1	Good	Parrots	70	0	Y	Remove
644	*Stag*	Stag	169	L	N	1	N	N	70	0	Y	Remove
645	*Stag*	Stag	71	L	N	1	N	N	70	0	Y	Remove

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
646	*Stag*	Stag	135	L	N	N	N	N	70	0	N	Retain
647	*Stag*	Stag	111	L	N	N	N	N	70	0	N	Retain
648	*Stag*	Stag	144	L	Y	N	N	N	80	0	N	Retain
649	*Stag*	Stag	135	L	No	1	N	N	80	0	Potential	Retain
650	*Stag*	Stag	1	L	Y	1	N	Bees	70	0	Y	Retain
651	*Stag*	Stag	89	L	Y	N	N	N	80	0	N	Retain
652	*Stag*	Stag	114	L	N	N	N	N	70	0	N	Retain
653	*Stag*	Stag	91	L	N	N	N	N	70	0	N	Retain
654	*Stag*	Stag	94	L	N	N	N	N	70	0	N	Retain
655	*Stag*	Stag	70	L	N	N	N	N	80		N	Retain
656	*Stag*	Stag	89	L	N	1	N	N	80	0	Y	Retain
657	*Stag*	Stag	148	L	Y	N	N	N	80	0	N	Retain
658	*Stag*	Stag	132	L	Y	N	N	N	80	0	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
659	*Stag*	Stag	84	L	N	N	N	N	70	0	N	Remove
660	*Stag*	Stag	99	L	N	1	N	N	70	100	Y	Retain
661	*Stag*	Stag	74	L	N	N	N	N	70	65	N	Remove
662	*Stag*	Stag	97	L	N	N	N	N	70		N	Remove
663	*Stag*	Stag	107	L	Y	1	N	N	70	65	Y	Retain
664	*Stag*	Stag	137	L	Y	1	N	N	70	0	Y	Remove
665	*Stag*	Stag	78	L	Y	1	N	N	70	0	Potential	Retain
666	*Stag*	Stag	93	L	Y	1	N	N	70	50	Potential	Retain
667	*Stag*	Stag	134	L	Y	1	N	N	70	0	Y	Retain
668	*Stag*	Stag	107	L	Y	1	N	N	70	0	Y	Retain
669	*Stag*	Stag	89	L	Y	1	N	N	70	0	Y	Retain
670	*Stag*	Stag	80	L	Y	1	N	N	80	0	Y	Retain
671	*Stag*	Stag	156	L	Y	1	N	N	80	0	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
672	*Stag*	Stag	85	L	Y	N	N	N	70	0	N	Retain
673	*Stag*	Stag	75	L	Y	N	N	N	70	0	N	Retain
674	*Stag*	Stag	91	L	Y	1	N	N	80	0	Y	Retain
675	*Stag*	Stag	92	L	Y	N	N	N	80	0	N	Retain
676	*Stag*	Stag	135	L	Y	1	N	N	80	0	Potential	Retain
677	*Stag*	Stag	131	L	Y	1	N	N	80	0	Potential	Retain
678	*Stag*	Stag	94	L	Y	1	N	N	80	0	Potential	Retain
679	*Stag*	Stag	77	L	Y	1	N	N	80	0	Potential	Retain
680	*Stag*	Stag	132	L	Y	1	N	N	70	0	Y	Retain
681	*Stag*	Stag	142	L	Y	N	N	N	70	0	N	Retain
682	*Stag*	Stag	129	L	Y	N	N	N	80	0	N	Retain
683	*Stag*	Stag	94	L	Y	N	N	N	80	0	N	Retain
684	*Stag*	Stag	57	S	N	N	N	N	70	0	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
685	*Stag*	Stag	70	L	N	N	N	N	70		N	Remove
686	*Stag*	Stag	78	L	N	1	N	N	70	0	Y	Retain
687	*Stag*	Stag	90	L	Y	1	N	N	70	0	Potential	Retain
688	*Stag*	Stag	70	L	N	1	Yes	Y	70	0	Y	Remove
689	*Stag*	Stag	120	L	N	1	N	N	70	0	Potential	Remove
690	*Stag*	Stag	117	L	N	N	N	N	70	0	N	Retain
691	*Stag*	Stag	130	L	N	1	N	N	70	0	Y	Retain
692	*Stag*	Stag	110	L	N	1	N	N	70	0	Y	Retain
693	*Stag*	Stag	50	S	N	N	N	N	70	0	N	Retain
694	*Stag*	Stag	97	L	Y	1	N	N	80	0	Potential	Retain
695	*Stag*	Stag	83	L	Y	N	N	N	80	0	N	Retain
696	*Stag*	Stag	151	L	Y	1	N	N	80	P	Potential	Retain
697	*Stag*	Stag	92	L	N	N	N	N	70	0	N	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
698	*Stag*	Stag	112	L	N	1	N	N	70	0	Potential	Retain
699	*Stag*	Stag	84	L	N	1	N	N	70	0	Y	Retain
700	*Stag*	Stag	110	L	N	N	N	N	70	0	N	Retain
701	*Stag*	Stag	101	L	N	1	N	N	70	0	Y	Retain
702	*Stag*	Stag	147	L	Y	N	N	N	70	0	N	Retain
703	*Stag*	Stag	69	S	N	N	N	N	70	0	N	Retain
704	*Stag*	Stag	98	L	N	N	N	N	70	0	N	Retain
705	*Stag*	Stag	110	L	N	N	N	N	70	0	N	Remove
706	*Stag*	Stag	204	L	N	N	N	N	70	0	N	Remove
707	*Stag*	Stag	92	L	N	N	N	N	70	0	N	Remove
708	*Eucalyptus microcarpa*	Grey Box	101	L	Y	1	N	N	70	65	Y	Retain
708	*Eucalyptus microcarpa*	Grey Box	72	L	Y	1	N	N	70	65	Y	Retain
709	*Eucalyptus microcarpa*	Grey Box	63	L	Y	1	N	N	70	65	Y	Retain
710	*Eucalyptus microcarpa*	Grey Box	56	L	Y	1	N	N	70	65	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
711	*Eucalyptus microcarpa*	Grey Box	64	L	Y	1	N	N	70	65	Y	Retain
712	*Eucalyptus microcarpa*	Grey Box	74	L	Y	1	N	N	70	65	Y	Remove
713	*Eucalyptus microcarpa*	Grey Box	74	L	Y	1	N	N	70	65	Y	Retain
714	*Eucalyptus microcarpa*	Grey Box	64	L	Y	1	N	N	70	65	Y	Retain
715	*Eucalyptus microcarpa*	Grey Box	64	L	Y	1	N	N	70	65	Y	Retain
716	*Eucalyptus microcarpa*	Grey Box	54	L	Y	1	N	N	70	65	Y	Retain
717	*Eucalyptus microcarpa*	Grey Box	50	L	Y	1	N	N	70	65	Y	Retain
718	*Eucalyptus microcarpa*	Grey Box	76	L	Y	1	N	N	70	65	Y	Retain
719	*Eucalyptus microcarpa*	Grey Box	60	L	Y	1	N	N	70	65	Y	Retain
720	*Eucalyptus microcarpa*	Grey Box	63	L	Y	1	N	N	70	65	Y	Retain
721	*Eucalyptus microcarpa*	Grey Box	59	L	Y	1	N	N	70	65	Y	Retain
722	*Eucalyptus microcarpa*	Grey Box	50	L	Y	1	N	N	70	65	Y	Retain
723	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
724	*Eucalyptus microcarpa*	Grey Box	65	L	Y	1	N	N	70	65	Y	Retain
725	*Eucalyptus microcarpa*	Grey Box	140	L	Y	1	N	N	70	65	Y	Retain
726	*Eucalyptus microcarpa*	Grey Box	71	L	Y	1	N	N	70	65	Y	Retain
727	*Eucalyptus microcarpa*	Grey Box	100	L	Y	1	N	N	70	65	Y	Retain

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
728	*Eucalyptus microcarpa*	Grey Box	46	L	Y	1	N	N	70	65	Y	Retain
729	*Eucalyptus microcarpa*	Grey Box	57	L	Y	1	N	N	70	65	Y	Retain
730	*Eucalyptus microcarpa*	Grey Box	46	L	Y	1	N	N	70	65	Y	Retain
731	*Eucalyptus microcarpa*	Grey Box	77	L	N	1	N	N	70	65	Y	Retain
732	*Eucalyptus microcarpa*	Grey Box	88	L	N	1	N	N	70	65	Y	Retain
733	*Eucalyptus microcarpa*	Grey Box	125	L	N	1	N	N	70	65	Y	Retain
734	*Eucalyptus microcarpa*	Grey Box	76	L	N	1	N	N	70	65	Y	Retain
735	*Eucalyptus microcarpa*	Grey Box	55	L	N	1	N	N	70	65	Y	Retain
736	*Eucalyptus microcarpa*	Grey Box	123	L	N	1	N	N	70	65	Y	Retain
737	*Eucalyptus microcarpa*	Grey Box	86	L	N	1	N	N	70	65	Y	Retain
738	*Eucalyptus microcarpa*	Grey Box	70	L	N	1	N	N	70	65	Y	Retain
739	*Eucalyptus microcarpa*	Grey Box	141	L	N	1	N	N	70	65	Y	Retain
740	*Eucalyptus microcarpa*	Grey Box	65	L	N	1	N	N	70	65	Y	Retain
741	*Eucalyptus microcarpa*	Grey Box	58	L	N	1	N	N	70	65	Y	Retain
742	*Eucalyptus microcarpa*	Grey Box	46	L	N	1	N	N	70	65	Y	Retain
743	*Eucalyptus microcarpa*	Grey Box	99	L	N	1	N	N	70	65	Y	Retain
744	*Eucalyptus microcarpa*	Grey Box	155	L	N	1	N	N	70	65	Y	Remove

Number	Scientific Name	Common Name	DBH	Large/Small Scattered Trees	Large Tree within a Patch	Number of Hollows	Habitat Value	Fauna activity	Benchmark DBH	Health	Hollow-bearing Tree	Retain or Remove
745	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
746	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
747	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
748	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
749	*Eucalyptus microcarpa*	Grey Box	70	L	Y	1	N	N	70	65	Y	Retain
750	*Stag*		88	L	Y	N	N	N	70	0	N	Retain
751	*Stag*		70	L	N	N	N	N	70	0	N	Retain
752	*Stag*		123	L	Y	N	N	N	70	0	N	Retain

APPENDIX C FAUNA SURVEY REPORT

Fauna Survey of the Muskerry Solar Farm, Muskerry, Victoria.

Wildlife & Ecology

May 2021

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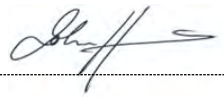
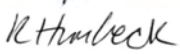
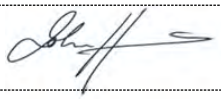
1.0	Author	John Harris	29 March 2021	
1.0	Reviewer	Kathryn Himbeck	29 March 2021	
1.1	Revision	John Harris	8 May 2021	

ACKNOWLEDGEMENTS

This survey was undertaken by Wildlife & Ecology during January and February 2021. The report was written by John Harris. GIS mapping was undertaken by Kathryn Himbeck.

The field surveys were conducted by John Harris and Kathryn Himbeck.

Michelle Patrick of NGH Consulting provided information and documents relating to the proposed sites.

Rob Gration from Eco Aerial undertook the analysis of the Anabat® data.

Cover photo: Looking north along Muskerry East School Road, showing roadside vegetation and scattered paddock trees in the northern section of the study area.

CONTENTS

1. BACKGROUND

1.1. INTRODUCTION

NGH Consulting engaged Wildlife & Ecology to undertake a brief fauna survey of the proposed Muskerry Solar Farm sites (the study area) in Muskerry during January and February 2021. The aim of the project was to improve the knowledge and understanding of the fauna currently residing in the reserve to inform potential impacts the proposed solar farm might have.

A range of survey techniques were used to sample the reserve. These included camera trapping, audio recordings using Anabat® audio devices, bird surveys, call playback and spotlight surveys for nocturnal fauna. NGH Consulting had previously undertaken a database review of fauna records from a 10km buffer of the syudy area.

All surveys conducted as set out in this report have been undertaken and completed in accordance with Wildlife & Ecology's animal ethics approval and Department of Environment, Land, Water and Planning Wildlife Research Permit 10009539.

Image 1: Brush-tailed Phascogale, observed while conducting spotlight surveys along Axedale – Toolleen Road, in late January.

2. STUDY AREA and SURROUNDING AREA

2.1. STUDY AREA

The study area consists of two distinct areas; northern and southern sections. Both sections primarily consist of open paddocks, with areas of remnant vegetation, revegetation areas, scattered indigenous trees, farm infrastructure such as fences, sheds and dams. The northern section is bordered to the west by Muskerry East School Road, north by Toolleen Angle Road, private property to the east and to the south. This section is approximately 455ha of farming land zoned Farm Zone 1 (FZ1) under the Campaspe Planning Scheme. The southern section is bordered on the northern and north-eastern side by Muskerry East School Road, lower eastern side by Murphy's Lane, southern side by Axedale – Toolleen Road and the western side by private property, Dwyer's Road and again by private property to the corner of Craig Road. This section is approximately 475ha of farming land partly zoned Farm Zone 1 (FZ1) under the Campaspe Planning Scheme and Farming Zone (FZ) under the Greater Bendigo Planning Scheme.

Two watercourses, Back Creek and Burke Creek, flow diagonally through the southern section from south-east to north-west, converging before joining Forest Creek to eventually flow into the Campaspe River at Barnadown. Back Creek is located at the top right corner with Burke Creek flowing from the south-east corner to the upper western boundary of this section.

The location of the study area and surrounding landscapes is shown in Figure 1.

2.2. SURROUNDING AREA

The surrounding area supports primarily farming land with Crosbie Nature Conservation Reserve approximately 2km to the east, Knowsley State Forest approximately 7km south-west and Mt Sugarloaf Nature Conservation Reserve approximately 9km to the west. Gold mining and quarrying are also significant land uses within a 10km radius of the study area.

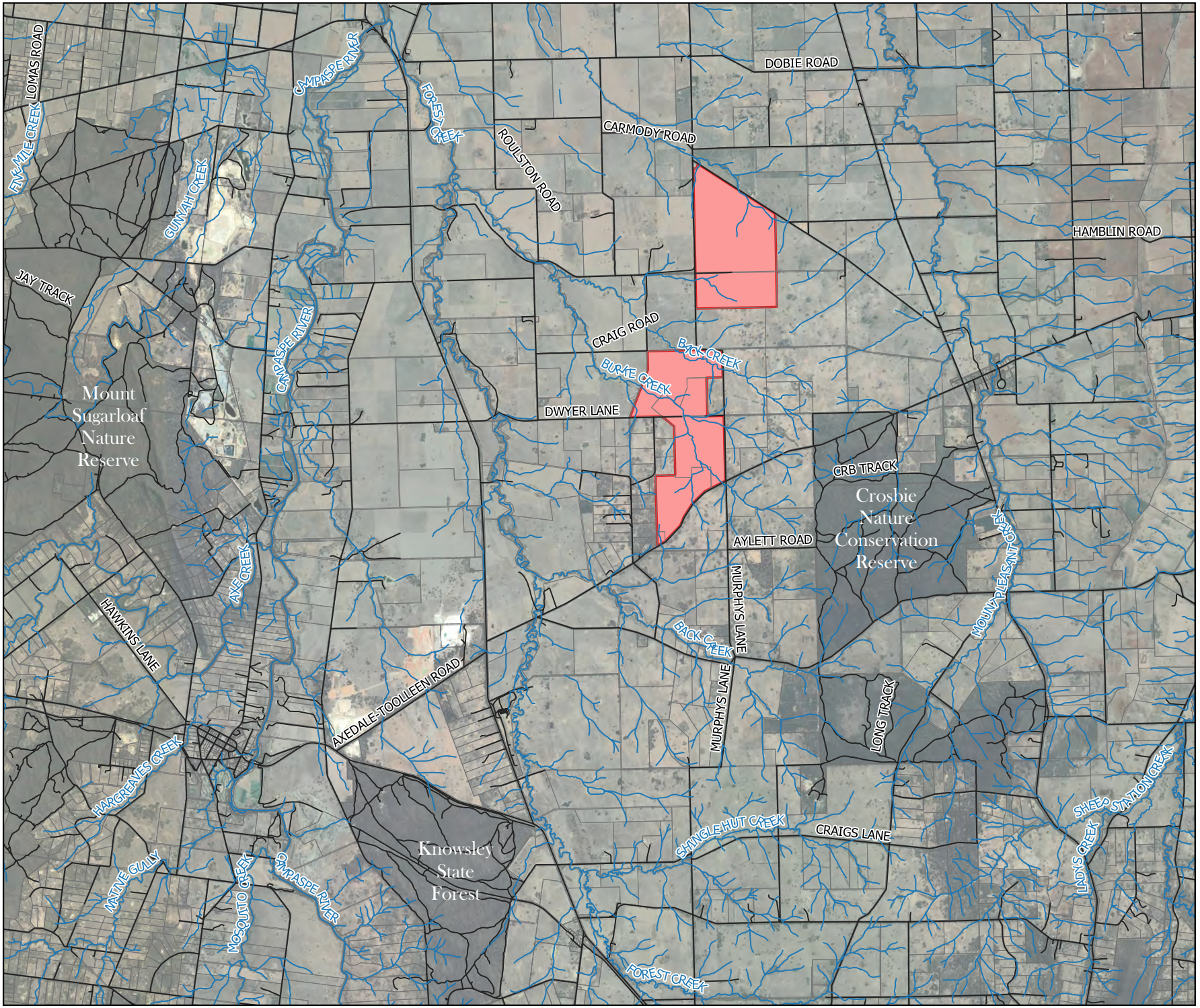


FIGURE 1
Location of Study Area & Surrounds, Muskerry Solar Farm

LEGEND

Study Area

GDA94 : A4
1:110000

0 1 2 3 4 km

Map created: 29 March 2021
Author: K. Himbeck

Wildlife & ECOLOGY

3. Survey Locations

All of the survey locations were based around eight transects, four in the northern section (refer to Figure 2A) and four in the southern section (refer to Figure 2B). The transects were predominantly along roads and tracks either along the boundaries of the two sections or within 'paper roads' with one being within a large stand of remnant trees within a paddock.

As the roadsides generally supported the only remnant vegetation with any connectivity to areas outside of the study area, it was considered that they were the most suitable areas to undertake each of the different surveys whilst allowing for a consistent methodology to be applied, especially for the bird and spotlighting surveys. The cameras and anabats are also located along these transects. The description and characteristics of the eight transects are summarised in Table 1 below and shown in Figure 2A & 2B.

Table 1. Transect descriptions and characteristics, Muskerry Solar Farm.

Transect	Distance	Description
Northern Section		
Transect 1: Toolleen Angle Road	2km	Toolleen Angle Road is a bitumen road that had limited remnant trees in the narrow road reserve. It supports predominantly exotic grasses in the understorey. The study area side of the road was devoid of trees for most of the transect length. The north-eastern side of the road had strips of planted native vegetation providing habitat for small birds.
Transect 2: Muskerry East School Road (Image 3)	3km	This transect extends along the road reserve (both sides of the road) from the boundary of the old school property, near the corner of Toolleen Angle Road, in the north along Muskerry East School Road to the southern boundary of the section. The section of transect, south of Joyce's Bridge Road was a narrow, less used gravel road with predominantly remnant trees, many with large hollows. North of Joyce's Bridge Road, the road was wider with more traffic. Large trees were along both sides, however the eastern side seemed to have a more consistent cover of trees than the western side of the road. Farms dams were located inside the paddocks on both sides of the road along this section. Northern sections supported non-indigenous eucalypts and other tree species that had been planted along the boundary fence line of the property west of the road.
Transect 3: Remnant Patch (Image 4)	0.5km	Represents the perimeter of a remnant stand of trees. The stand supports various sized 'Box' trees, from small to large, supporting a range of hollow sizes with plenty of fallen timber on the ground. The understorey was predominantly indigenous grasses with large open area of bare soil of organic matter including sheep manure. The area was used by sheep as a 'camp' overnight.
Transect 4: Power Easement track (Image 5)	1.2km	Extends from Muskerry East School Road, just south of Joyce's Bridge Road and followed the east/west easement of a 'paper road' to a paddock gate, then through the existing power easement along a line of mature eucalypts finishing at a fence line. The western section supports a shrubby understorey within the road reserve with considerable immature eucalypt regrowth in the paddock to the south opening out to a grassy paddock under the power lines then a stand of mature gums along the fence line. The stand of mature gums supported large amounts of fallen timber but limited vegetation in the understorey as it is likely to be used by sheep as a 'camp' overnight. Hollows of all sizes were present within the trees. A farm dam was just inside the paddock on the northern side of the track.

Transect	Distance	Description
Southern Section		
Transect 5: Dwyer Lane West	0.5km	Road reserve that extends from Weston Drive to the east and the western edge of the study site to the west along Dywer Lane. This transect supported an open habitat structure with predominately grassy understorey with scattered large trees. The adjoining paddocks were predominantly cleared, although there was a treed area surrounding a dam on the southern side of the road.
Transect 6: Murphy's Lane (Image 6)	2.6km	This transect extended from Axedale-Toolleen Road in the south, along Murphy's Lane to Dwyer Lane and recommenced following a gap of approximately 820m aligning with the boundary of a property excised from the southern section. The northern section of the transect encompassed the southern section of Muskerry East School Road that commences north of Dywer Lane. There was good connectivity and some diversity of habitat along this transect with large eucalypt trees along the road reserve, patches of Yellow Gum in the paddocks along with other native shrubby vegetation within the study area, creek crossings and open paddocks to the east and north of this transect. Lots of indigenous understorey species mixed with pasture grasses in the road reserve.
Transect 7: Dwyer Lane East (Image 7)	1km	This transect extended from Murphy's Lane in the east along a 'paper road' and a heavily eroded dry creek bed to the corner of a paddock/Burke Creek in the west. The vegetation was heavily wooded along its entire length. The trees up unto gate were in good condition, while many if not most, between the paddock gate and Burke Creek were senescent or stags with lots are hollows of varying sizes. There was also considerable fallen timber in this area. Farm dams were on both sides of the road reserve
Transect 8: Axedale – Toolleen Road	2.1km	This transect was along the length of the southern boundary of the study area, extending from Murphy's Lane in the east to a farmhouse in the south-west corner. The road reserve supports good connectivity along its length and into the paddocks on the southern side of the road and the large block of remnant vegetation immediately to the west of the study area. There were numerous large trees, with canopies stretching across the road and hollows of various sizes present throughout.

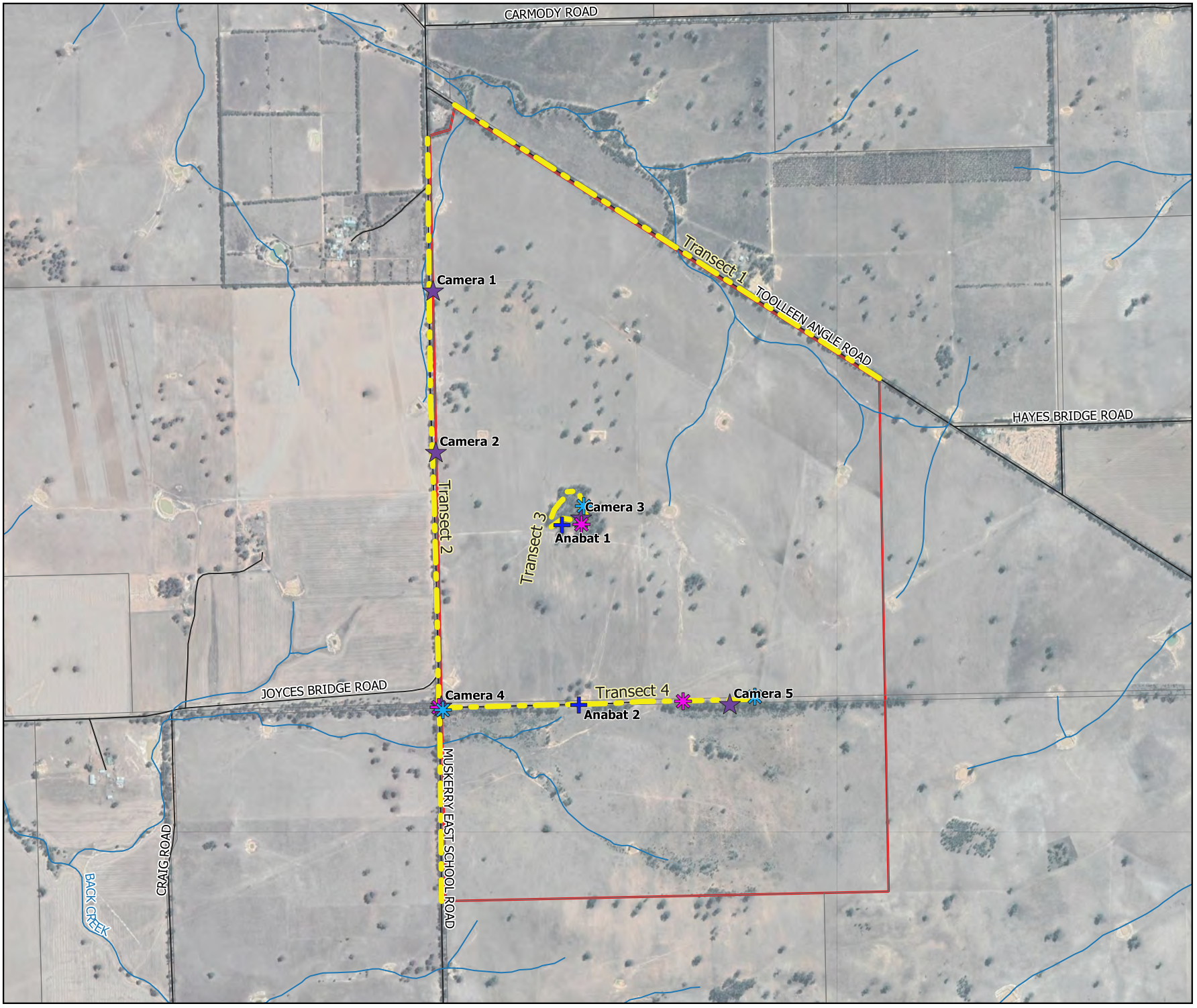


FIGURE 2A
Location of Survey Sites, Northern Section, Muskerry Solar Farm

LEGEND

- Study Area

Survey Types

- Anabat
- Camera
- Survey Transects

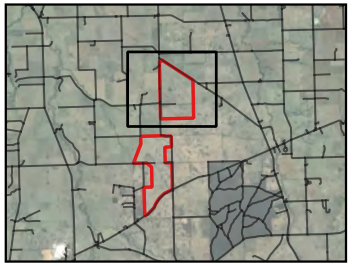
Call Playback

- Survey 1 (Jan 2021)
- Survey 2 (Feb 2021)

GDA94 : A4
1:20,000

0 0.2 0.4 0.6 0.8 km

Map created: 29 March 2021
Author: K. Himbeck



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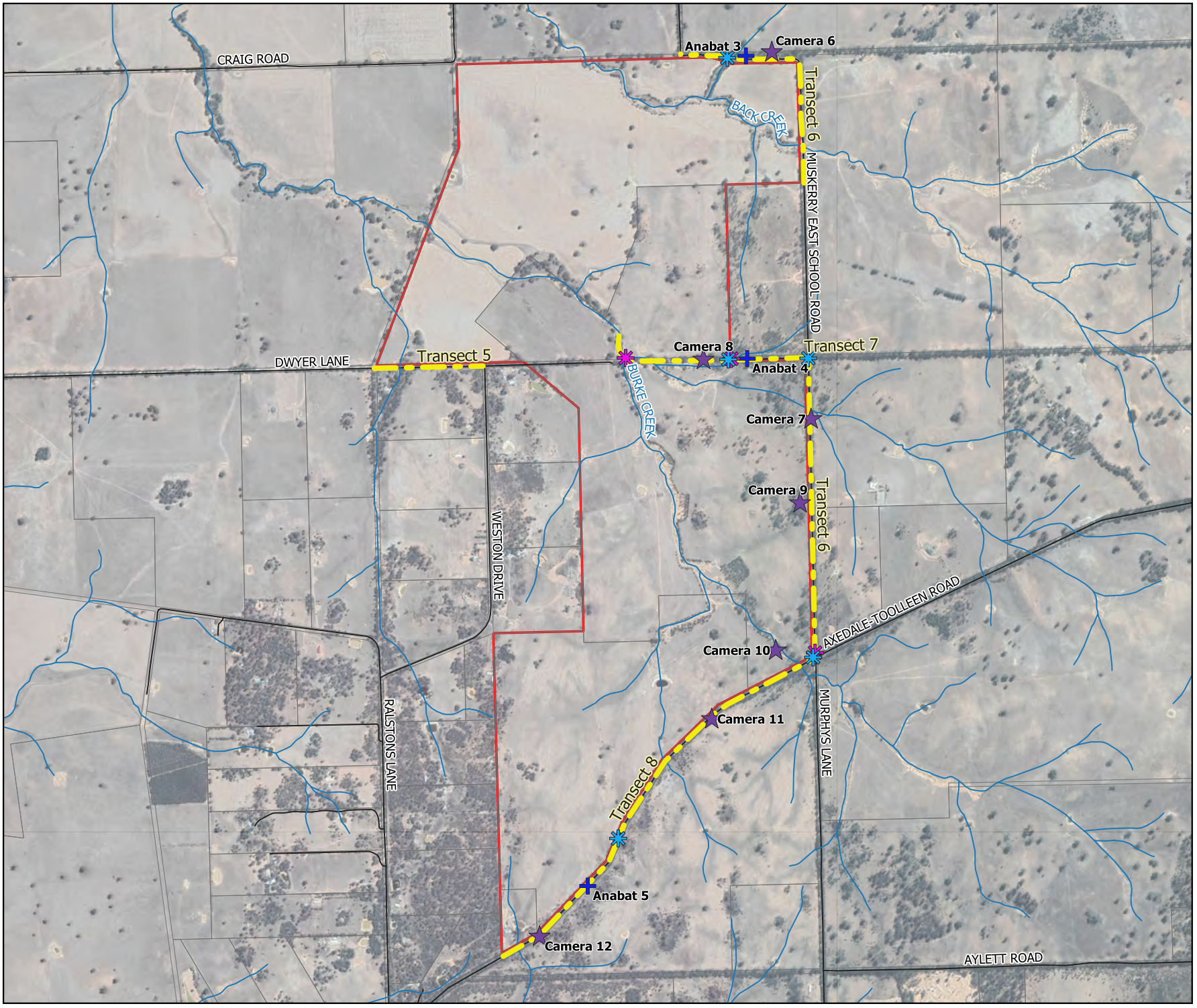


FIGURE 2B
Location of Survey Sites, Southern Section, Muskerry Solar Farm

LEGEND

- Study Area

Survey Types

- Anabat
- Camera
- Survey Transects

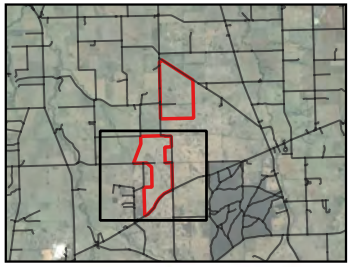
Call Playback

- Survey 1 (Jan 2021)
- Survey 2 (Feb 2021)

GDA94 : A4
1:24,000

0 0.25 0.5 0.75 1 km

Map created: 29 March 2021
Author: K. Himbeck



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4. SURVEY METHODOLOGY

To meet the objectives of the survey, a number of sampling techniques were employed that are designed to efficiently gather as many species as possible over a short period of time. These included camera trapping, spotlighting, audio recording devices, call playback, bird surveys and incidental observations. In addition to the field surveys, a desktop survey of historical records and available literature was undertaken. All methods are described in more detail below, while Figures 2A and 2B identify the locations where each of the survey methods were undertaken.

4.1. DESKTOP SURVEY AND LITERATURE REVIEW

A desktop review was undertaken by NGH Consulting to gather the available historical fauna data previously recorded from a 10km buffer of the proposed Muskerry Solar Farm. The information resources that were used include:

Victorian Biodiversity Atlas (VBA)

The VBA is maintained by the Department of Environment, Land, Water and Planning (DELWP) and is a web-based information system designed to manage information about wildlife in Victoria. The VBA was queried for all fauna species that have been recorded within 5km of the study area. The 5km buffer was chosen to reflect the fauna species that may occur within the immediate vicinity to the study area, given that a smaller buffer (1km) produced limited records. This was not surprising given the land use of the district and lack of nearby reserves, all of which can impact on the number of fauna records in the VBA.

Protected Matters Search Tool (PMST)

The PMST, maintained by the Commonwealth Department of Agriculture, Water and the Environment (DAWE), a predictive database that identifies nationally listed species and communities under the *Environment Protection and Biodiversity Conservation Act 1999* that may occur in a given search area.

From these two databases, NGH Consulting undertook an assessment of the 'Likelihood of Occurrence' for threatened species listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999,* the Victorian *Flora and Fauna Guarantee Act 1988* and Victorian advisory lists (DSE 2009 and DSE 2013).

Wildlife & Ecology also reviewed bird records from eBird Australia (eBird) for the same area to further add to the knowledge of avifauna previously recorded from the surrounding area. eBird is maintained by the Cornell Lab of Ornithology at Cornell University, New York and collects observations from birders through a web portal managed and maintained by local partner conservation organisations. eBird provides a rich data source for basic information on bird abundance and distribution at a variety of spatial and temporal scales. The 'hotspots' function was used to search the local area for previous records, producing a list of all bird species previously recorded (including date) by bird watchers from the reserve.

The assessment of the 'Likelihood of Occurrence' undertaken by NGH Consulting along with personal knowledge of the fauna of the region helped to determine the targeted species. From the 'Likelihood of Occurrence' the threatened fauna that were identified as having a 'medium' or 'high' likelihood within the study area (only birds and an arboreal mammal, the Brush-tailed Phascogale *Phascogale tapoatafa tapoatafa)* were targeted with survey techniques appropriate for these species being used for this project. The potential for threatened microbat species, which didn't come up during the various desk top reviews, was also considered and survey techniques employed. These techniques are described in detail below.

4.2. CAMERA TRAPPING (C)

As the focus of the camera-trapping was threatened arboreal mammals, the cameras were set in secure areas that represented slightly different habitat attributes across the study area. Sites with hollow bearing trees, fallen timber and good connectivity across the landscape were targeted. None of the cameras were set on fallen logs due to animal ethics concerns that foxes and cats may 'wise-up' to bait stations on, or close to, the ground and potentially prey on the local native fauna that come into the bait stations. DELWP's standard for ground-based camera-trapping for small mammals is three weeks.

Passive-infrared cameras were used to gather species presence data for a wide range of vertebrate taxa, especially small, medium and large mammals. These cameras use an infrared sensor trigger to detect movement of wildlife and take a photo with an infrared flash when required, particularly at night. A lure is included in front of each camera to increase the detection of animals present within the area.

Nine Little Acorn® Infra-red motion cameras were set in trees at a height of approximately 3m for a period of 26 days from late January 2021, operating 24 hours a day. An additional three Reconyx Hyperfire Professional® cameras were set similarly for two nights on 22 February 2021. Each camera was secured to a tree with the bait station attached to a nearby tree (Image 10), approximately two metres away. Infra-red cameras can have a delay between detecting movement and taking a photo, due to focussing and exposure considerations. The cameras used were equipped with side sensors which were activated to increase the probability of capturing all animals that trigger the camera.

The lure used in all bait stations for this project consisted of a standard mixture of peanut butter, golden syrup, vegetable oil and rolled oats and is widely used for general fauna surveys. Each camera was set to take a burst of three photos each time it was activated by movement, with a delay of 30 seconds before being ready to take the next burst of photos. After the 26 days, the nine cameras were collected along with the three deployed for two nights, images downloaded, reviewed and summarised.

4.3. SPOTLIGHTING (S)

Spotlighting involved the use of powerful Klaris ® FH10 and Led Lenser® M10 LED torches with lighting outputs of 700 and 1000 lumens (lm) respectively with an effective beam range of 500m and 200m respectively (makers specifications for both torches). These torches were used to detect reflected eye-shine of nocturnal mammals, herpetofauna and owl species. No filters were used on the torches as filters severely reduce the lighting output and effective beam range (for the Klaris this is only 100lm for the red LED and only 225m), however, as per our approved animal ethics once an animal was found the light intensity was reduced by changing settings on the torch or moving the torch so that the animal was only in the periphery of the beam.

The surveys were undertaken by slowly driving along the roads, or walking where driving was not possible, along the transects. This survey method can provide data on the presence of species along with, to a degree, measures of relative abundance.

The spotlighting survey was undertaken on an evening when the weather was appropriate for the various species targeted. Spotlighting was conducted between 21:00 and 00:30 along the roads and tracks within and adjacent to the study area. The above LED torches were used to scan the vegetation and ground on both sides of the roads and tracks looking for eye-shine, the movement of vegetation or fauna.

4.4. AUDIO RECORDING DEVICES (A)

Two Anabat Express® (Image 11) were set up in remnant vegetation either in the paddocks or beside the tracks and road reserves or near dams in the northern and southern sections. The aim was to determine which microbat species were inhabiting or using the various resources (flyways, water points and foraging

areas) by recording the echo locations of the microbats as they flew past the audio recorder. Echo locations are high frequency sound waves, measured in kilohertz (kHz), that microbats use to navigate through their environment and search for food such as flying beetles, moths and mosquitos. Most microbat species have echo locations outside of the frequency range that humans can hear (3-20kHz) with the average bat call being around 50kHz (Churchill 2008). The Anabat detector records these bat calls and with the help of computer software and a reference library of known calls of each species, the calls can be reliably compared to determine which microbat species, or at least genus, are present during the recording time frame. The time frame for this survey was from dusk to dawn each night.

Five sites were chosen throughout the duration of recordings with two sites in the northern section and three in the southern section. These sites and duration of recording are shown in the table below.

4.5. CALL PLAYBACK (P)

Call playback utilises the recorded calls of a species to elicit a response from that species or other animals within the area. This technique is useful for a range of vocal taxa, including frogs, arboreal mammals, owls and some other bird species and can be used to determine the presence of target species. This survey method is most effective when timed to coincide with vocal periods of the target species, such as prior to the or during the breeding season.

Call playback was used for threatened nocturnal birds, namely owls. A digital media device was used to broadcast pre-recorded calls, of the potential species Barking and Powerful Owls, through speakers across the various locations within the two sites.

The call playback methodology was adapted from that outlined for forest owls in forestry coupes by DELWP (DELWP 2020). The methodology included a period of at least five minutes listening for owls before initiating the broadcast of calls. The calls used are those used by DELWP for the forestry surveys. Each call has a duration of two minutes and then there is two minutes of listening before playing the next call.

The call playback locations are indicated on Figures 2a and 2b.

During all of the spotlight transects, particular effort was made to listen for owl calls while conducting the transect surveys.

4.6. BIRD SURVEYS (B)

Bird surveys were undertaken during the early morning and late afternoon on separate days along the roads and tracks within and adjacent to the sites. These time periods were used to take advantage of when bird species are most active during the day. The timing of each survey ensured that they were not undertaken on the same day or afternoon of one day and morning of the next.

The surveys involved driving, or walking where driving was not possible, the roads and tracks observing birds present and listening for calls, stopping regularly to search the trees and other vegetation for birds. A vehicle speed of 5-8km/h was maintained wherever possible.

All bird species either seen or heard during the transect surveys were recorded along with numbers of individuals, on the transect survey record sheets.

4.7. INCIDENTAL OBSERVATIONS (I)

Any fauna observed or heard during the above activities were recorded with particular focus on reptile species as there was no formalised surveying for this fauna groups. Occasional log-turning was also undertaken in search of reptiles, small mammals and amphibians.

Any bird seen or heard outside of the bird survey occasions were identified and noted.

4.8. SURVEY LIMITATIONS

Zoological surveys commonly fail to record all species present in a study area due to reasons that include: survey time constraints, timing, fauna migration patterns, the relative obscurity of some species and limitation to the range of fauna survey techniques able to be used. For these reasons it is likely that some common species may have been missed during a fauna assessment that was conducted over a relatively short time frame. It is highly likely that additional species of fauna would be recorded given a greater sampling effort and a survey period covering multiple seasons.

In this study, fauna observations were undertaken in late January into February. Due to the brevity of the survey and the lack of seasonal range it is likely that some cryptic, uncommon, migratory or transitory species that utilize the area may not have been recorded such as the autumn/winter migrant the Swift Parrot *Lathamus discolor,* a Commonwealth and State listed threatened species

All parts of the study area were not surveyed due to time constraints and the desire not to interfere with the farming practices however, even with these restrictions it is considered that the most suitable habitats for the targeted fauna species were surveyed.

Based on budgetary constraints, the sheer volume of Anabat recordings (13000+), were not able to be analysed so it was decided, following consultation with the analysist, that only the first three hours of each night would be reviewed.

While these limitations are acknowledged, the range of survey techniques conducted during this fauna survey were specifically chosen as they were considered to achieve the desired results. Therefore, it is considered that a relatively comprehensive species list, except for reptiles and frogs, was compiled given these limitations.

5. RESULTS

A total of 57 species, or taxa, of fauna were recorded during the survey. Of these, birds comprised 33 species, 21 mammal species or taxa three reptile. The full list of species recorded during the survey can be found in Table 6 below. Of the 57 species, two species; Brush-tailed Phascogale (Image 1) and Lace Monitor *Varanus varius* (Image 2) and are considered threatened in Victoria (vulnerable and endangered, respectively) with the phascogale also listed under the *Flora and Fauna Guarantee Act 1988.* All four introduced species recorded were mammals.

5.1. CAMERA TRAPPING

A total of 12 cameras were set, with nine of the cameras set in late January and another three set for two nights on the return visit in February. Each camera set in late January was out for 26 days. The location of where each camera was set is shown in Table 2 and Figure 2A & 2B.

Collectively, nearly 43 000 photos were taken from the cameras during the course of the survey. Our Principal and Senior Zoologists, both with many years of camera-trapping and image review experience along with very good knowledge of the species that may be captured, reviewed all of the images. From these images, seven species of fauna were recorded including three mammals and four birds. The mammals were the targeted fauna for these cameras with the threatened Brush-tailed Phascogale (Images 1 and 12) and Krefft's (formerly Sugar) Glider *Petaurus notatus* at four of the camera locations and Yellow-footed Antechinus *Antechinus flavipes* at three locations. The Brush-tailed Phascogale locations are shown in Figure 4 and in Table 6 below. The recorded birds were common species like Australian Magpie and White-winged Chough, were in the background of the photos.

Table 2. Location and dates that infra-red cameras were deployed at the proposed Muskerry Solar Farm.

Camera	**Location** (transect no.)	Transect	Duration
1	Muskerry East School Road (1)	2	29 January – 24 February 2021
2	Muskerry East School Road (2)	2	27 January – 22 February 2021
3	Remnant Patch	3	27 January – 22 February 2021
4	Muskerry East School Road (3)	2	27 January – 22 February 2021
5	Row of trees east of the power easement	4	27 January – 22 February 2021
6	Muskerry East School Road (4) ('Murphy's Lane')	6	22-24 February 2021
7	Murphy's Lane	6	28 January – 23 February 2021
8	Dwyer's Road 'East' (S)	7	28 January – 23 February 2021
9	Yellow Gums along Murphy's Lane (Image 8)	6	28 January – 23 February 2021
10	Burke Creek, downstream of Axedale-Toolleen Road (Image 9)	8	28 January – 23 February 2021
11	Axedale – Toolleen Road (1)	8	22-24 February 2021
12	Axedale – Toolleen Road (2)	8	22-24 February 2021

5.2. SPOTLIGHTING

Spotlighting was undertaken along the same defined transects as the bird surveys (shown in Figure 2A & 2B) on one night for each of the northern and southern sections in late January 2021 and again in late February 2021 and shown in Table 3 below. A total of 10 species of mammals and nocturnal birds were

recorded during these surveys. Bird species that were roosting and whose species had been recorded during the associated bird surveys were not included in these results. The fauna recorded during the spotlighting is presented in Table 6 on the following page.

The most notable fauna recorded during the spotlight surveys was a Brush-tailed Phascogale (Image 1) recorded at the southern end of Transect 8 on Axedale-Toolleen Road, opposite the farm house. These spotlight surveys also recorded five species not recorded during other survey activities. Of these, the two possum species Eastern Ringtailed Possum *Pseudocheirus peregrinus* and Common Brushtailed Possum *Trichosurus vulpecula* and the Tawny Frogmouth *Podargus strigoides* were expected to be present in the area while the other two species found were Red Fox * *Vulpes vulpes* and European Rabbit **Oryctolagus cuniculus.* Of interest, Krefft's Gliders were observed feeding in gum trees in Transects 2 (Image 14) and 8.

Unidentified microbats were observed flying along the tracks during the survey with the only microbat positively identified during the spotlight surveys being the White-striped Freetail Bat *Austronomus tadarida* which was heard flying over the tree canopy. This species is the only audible microbat likely to be encountered in southern Victoria, making identification easier.

Table 3. Location and dates when each spotlight transect was undertaken at the Muskerry Solar Farm.

Location	Survey	
	Night 1	Night 2
North		
Transect 1	27 January 2021	23 February 2021
Transect 2	27 January 2021	23 February 2021
Transect 3	27 January 2021	23 February 2021
Transect 4	27 January 2021	23 February 2021
South		
Transect 5	27 January 2021	23 February 2021
Transect 6	28 January 2021	22 February 2021
Transect 7	28 January 2021	22 February 2021
Transect 8	28 January 2021	22 February 2021

5.3. AUDIO RECORDING DEVICES

The results from the two Anabat Express® devices resulted in a high number of calls recorded from the southern sites, particularly from Anabat #2 with over 9,000 recordings in total. In total, across the two detectors, there are nearly 13,000 files after filtering out extraneous noise. Table 4 outlines the locations and date ranges for the deployment of the Anabat® detectors across the study area.

Table 4. Anabat locations and number of recording nights at the proposed Muskerry Solar Farm.

Anabat No.	Location	Location	Duration
1	Remnant patch	Northern section	27-29 January 2021
2	Dam near power easement	Northern section	29 January – 22 February 2021
3	Murphy's Lane (Muskerry East School Road)	Southern section	27-29 January 2021
4	Dwyer's Road 'east'	Southern section	29 January – 24 February 2021
5	Axedale – Toolleen Road	Southern section	22-24 February 2021

Eight taxa of microbats were been identified to species level, based on their echo location frequencies, with an additional three genera identified where the actual species was not able to be determined. These species are identified in Table 5 and which locations they were recorded. An example of the results from the Anabat analysis is provided in Figure 3.

Figure 3: Sonogram of the echo locations of the Inland Broadnosed Bat, showing frequency range between 34 and 53kHz.

5.4. CALL PLAYBACK

Call playback was conducted during the spotlighting surveys, at various locations in each section to elicit responses from nocturnal bird species, primarily the threatened Barking Owl *Ninox connivens connivens* and Powerful Owl *Ninox strenua*. The use of call playback for these owls did not elicit any response from either of these two species or other fauna.

5.5. BIRD SURVEYS

Thirty-two bird species were recorded during the two rounds of surveys in late January and late February with the survey details being shown in Tables 5a-d below. All birds identified during each transect survey were recorded and counted. The birds recorded on each transect can be found in Table 6 below.

Table 5a. Bird survey 1 transect data for the northern site of the proposed Muskerry Solar Farm.

Survey		Transect 1	Transect 2	Transect 3	Transect 4
Site Name		Toolleen Angle Rd	Muskerry East School Road	Remnant in paddock	Power easement
Transect length		2.0 km	3.0 km	~ 500m	1.2 km
Session		AM	AM	AM	AM
Date		27/01/2021	27/01/2021	27/01/2021	27/01/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	**Start**	09:05	07:15	08:20	07:30
	End	09:20	09:05	08:55	08:10
	Total	15 mins	40 mins	35 mins	40 mins
Co-ord's	**Start**	287299 / 5938391	287263 / 5935266	287772 / 5936810	287234 / 5936016
	End	288956 / 5937337	287194 / 5938282	N/A	288476 / 5936057
Notes		Undertaken from the vehicle due to being a narrow, bitumen road with moderate traffic.	Survey interrupted by survey transects 3 & 4.	Entirely on foot around remnant patch of trees. Includes opportunistic searches for reptiles.	Incidental observations on the return trip to the track.
Weather		Cool, fine with gusty winds			
Session		PM	PM	PM	PM
Date		28/01/2021	28/01/2021	28/01/2021	28/01/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	**Start**	16:50	16:15	17:23	17:47
	End	17:10	16:46	17:41	18:10
	Total	20 mins	31 mins	18 mins	23 mins
Co-ord's	**Start**	287299 / 5938391	287263 / 5935266	287772 / 5936810	287234 / 5936016
	End	288956 / 5937337	287194 / 5938282	N/A	288476 / 5936057
Notes		Undertaken from the vehicle due to being a narrow, bitumen road with moderate traffic.	Undertaken from the vehicle, stopping frequently as required.	Entirely on foot. Walked around remnant patch of trees	Driving slowly and stopping frequently as only internal access track.
Weather		Strong gusty winds, fine, mild & overcast			

Table 5b. Bird survey 1 transect data for the southern site of the proposed Muskerry Solar Farm.

Survey		Transect 5	Transect 6	Transect 7	Transect 8
Site Name		Dwyers Lane - west	Murphy's Lane	Dwyers Lane - east	Axedale-Toolleen Rd
Transect length		520 m	1.1 km	1.0 km	2.1 km
Session		PM	PM	PM	PM
Date		28/01/2021	27/01/2021	27/01/2021	27/01/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	**Start**	18:23	17:20	17:36	18:36
	End	18:30	18:28	18:00	18:46
	Total	7 mins	25 mins	24 mins	10 mins
Co-ord's	**Start**	285807 / 5932903	287905 / 5931545	287871 / 5932953	287876 / 5931508
	End	286332 / 5932914	287272 / 5934376	286995 / 5933022	286429 / 5930110
Notes		Short section.	Survey interrupted by survey transect 7.	350m of the western half (inside the gate) was traversed on foot.	Undertaken from the vehicle due to being a busy bitumen road.
Weather		Cool, fine with gusty winds	Warm (26°C), fine, light winds		
Session		AM	AM	AM	AM
Date		27/01/2021	29/01/2021	29/01/2021	29/01/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	**Start**	N/A	07:53	08:18	07:35
	End	N/A	08:17	08:39	07:53
	Total		24 mins	21 mins	18 mins
Co-ord's	**Start**	285807 / 5932903	287272 / 5934376	287871 / 5932953	286429 / 5930110
	End	286332 / 5932914	287905 / 5931545	286995 / 5933022	287876 / 5931508
Notes		Incidental observations only for approximately 20mins at midday	Survey interrupted by survey transect 7. Undertaken from the vehicle, stopping frequently as required.	350m of the western half was traversed on foot.	Undertaken from the vehicle due to being a busy bitumen road.
Weather		Warm, partly cloudy, light winds	Mild (18°C), occasional light showers, light winds, gusty at times		

Table 5c. Bird survey 2 transect data for the northern site of the proposed Muskerry Solar Farm.

Survey		Transect 1	Transect 2	Transect 3	Transect 4
Site Name		Toolleen Angle Rd	Muskerry East School Road	Remnant in paddock	Power easement
Transect length		2.0 km	3.0 km	~ 500m	1.2 km
Session		AM	AM	AM	AM
Date		23/02/2021	23/02/2021	23/02/2021	23/02/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	Start	07:16	07:34	08:34	16:45
	End	07:32	07:53	08:55	17:00
	Total	16 mins	19 mins	21 mins	32 mins
Co-ord's	Start	288956 / 5937337	287194 / 5938282	287772 / 5936810	287234 / 5936016
	End	287299 / 5938391	287263 / 5935266	N/A	288476 / 5936057
Notes		Undertaken from the vehicle due to being a narrow, bitumen road with moderate traffic.	Undertaken from the vehicle, stopping frequently as required.	Entirely on foot. Walked around remnant patch of trees	Incidental observations on the return trip to the track.
Weather		Cool (10°C), fine, partly cloudy, 65% humidity, light winds, gusting at times			
Session		PM	PM	PM	PM
Date		24/02/2021	24/02/2021	24/02/2021	24/02/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	Start	16:00	16:13	17:17	16:33
	End	16:12	16:30	17:32	17:10
	Total	12 mins	17 mins	15 mins	37 mins
Co-ord's	Start	288956 / 5937337	287194 / 5938282	287772 / 5936810	287234 / 5936016
	End	287299 / 5938391	287263 / 5935266	N/A	288476 / 5936057
Notes		Undertaken from the vehicle being a narrow, bitumen road of moderate traffic.	Undertaken from the vehicle, stopping frequently as required.	Entirely on foot. Walked around remnant patch of trees	Driving slowly and stopping frequently as only internal access track.
Weather		Warm (23°C), fine, overcast, hazy, 27% humidity, gusty winds			

Table 5d. Bird survey 2 transect data for the southern site of the proposed Muskerry Solar Farm.

Survey		Transect 5	Transect 6	Transect 7	Transect 8
Site Name		Dwyers Lane - west	Murphy's Lane	Dwyers Lane - east	Axedale-Toolleen Rd
Transect length		520 m	1.1 km	1.0 km	2.1 km
Session		PM	PM	PM	PM
Date		24/02/2021	22/02/2021	22/02/2021	22/02/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	Start	17:50	17:02	18:40	16:45
	End	17:57	17:37	19:08	17:00
	Total	7 mins	35 mins	28 mins	15 mins
Co-ord's	Start	285807 / 5932903	287272 / 5934376	287871 / 5932953	286429 / 5930110
	End	286332 / 5932914	287905 / 5931545	286995 / 5933022	287876 / 5931508
Notes		Short section.	Undertaken from the vehicle, stopping frequently as required.	350m of the western half was traversed on foot.	Undertaken from the vehicle being a busy bitumen road.
Weather		Warm (23°C), fine, overcast, hazy, 27% humidity, gusty winds	Mild (23°C), fine, partly cloudy, 37% humidity, moderate winds		
Session		AM	AM	AM	AM
Date		23/02/2021	24/02/2021	24/02/2021	24/02/2021
Assessors		J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck	J. Harris, K. Himbeck
Time	Start	09:10	07:59	08:23	07:41
	End	09:17	08:17	08:50	07:58
	Total	7 mins	18 mins	27 mins	17 mins
Co-ord's	Start	285807 / 5932903	287272 / 5934376	287871 / 5932953	286429 / 5930110
	End	286332 / 5932914	287905 / 5931545	286995 / 5933022	287876 / 5931508
Notes		Short section.	Undertaken from the vehicle, stopping frequently as required.	350m of the western half was traversed on foot.	Undertaken from the vehicle being a busy bitumen road.
Weather		Mild (13°C), fine, partly cloudy, 57% humidity, light winds, gusting at times	Cool (11°C), fine, overcast, 76% humidity, light winds, gusting to 24km/hr at times		

5.6. INCIDENTAL OBSERVATIONS

A number of fauna species, especially all the reptiles, recorded during the survey were from incidental observations. Fauna, in particular, bird and mammal species were recorded opportunistically during each visit to the study site.

Due to the brief nature of the survey and the lack of opportunity for any dedicated reptile survey, a small amount of time was spent turning logs and looking in other suitable areas of habitat for reptiles such as under tin. This technique added two of the reptile species, the Marbled Gecko *Christinus marmoratus* and Boulenger's Skink *Morethia boulengeri*.

The full list of fauna recorded from the various surveys undertaken can be found in Table 6 below.

Image 2: Lace Monitor observed while conducting bird surveys along Transect 5 at Dwyer Lane (west) in late January.

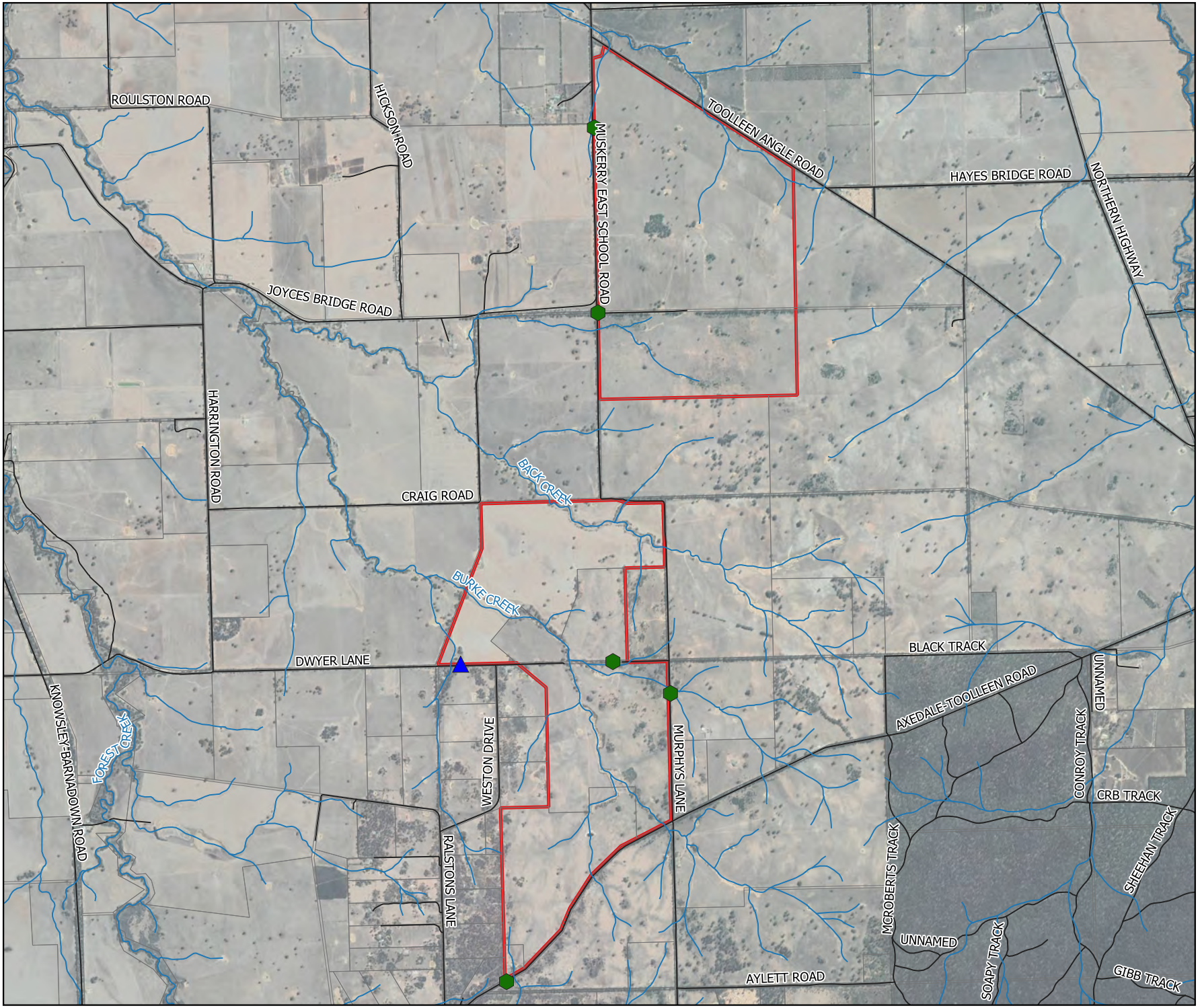


FIGURE 4
Location of Threatened Fauna Results, Muskerry Solar Farm

LEGEND

StudyArea

Threatened Fauna

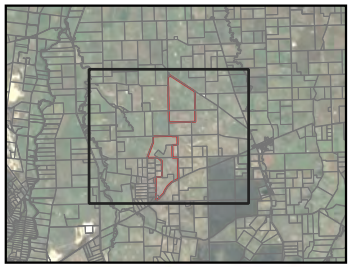
Brush-tailed Phascogale

Lace Monitor

GDA94 : A4
1:45000

0 0.5 1 1.5 km

Map created: 29 March 2021
Author: K. Himbeck



Wildlife & ECOLOGY

Table 6. Fauna recorded during the various surveys at the proposed Muskerry Solar Farm, including transect and survey type.

Legend

L – Listed under the FFG Act 1998
en – endangered under the Advisory list of threatened vertebrate fauna in Victoria (DEPI 2013)
vu – vulnerable under the Advisory list of threatened vertebrate fauna in Victoria (DEPI 2013)
* - introduced species

A – Anabat recording
B – Bird Survey
C - Camera trapping
I – Incidental observation
S - Spotlighting

Common Name	Scientific Name	Conservation Status	Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7	Transect 8
Reptiles										
Boulenger's Skink	*Morethia boulengeri*				I					
Lace Monitor	*Varanus varius*	en					I			
Marbled Gecko	*Christinus marmoratus*				I					
Birds										
Australian Hobby	*Falco longipennis*			B						
Australian Magpie	*Gymnorhina tibicen*		B	B	B, C	B, C	B	B	B, C	B
Australian Raven	*Corvus coronoides*		B	B	B, C	B		B	B	B
Australian Wood Duck	*Chenonetta jubata*			B, I		B			B	B
Blue-faced Honeyeater	*Entomyzon cyanotis*			B					B	
Brown Falcon	*Falco berigora*			B				B		
Brown Goshawk	*Accipiter fasciatus*			I				B	B	
Common Bronzewing	*Phaps chalcoptera*		B							
Crested Pigeon	*Ocyphaps lophotes*		B	B		B		B	B	
Crimson Rosella	*Platycercus elegans*		B							
Eastern Rosella	*Platycercus eximius*		B	B	B	B	B	B	B	B
Galah	*Eolophus roseicapilla*		B	B	B	B	B	B	B	B

Common Name	Scientific Name	Conservation Status	Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7	Transect 8
Grey Butcherbird	*Cracticus torquatus*		B	B	B		B	B	B	B
Laughing Kookaburra	*Dacelo novaeguineae*			I						B, I
Little Corella	*Cacatua sanguinea*						B			
Little Raven	*Corvus mellori*		B	B	B				B	B
Long-billed Corella	*Cacatua tenuirostris*							B	B	B
Magpie-lark	*Grallina cyanoleuca*		B	B					B	
Masked Lapwing	*Vanellus miles*			B, I		B				
Musk Lorikeet	*Glossopsitta concinna*		B	B	B		B	B	B	B
Noisy Miner	*Manorina melanocephala*		B	B	B	B	B	B	B	B, C
Red Wattlebird	*Anthochaera carunculata*		B							
Red-rumped Parrot	*Psephotus haematonotus*		B			B		B	B	
Sulphur-crested Cockatoo	*Cacatua galerita*									B
Superb Fairy-wren	*Malurus cyaneus*		B							
Tawny Frogmouth	*Podargus strigoides*							S	S	S
Wedge-tailed Eagle	*Aquila audax*		B							B
Welcome Swallow	*Hirundo neoxena*		B						I	
White-faced Heron	*Egretta novaehollandiae*			B						I
White-plumed Honeyeater	*Ptilotula penicillata*		B							
White-winged Chough	*Corcorax melanorhamphos*		B	B, I	C	B		B, C	B	B
Willie Wagtail	*Rhipidura leucophrys*		B							
Yellow-billed Spoonbill	*Platalea flavipes*			I						
Mammals										
Brush-tailed Phascogale	*Phascogale tapoatafa*	L / vu		C		C		C	C	S
Chocolate Wattled Bat	*Chalinolobus morio*				A	A		A	A	

Common Name	Scientific Name	Conservation Status	Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7	Transect 8
Common Brush-tailed Possum	*Trichosurus vulpecula*									S
Eastern Falsistrellus	*Falsistrellus tasmaniensis*				A	A		A		
Eastern Grey Kangaroo	*Macropus giganteus*		I				I, S	I	I	I
Eastern Ring-tailed Possum	*Pseudocheirus peregrinus*			S	S	S	S	S	S	S
European Brown Hare	*Lepus europaeus*	*					I			
European Rabbit	*Oryctolagus cuniculus*	*		I, S		I		I, S	I, S	
Forest Bat species	*Vespadelus* spp.				A	A		A	A	
Freetail Bat species	*Ozimops* spp.					A			A	A
Gould's Wattled Bat	*Chalinolobus gouldii*					A			A	A
House Mouse	*Mus musculus*	*			I					
Inland Broadnosed Bat	*Scotorepens balstoni*					A			A	
Krefft's Glider	*Petaurus notatus*			C, S				S	C	C, S
Large Forest Bat	*Vespadelus darlingtoni*					A			A	
Little Forest Bat	*Vespadelus vulturnus*				A	A				
Long-eared Bat species	*Nyctophilus* sp				A	A			A	
Microbat species			S	S				S	S	S
Red Fox	*Vulpes vulpes*	*							S	
Southern Freetail bat	*Ozimops planiceps*				A	A		A	A	A
White-striped Freetail Bat	*Tadarida australis*			S	A, S	A, S	S	A, S	A, S	A, S
Yellow-footed Antechinus	*Antechinus flavipes*			C		C, I		C		

6. DISCUSSION

Despite the brevity of this survey, good results and valuable information on the extent of fauna diversity currently present within the study area was able to be collected. A total of 57 fauna species were recorded during the surveys with Lace Monitor and Brush-tailed Phascogale being the most significant findings.

Of the 26 threatened species that have previously been recorded within the 10km buffer of the study area that arose from the desktop review, the phascogale was the only one found to be present during the surveys. This is not surprising given that the most recent records of 20 of the species are from more than 30 years ago or locations that have different habitats to those found in the study area, such as the Crosbie and Mt Sugarloaf Nature Conservation Reserves.

Most of the bird species are generalists and highly adaptive to a modified landscape such as the magpies, ravens, the parrots and cockatoos. The larger trees with hollows also provide ideal nesting locations for the eight parrot and cockatoo species that were recorded, although the Musk Lorikeet is a more transient species that is dependent on flowering trees for food resources.

Due to the timing of the surveys being in summer, no targeted surveys were undertaken for the Critically Endangered (EPBC Act) Swift Parrot *Lathamus discolor* as this species is an autumn/winter migrant from Tasmania.

The lack of understorey structure, such as significant areas of shrubs, is likely to have impacted on the number of more common bird species, especially the smaller bush birds like robins, thornbills and honeyeaters, that were recorded during the surveys. Toolleen Angle Road, where such habitat existed in the gardens of the two houses along this road and the strips of densely planted vegetation in the paddocks beside the road, were the only places where fairywrens and small honeyeaters were recorded.

The array of microbat species was to be expected given the locality of the study area in central Victoria. The roadside and scattered paddock trees are important roosting spots for this group of mammals. The two Anabat® locations that were near farm dams in Transect 4 and 7 had the most calls recorded, indicating the importance of these water sources in providing hunting (small insects) and water resources.

7. RECOMMENDATIONS

The recommendations that arise from this fauna survey include:

- From the maps provided showing the development footprint, there appear to be minimal impact to the significant areas of trees and vegetation located along the roadsides and water courses. As these areas support the highest quality of habitat in an area that has been highly modified, it is important to retain and protect such relatively significant habitat where possible.
- Given the presence of threatened fauna within or adjacent to the study area, it is strongly recommended that a Fauna Conservation Management Plan (FCMP) be prepared for the project and be included as part of the documentation for the final approvals application. Part of this FCMP must include that the removal of any trees, living or dead, and fallen timber from within the paddocks and roadsides must be assessed for the presence of native fauna before the removal is undertaken and that an experienced zoologist with the required DELWP wildlife permits be on-site during the removal of trees and fallen timber to salvage and relocate any fauna found.
- The southern section, in particular, supports a significant length of heavily eroded, ephemeral creeks, that apart from scattered trees and some areas of planted vegetation, they are primarily devoid of suitable vegetation. Along with remnant vegetation along roadside, creeklines can also provide locally significant, linear pathways of connectivity for a range of common and threatened fauna. There is opportunity in those areas along the creeklines, that are not being impacted, by the solar farm to be planted out with a range of shrubs and grasses to enhance and provide valuable habitat that is lacking in the study area.
- It would be prudent to undertake targeted surveys for the Commonwealth threatened Swift Parrot in winter 2021, while this species is on the mainland especially if Commonwealth EPBC Act or Victorian Environmental Effects Act referrals are required to be submitted for this project.

8. REFERENCES

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PHOTOLOG

Below are photos from the study area taken during the field assessment, referenced in this report.

Image 3. Muskerry East School Road showing large trees in road reserve

Image 4. Remnant patch of trees in paddock of northern section.

Image 5. Large gums along fenceline, east of power easement

Image 6. Murphy's Lane showing treed road reserve.

Image 7. Dwyer Lane (east) inside paddock

Image 8. Patch of Yellow Gums west of Murphy's Lane where camera was set up.

Image 9. Vegetation along Burke Creek, just north of Axedale – Toolleen Road (camera mounted in tree)

Image 10. Camera and bait set up

Image 11. Anabat ® detector, with microphone attached, mounted to tree

Image 12. Brush-tailed Phascogale captured with Infra-red camera, visiting bait station

Image 13. Yellow-footed Antechinus, captured during the day, visiting bait station.

Image 14. Krefft's (formerly Sugar) Glider observed while spotlighting along Transect 2, towards the top of Muskerry East School Road.

APPENDIX D THREATENED SPECIES

D.1 THREATENED FLORA ASSESSMENT

EPBC Status – E: Endangered; V: Vulnerable.

FFG Status –: E: Endangered; V: Vulnerable.

Scientific Name	Common Name	EPBC Status	FFG Status	VBA/MNES search result	Total Count	Most recent survey Date	Likelihood of Occurrence	Reasoning
Acacia ausfeldii	Ausfeld's Wattle	Not listed	Endangered	VBA	6	15/05/2011	Low	Recent records within 10km. Suitable habitat but not observed during survey.
Allocasuarina luehmannii	Buloke	Not listed	Critically Endangered	VBA	5	15/01/1995	Low	Recent records within 10km. Suitable habitat but not observed during survey.
Amphibromus fluitans	Wallaby-grass	Vulnerable	Not listed	MNES			Low	Found in wetlands on the Murray
Brachyscome gracilis subsp. gracilis	Dookie Daisy	Not listed	Endangered	VBA	1	9/10/1960	Low	Historic record Mainly in the northeast
Caladenia tensa	Greencomb Spider-orchid,	Endangered	Not in the revised FFG listing	MNES			Low	Out of geographical range
Caladenia versicolor	Candy Spider-orchid	Vulnerable	Endangered	MNES			Low	Out of geographical range

Scientific Name	Common Name	EPBC Status	FFG Status	VBA/MNES search result	Total Count	Most recent survey Date	Likelihood of Occurrence	Reasoning
Dodonaea procumbens	Trailing Hop-bush	Vulnerable	Not in the revised FFG listing	MNES			Low	Out of geographical range
Glycine latrobeana	Purple Clover	Vulnerable	Vulnerable	MNES			Low	No records within 10km
Pimelea spinescens subsp. spinescens	Spiny Rice-flower	Critically Endangered	Critically Endangered	VBA	2	23/03/2018	Low	Recent records within 10km. No suitable habitat. Not observed during survey.
Prasophyllum sp.aff. validum	Sturdy Leek-orchid	Vulnerable	Endangered	MNES			Low	No records within 10kms
Rutidosis leptorhynchoides	Button Wrinklewort	Endangered	Endangered	MNES			Low	Out of geographical range
Lepidium monoplocoides	Winged Peppercress	Endangered	Endangered	MNES			Low	No records within 10kms
Senecio behrianus	Stiff Groundsel	Endangered	Critically Endangered	MNES			Low	No records within 10kms
Senecio macrocarpus	Large-fruit Fireweed	Vulnerable	Critically Endangered	MNES			Low	No records within 10kms
Swainsona plagiotropis	Red Darling-pea	Vulnerable	Endangered	MNES			Low	No records within 10kms

D.2 THREATENED FAUNA ASSESSMENT

This table was prepared to assess all species that are listed as threatened under EPBC and FFG that could occur within the locality and determine if the species requires targeted surveys to determine their presence on site and establish their likely habitat within the development footprint.

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Aves									
Accipiter novaehollandiae	Grey Goshawk	Not listed	Endangered	VBA		2	16/02/2001	Low	Foraging only
Actitis hypoleucos	Common Sandpiper	Migratory Wetlands Species, Critically Endangered	Vulnerable	MNES	Bonn, CAMBA, JAMBA, ROKAMBA			Low	No suitable habitat
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Critically Endangered	VBA		7	11/06/1983	Low	No species recorded during surveys. Found in Box Ironbark Forests similar habitat on site but rare occurrence near Bendigo
Aprasia parapulchella	Pink-tailed Worm-Lizard	Vulnerable	Endangered	VBA		2	26/11/2008	Low	Few rocky outcrop areas. Found on Mount Sugarloaf near Bendigo.
Ardea alba modesta	Eastern Great Egret	Not listed	Vulnerable	VBA	jamba, camba	1	14/08/2018	Low	Foraging habitat

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Ardea intermedia plumifera	Plumed Egret	Not listed	Critically Endangered	VBA		1	10/11/2000	Low	Foraging habitat
Botaurus poiciloptilus	Australasian Bittern	Endangered	Critically Endangered	MNES				Low	No habitat
Burhinus grallarius	Bush Stone-curlew	Not listed	Critically Endangered	VBA		5	30/07/1990	Low	Absence of dense cover and habitat
Calamanthus pyrrhopygius	Chestnut-rumped Heathwren	Not listed	Vulnerable	VBA		4	1/12/1990	Low	Older records and low record numbers. Limited shrub cover to provide suitable habitat in study area
Calidris acuminata	Sharp-tailed Sandpiper	Migratory Wetlands Species	Not listed	MNES	Bonn, CAMBA, JAMBA, ROKAMBA			Low	Absence of habitat
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	Critically Endangered	MNES	Bonn, CAMBA, JAMBA, ROKAMBA			Low	Absence of habitat
Calidris melanotos	Pectoral Sandpiper	Migratory Wetlands Species	Not listed	MNES	Bonn, JAMBA, ROKAMBA			Low	Absence of habitat
Coracina maxima	Ground Cuckoo-shrike	Not listed	Endangered	VBA		1	9/04/1971	Low	Uncommon in Victoria but suitable habitat

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Crinia sloanei	Sloane's Froglet	Endangered	Endangered	MNES				Low	Outside of geographical Range
Dasyurus maculatus maculatus (SE mainland population)	Spotted-tail Quoll	Endangered	Endangered	MNES				Low	No records and unsuitable habitat
Delma impar	Striped Legless Lizard,	Vulnerable	Endangered	MNES				Low	Outside of sites where the species is known to occur.
Falco hypoleucos	Grey Falcon	Vulnerable	Vulnerable	MNES				Low	Found further west.
Falco subniger	Black Falcon	Not listed	Critically Endangered	VBA		1	4/03/2017	Low	No species recorded during surveys. Recent record within 10km
Galaxias rostratus	Flathead Galaxias	Critically Endangered	Vulnerable	MNES				Low	Unsuitable habitat
Gallinago hardwickii	Latham's Snipe	Migratory Wetlands Species	Not listed	MNES	Bonn JAMBA, ROKAMBA			Low	Absence of habitat
Grantiella picta	Painted Honeyeater	Vulnerable	Vulnerable	VBA		2	13/10/2002	Low	Low numbers around Bendigo since the 1950s.

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Haliaeetus leucogaster	White-bellied Sea-Eagle	Not listed	Endangered	VBA	CAMBA	3	21/10/2018	Low	Foraging habitat. Breeding in Barmah Forest on Murray River
Hirundapus caudacutus	White-throated Needletail	Vulnerable, Migratory	Vulnerable	VBA	ROKAMBA, CAMBA, JAMBA	4	26/11/2017	Low	aerial
Lathamus discolor	Swift Parrot	Critically Endangered	Critically Endangered	VBA		35	20/05/2018	Medium	No species recorded during surveys. However, suitable habitat. Multiple records close to the study area.
Litoria raniformis	Growling Grass Frog	Vulnerable	Vulnerable	MNES				Low	No records within 10kms
Lophoictinia isura	Square-tailed Kite	Not listed	Vulnerable	VBA		2	15/04/2018	Low	No species recorded during surveys. Recent records within 10kms. Potential breeding and foraging habitat in the study area.
Melanodryas cucullata	Hooded Robin	Not listed	Vulnerable	VBA		16	1/07/2006	Low	No species recorded during surveys. Suitable habitat. High number of records
Monarcha melanopsis	Black-faced Monarch	Migratory - Terrestrial	Not listed	MNES	Bonn			Low	No records within 10km. No suitable habitat.
Motacilla flava	Yellow Wagtail	Migratory - Terrestrial	Not listed	MNES	CAMBA, JAMBA, ROKAMBA			Low	No records within 10km. Potential foraging habitat.

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Myiagra cyanoleuca	Satin Flycatcher	Migratory - Terrestrial	Not listed	MNES	Bonn			Low	No records within 10km. Potential foraging habitat.
Myrmecia sp. 17	Bull ant	Not listed	Not listed	VBA		2	25/06/2003	Low	Records within 10kms but low record numbers. Data deficient.
Ninox connivens	Barking Owl	Not listed	Critically Endangered	VBA		3	25/09/2006	Low	No species recorded during surveys. Records within 10kms. Suitable habitat
Ninox strenua	Powerful Owl	Not listed	Vulnerable	VBA		3	15/04/2009	Low	No species recorded during surveys. Records adjacent to site
Numenius madagascariensis	Eastern Curlew	Critically Endangered, Migratory	Critically Endangered	MNES				Low	Unsuitable habitat
Oreoica gutturalis	Crested Bellbird	Not listed	Endangered	VBA		16	5/10/2008	Low	No species recorded during surveys. Number of recent records
Ornithorhynchus anatinus	Platypus	Not listed	Vulnerable	VBA				Low	Habitat excluded from footprint
Pedionomus torquatus	Plains-wanderer	Critically Endangered	Critically Endangered	MNES				Low-	Suitable habitat. No recent records
Phascogale tapoatafa	Brush-tailed Phascogale	Not listed	Vulnerable	VBA		8	21/06/2003	High	Recorded in five locations adjacent top site. Trees with hollows and connecting canopy

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Pomatostomus temporalis	Grey-crowned Babbler	Not listed	Vulnerable	VBA		10	10/03/2004	Low	No species recorded during surveys. Recent multiple records
Porzana pusilla	Baillon's Crake	Not listed	Not listed	VBA		1	20/12/2006	Low	Low record numbers
Pseudophryne bibronii	Brown Toadlet	Not listed	Endangered	VBA		1	18/11/1976	Low	No recent records
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	MNES				Low	Foraging only. Camp in Bendigo
Pyrrholaemus sagittatus	Speckled Warbler	Not listed	Endangered	VBA		22	13/07/2019	Low	No species recorded during surveys. Recent multiple records
Rhipidura rufifrons	Rufous Fantail	Migratory - Terrestrial	Not listed	MNES	BONN			Low	No records within 10km. Potential foraging habitat.
Rostratula australis	Australian Painted Snipe	Endangered	Critically Endangered	MNES				Low	No nearby records
Stagonopleura guttata	Diamond Firetail	Not listed	Vulnerable	VBA		46	31/07/2018	Low	No species recorded during surveys. Recent multiple records
Callocephalon fimbriatum	Gang-gang cockatoo	Endangered	Not listed	MNES				Low	No species recorded during surveys. No nearby records
Polytelis swainsonii	Superb Parrot	Vulnerable	Endangered	MNES				Low	No species recorded during surveys. No nearby records
Mammals and Monotremes									

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	MNES				Low	Foraging only. Camp in Bendigo
Phascogale tapoatafa	Brush-tailed Phascogale	Not listed	Vulnerable	VBA		8	21/06/2003	High	Recorded in five locations adjacent top site. Trees with hollows and connecting canopy
Ornithorhynchus anatinus	Platypus	Not listed	Vulnerable	VBA				Low	Habitat excluded from footprint
Invertebrates									
Synemon plana	Golden Sun Moth	Critically Endangered	Vulnerable	MNES				Low	Significant soil disturbance, no habitat present
Myrmecia sp. 17	Bull ant	Not listed	Not listed	VBA		2	25/06/2003	Low	Records within 10kms but low record numbers. Data deficient.
Amphibians									
Pseudophryne bibronii	Brown Toadlet	Not listed	Endangered	VBA		1	18/11/1976	Low	No recent records
Litoria raniformis	Growling Grass Frog	Vulnerable	Vulnerable	MNES				Low	No records within 10kms
Crinia sloanei	Sloane's Froglet	Endangered	Endangered	MNES				Low	Outside of geographical Range
Reptiles									
Varanus varius	Lace Monitor	Not listed	Endangered	No results		1	2021	High	Recorded on site

Scientific Name	Common Name	EPBC	FFG	VBA/MNES search result	Treaty	Total Count	Most recent survey date	Likelihood of Occurrence	Reasoning
Aprasia parapulchella	Pink-tailed Worm-Lizard	Vulnerable	Endangered	VBA		2	26/11/2008	Low	Few rocky outcrop areas. Found on Mount Sugarloaf near Bendigo.
Delma impar	Striped Legless Lizard,	Vulnerable	Endangered	MNES				Low	Outside of sites where the species is known to occur.
Fish									
Galaxias rostratus	Flathead Galaxias	Critically Endangered	Vulnerable	MNES				Low	Unsuitable habitat
Maccullochella macquariensis	Trout Cod	Endangered	Endangered	MNES				Low	Unsuitable habitat
Maccullochella peelii	Murray Cod	Vulnerable	Endangered	MNES				Low	Unsuitable habitat
Macquaria australasica	Macquarie Perch	Endangered	Endangered	MNES				Low	Unsuitable habitat

APPENDIX E TARGETED SURVEY RESULTS

E.1 SWIFT PARROT SURVEY RESULTS

Species – Common Name	Scientific Name	Session 1 1 -3 Aug 2022	Session 2 8-10 Aug 2022	Session 3 15-17 Aug 2022
Australasian Pipit	*Anthus novaeseelandiae*	X	X	X
Australian Magpie	*Gymnorhina tibicen*	X	X	X
Australian Raven	*Corvus coronoides*	X	X	X
Australian Shelduck	*Tadorna tadornoides*	X	X	
Australian Wood Duck	*Chenonetta jubata*	X	X	X
Black-faced Cuckoo-Shrike	*Coracina novaehollandiae*	X	X	
Chestnut Teal	*Anas castanea*			X
Common Bronzewing	*Phaps chalcoptera*	X	X	X
Crested Pigeon	*Ocyphaps lophotes*	X	X	X
Crimson Rosella	*Platycercus elegans*		X	X
Eastern Rosella	*Platycercus eximius*	X	X	X
Galah	*Eolophus roeicapilla*	X	X	X
Grey Butcherbird	*Cracticus torquatus*		X	X
Grey Teal	*Anas gracilis*			X
Golden Whistler	*Pachycephala pectoralis*	X	X	
Little Corella	*Cacatua sanguinea*	X	X	

Little Friarbird	*Philemon citreogularis*	X	X	X
Little Lorikeet	*Glossopsitta pusilla*	X	X	
Little Raven	*Corvus mellori*	X	X	
Long-billed Corella	*Cacatua tenuirostris*			X
Masked Lapwing	*Vanellus miles*	X	X	X
Magpie-Lark	*Grallina cyanoleuca*	X	X	X
Musk Lorikeet	*Glossopsitta concinna*	X	X	X
Noisy Friarbird	*Philemon corniculatus*	X	X	X
Noisy Miner	*Manorina melanocephala*	X	X	X
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*		X	
Red Wattlebird	*Anthochaera carunculata*	X	X	X
Red-rumped Parrot	*Psephotus haematonotus*	X	X	X
Striated Pardalote	*Pardalotus striatus*	X	X	X
Sulphur-crested Cockatoo	*Cacatua galerita*	X	X	X
Superb Fairy-wren	*Malurus cyaneus*	X	X	
Wedge-tailed Eagle	*Aquila audax*	X	X	X
Weebill	*Smicrornis brevirostris*	X	X	
Welcome Swallow	*Hirundo neoxena*	X	X	X
White-plumed Honeyeater	*Ptilotula penicillatus*	X	X	X

White-faced Heron	*Egretta novaehollandiae*		X	
White-winged Chough	*Corcorax melanorhamphos*	X	X	
Willy Wagtail	*Rhipidura leucophrys*	X	X	X
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	X	X	
European Starling*	*Sturnus vulgaris*	X	X	
Survey session total (new in brackets)		33	36 (4)	27 (3)
Total Species Survey Observations		**40**		

Incidental Observations

Coastal Bearded Dragon	*Pogona barbata*		X	
Common Eastern Froglet	*Crinia signifera*	X	X	X
Eastern Blue-tongued Lizard	*Tiliqua scincoides*	X		
Eastern Sign-bearing Froglet	*Crinia parasignifera*	X		
Eastern Grey Kangaroo	*Macropus giganteus*		X	X
Fat-tailed Dunnart	*Sminthopsis crassicaudata*		X	
Little Whip Snake	*Suta flagellum*		X	
Boulenger's Skink	*Morethia boulengeri*		X	X

Olive Legless Lizard	*Delma inornata*			X
Eastern Banjo Frog	*Limnodynastes dumerilii*			X
Survey session total (new in brackets)		3	6 (5)	4 (1)
Total Incidental Observations		**10**		

E.2 CROSBIE NATURE CONSERVATION RESERVE – REFERENCE SITE FOR SWIFT PARROT

Common Name	Scientific Name	Session 1 1 -3 Aug 2022	Session 2 8-10 Aug 2022	Session 3 15-17 Aug 2022
Australian Magpie	*Gymnorhina tibicen*	X	X	X
Australian Raven	*Corvus coronoides*	X	X	X
Black-chinned Honeyeater	*Melithreptus gularis*	X	X	
Brown Treecreeper	*Climacteris picumnus*	X	X	X
Brown-headed Honeyeater	*Melithreptus brevirostris*	X	X	X
Buff-rumped Thornbill	*Acanthiza reguloides*	X	X	
Common Bronzewing	*Phaps chalcoptera*	X	X	X
Crested Pigeon	*Ocyphaps lophotes*			X
Crested Shrike-tit	*Falcunculus frontatus*		X	
Eastern Rosella	*Platycercus eximius*			X
Flame Robin	*Petrioca phoenicea*	X		
Fuscus Honeyeater	*Ptilotula fusca*			X
Galah	*Eolophus roseicapilla*	X	X	X
Grey Fantail	*Rhipidura albiscapa*	X		X
Grey Shrike thrush	*Colluricincla harmonica*	X	X	X
Hooded Robin	*Melanodryas cucullata*	X		

Jacky Winter	*Microeca fascinans*			X
Laughing Kookaburra	*Dacelo novaeguineae*	X		
Lewin's Honeyeater	*Meliphaga lewinii*	X		
Long-billed Corella	*Cacatua tenuirostris*			X
Little Friarbird	*Philemon citreogularis*	X	X	X
Musk Lorikeet	*Glossopsitta concinna*	X	X	X
Noisy Friarbird	*Philemon corniculatus*	X	X	X
Noisy Miner	*Manorina melanocephala*	X	X	X
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	X		
Red Wattlebird	*Anthochaera carunculata*	X	X	X
Rose Robin	*Petroica rosea*	X		
Satin Flycatcher	*Myiagra cyanoleuca*	X		
Striated Pardalote	*Pardalotus striatus*	X	X	
Superb Fairy-wren	*Malurus cyaneus*			X
Weebill	*Smicornis brevirostris*			X
White-eared Honeyeater	*Nesoptilotis leucotis*			X
White plumed Honeyeater	*Ptilotus penicillatus*			X
White-winged Chough	*Coracorax melanorhamphos*			X
White-throated Treecreeper	*Cormobates leucophaea*	X	X	

Willy Wagtail	*Rhipidura leucophrys*			X
Wedge-tailed Eagle	*Aquila audax*			X
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	X	X	
Yellow-tufted Honeyeater	*Lichenostomus melanops*		X	
Olive-backed Oriole	*Oriolus sagittatus*	X		
Survey session total (new in brackets)		26	19 (2)	25 (12)
Total Species Survey Observations		40		

Incidental Observations

Boulenger's Skink	*Morethia boulengeri*		X	X
Eastern Grey Kangaroo	*Macropus giganteus*			X
Swamp Wallaby	*Wallabia bicolor*			X

Survey session total (new in brackets)		0	1	3 (2)
Total Species Survey Observations		**3**		

APPENDIX F MNES SEARCH RESULTS

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 30-Aug-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	34
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	8
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	8
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	400 - 500km upstream from Ramsar site	In feature area
Gunbower forest	50 - 100km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	200 - 300km upstream from Ramsar site	In feature area
Nsw central murray state forests	50 - 100km upstream from Ramsar site	In feature area
Riverland	400 - 500km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	400 - 500km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area	In feature area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In buffer area only
FROG			
[Crinia sloanei](#) Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In feature area
[Litoria raniformis](#) Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area	In feature area
INSECT			
[Synemon plana](#) Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
PLANT			
Amphibromus fluitans River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Caladenia versicolor Candy Spider-orchid [24392]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In feature area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Prasophyllum validum Sturdy Leek-orchid, Mount Remarkable Leek-orchid [10268]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat may occur within area	In buffer area only
Senecio behrianus Stiff Groundsel, Behr's Groundsel [14030]	Endangered	Species or species habitat may occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Swainsona plagiotropis Red Darling-pea, Red Swainson-pea [10804]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Barnadown SS.R.	Natural Features Reserve	VIC	In buffer area only
Campaspe River, Axedale SS.R.	Natural Features Reserve	VIC	In buffer area only
Campaspe River K39 SS.R.	Natural Features Reserve	VIC	In buffer area only
Campaspe River K40 SS.R.	Natural Features Reserve	VIC	In buffer area only
Campaspe River K41 SS.R.	Natural Features Reserve	VIC	In buffer area only
Crosbie N.C.R.	Natural Features Reserve	VIC	In buffer area only
English Bridge SS.R.	Natural Features Reserve	VIC	In buffer area only
Toolleen B.R.	Natural Features Reserve	VIC	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Fosterville Gold Mine Sustained Operations Project Sustained Operations Project	2021/9050	Controlled Action	Assessment Approach	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Nava-1 Cable System	2001/510	Controlled Action	Completed	In feature area
The Modified Operation of the Goulburn Murray Irrigation District	2009/5123	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Axedale Solar Farm, 25 kms east of Bendigo, VIC	2020/8730	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
All actions taken in response to the current severe bushfires in Victoria.	2009/4787	Referral Decision	Completed	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

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APPENDIX G NATIVE VEGETATION REMOVAL REPORT

Native vegetation removal report

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

Date of Issue: 28/08/2022
Time of Issue: 9:28 pm

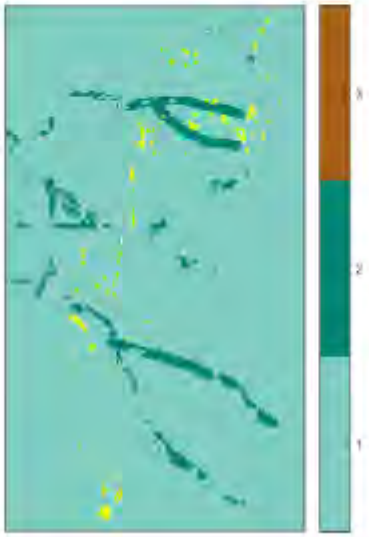
Report ID: NGH_2022_010

Project ID	19-941 Muskerry SF_ImpactedVegetation_EnSym26082022

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	8.653 ha
Extent of past removal	0.000 ha
Extent of proposed removal	8.653 ha
No. Large trees proposed to be removed	49
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



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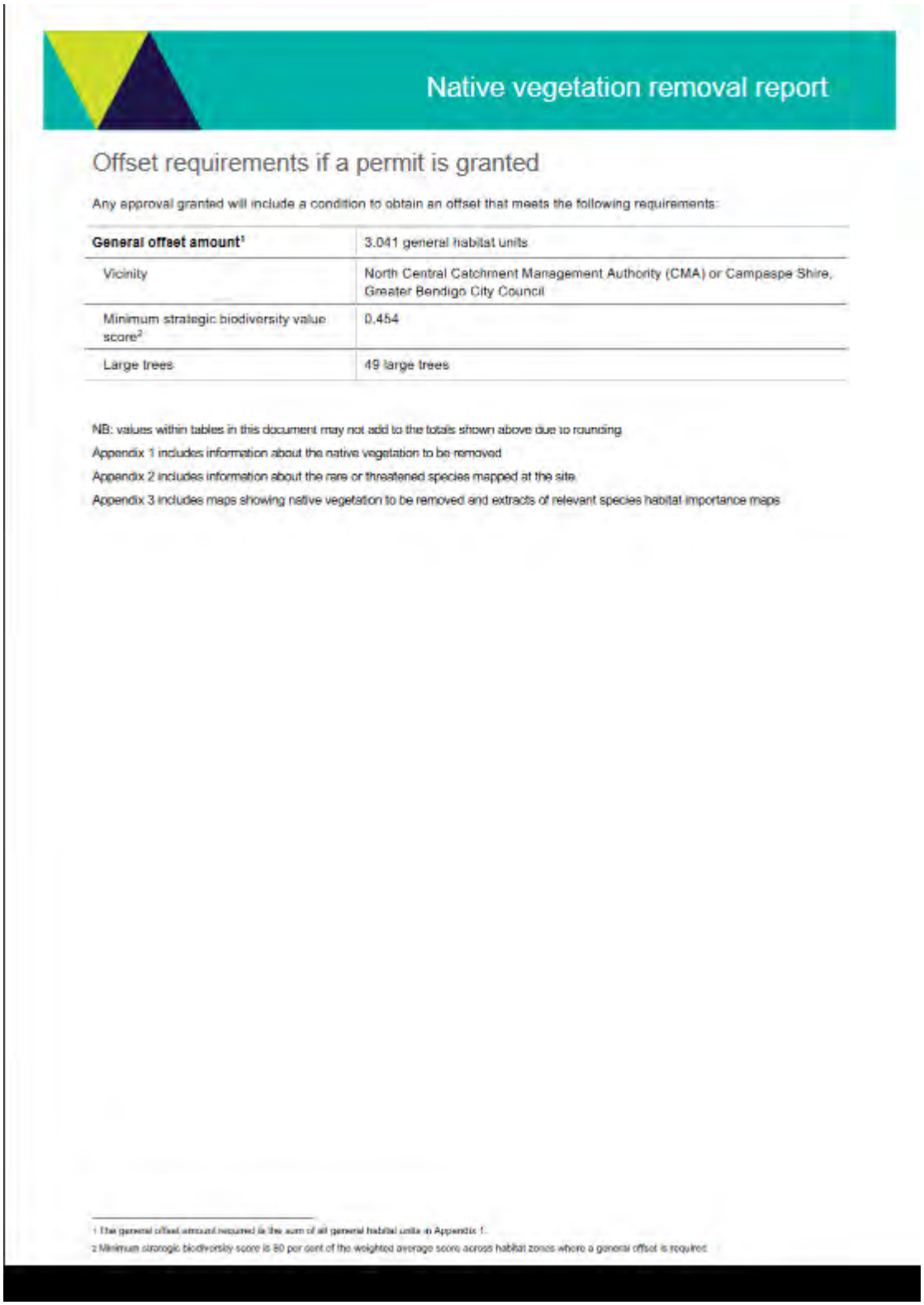

Native vegetation removal report

Offset requirements if a permit is granted

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

General offset amount[1]	3.041 general habitat units
Vicinity	North Central Catchment Management Authority (CMA) or Campaspe Shire, Greater Bendigo City Council
Minimum strategic biodiversity value score[2]	0.454
Large trees	49 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.

Native vegetation removal report

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.

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Appendix 1: Description of native vegetation to be removed

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

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

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
22-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.690		0.008	General
21-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.680		0.008	General
20-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.800		0.008	General
24-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.780		0.008	General
23-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.026	0.547		0.006	General
27-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.026	0.570		0.006	General
26-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.660		0.008	General
25-A	Scattered Tree	gold0175_61	Vulnerable	0	no	0.200	0.031	0.031	0.500		0.007	General

Page 4

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
8-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.690		0.018	General
3-D	Patch	gold0175_61	Vulnerable	1	no	0.380	0.070	0.070	0.690		0.034	General
7-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.690		0.018	General
6-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.690		0.018	General
12-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.684		0.018	General
11-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.636		0.017	General
10-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.520		0.016	General
9-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.490		0.016	General
15-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.551		0.016	General
14-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.548		0.016	General
13-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.620		0.017	General
19-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.690		0.018	General
18-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.660		0.018	General
17-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
16-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
46-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.313		0.014	General

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Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
45-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.741		0.018	General
44-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.740		0.018	General
43-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.740		0.018	General
50-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.760		0.019	General
49-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.046	0.708		0.012	General
48-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.046	0.694		0.012	General
47-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.760		0.019	General
52-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.540		0.016	General
51-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.540		0.016	General
30-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
29-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
28-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.041	0.366		0.008	General
34-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.034	0.405		0.007	General
33-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.064	0.464		0.014	General
32-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.290		0.014	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
5-B	Patch	gold0175_61	Vulnerable	1	no	0.320	0.679	0.679	0.501		0.244	General
1-P	Patch	gold0175_61	Vulnerable	0	no	0.300	0.068	0.068	0.510		0.023	General
66-A	Patch	gold0175_61	Vulnerable	2	no	0.320	0.359	0.359	0.595		0.138	General
1-B	Patch	gold0175_61	Vulnerable	0	no	0.300	0.025	0.025	0.510		0.009	General
1-A	Patch	gold0175_61	Vulnerable	0	no	0.300	0.089	0.089	0.650		0.033	General
1-D	Patch	gold0175_61	Vulnerable	0	no	0.300	0.003	0.003	0.650		0.001	General
1-E	Patch	gold0175_61	Vulnerable	0	no	0.300	0.009	0.009	0.650		0.003	General
1-H	Patch	gold0175_61	Vulnerable	0	no	0.300	0.103	0.103	0.580		0.036	General
1-J	Patch	gold0175_61	Vulnerable	0	no	0.300	0.022	0.022	0.698		0.008	General
1-N	Patch	gold0175_61	Vulnerable	0	no	0.300	0.002	0.002	0.500		0.001	General
1-K	Patch	gold0175_61	Vulnerable	0	no	0.300	0.018	0.018	0.500		0.006	General
1-I	Patch	gold0175_61	Vulnerable	0	no	0.300	0.258	0.258	0.698		0.099	General
1-M	Patch	gold0175_61	Vulnerable	0	no	0.300	0.031	0.031	0.492		0.010	General
1-O	Patch	gold0175_61	Vulnerable	0	no	0.300	0.006	0.006	0.500		0.002	General
1-L	Patch	gold0175_61	Vulnerable	0	no	0.300	0.020	0.020	0.500		0.007	General
1-F	Patch	gold0175_61	Vulnerable	0	no	0.300	0.015	0.015	0.500		0.005	General
1-G	Patch	gold0175_61	Vulnerable	0	no	0.300	0.006	0.006	0.500		0.002	General
3-C	Patch	gold0175_61	Vulnerable	0	no	0.380	0.210	0.210	0.500		0.090	General
3-B	Patch	gold0175_61	Vulnerable	0	no	0.380	0.172	0.172	0.574		0.077	General
3-A	Patch	gold0175_61	Vulnerable	0	no	0.380	0.026	0.026	0.480		0.011	General
63-A	Patch	gold0175_61	Vulnerable	0	no	0.320	0.021	0.021	0.500		0.007	General
61-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.018	0.018	0.455		0.004	General

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Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
31-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
38-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.404		0.015	General
37-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.490		0.016	General
36-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.290		0.014	General
35-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
42-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
41-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.070	0.290		0.014	General
40-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.071	0.480		0.016	General
39-A	Scattered Tree	gold0175_61	Vulnerable	1	no	0.200	0.071	0.070	0.290		0.014	General
4-A	Patch	gold0803	Endangered	0	no	0.330	0.004	0.004	0.610		0.002	General
2-A	Patch	vriv0810	Vulnerable	0	no	0.540	0.012	0.012	0.690		0.009	General
3-F	Patch	gold0175_61	Vulnerable	0	no	0.380	0.000	0.000	0.690		0.000	General
2-B	Patch	vriv0810	Vulnerable	0	no	0.540	0.632	0.632	0.579		0.404	General
2-C	Patch	vriv0810	Vulnerable	0	no	0.540	0.255	0.255	0.660		0.171	General
1-S	Patch	gold0175_61	Vulnerable	0	no	0.300	0.351	0.351	0.693		0.134	General
1-T	Patch	gold0175_61	Vulnerable	0	no	0.300	0.322	0.322	0.690		0.122	General
3-E	Patch	gold0175_61	Vulnerable	1	no	0.380	0.038	0.038	0.610		0.018	General
1-C	Patch	gold0175_61	Vulnerable	0	no	0.300	0.010	0.010	0.580		0.004	General

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Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
64-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.020	0.020	0.290		0.004	General
55-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.013	0.013	0.290		0.003	General
58-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.001	0.001	0.290		0.000	General
65-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.000	0.000	0.290		0.000	General
56-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.010	0.010	0.290		0.002	General
59-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.009	0.009	0.321		0.002	General
62-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.054	0.054	0.540		0.013	General
57-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.002	0.002	0.540		0.000	General
60-A	Patch	gold0175_61	Vulnerable	0	no	0.210	0.001	0.001	0.540		0.000	General
53-A	Patch	gold0175_61	Vulnerable	1	no	0.210	0.167	0.167	0.430		0.038	General
54-A	Patch	gold0175_61	Vulnerable	1	no	0.290	0.071	0.071	0.553		0.024	General
1-Q	Patch	gold0175_61	Vulnerable	0	no	0.300	0.591	0.591	0.627		0.216	General
1-U	Patch	gold0175_61	Vulnerable	1	no	0.300	0.083	0.083	0.690		0.032	General
5-A	Patch	gold0175_61	Vulnerable	2	no	0.320	0.905	0.905	0.492		0.324	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
Rising Star Guinea-flower	*Hibbertia humifusa subsp. humifusa*	505082	Rare	Dispersed	Habitat importance map	0.0007
Dwarf Cassinia	*Cassinia diminuta*	507664	Rare	Dispersed	Habitat importance map	0.0006
Whirrakee Wattle	*Acacia williamsonii*	500103	Rare	Dispersed	Habitat importance map	0.0006
Jericho Wire-grass	*Aristida jerichoensis var. subspinulifera*	504631	Endangered	Dispersed	Habitat importance map	0.0006
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0005
Woodland Leek-orchid	*Prasophyllum sp. aff. validum A*	505904	Endangered	Dispersed	Habitat importance map	0.0004
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0004
Goldfields Grevillea	*Grevillea dryophylla*	501533	Rare	Dispersed	Habitat importance map	0.0004
Cane Spear-grass	*Austrostipa breviglumis*	503268	Rare	Dispersed	Habitat importance map	0.0004
Ausfeld's Wattle	*Acacia ausfeldii*	500013	Vulnerable	Dispersed	Habitat importance map	0.0004
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0002
McIvor Spider-orchid	*Caladenia audasii*	503664	Endangered	Dispersed	Habitat importance map	0.0002
Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	505660	Vulnerable	Dispersed	Habitat importance map	0.0002
Late-flower Flax-lily	*Dianella tarda*	505065	Vulnerable	Dispersed	Habitat importance map	0.0002
Slender Mint-bush	*Prostanthera saxicola var. bracteolata*	502750	Rare	Dispersed	Habitat importance map	0.0002
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0002
Slender Club-sedge	*Isolepis congrua*	501773	Vulnerable	Dispersed	Habitat importance map	0.0002
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0001

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Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0001
Sutton Grange Greenhood	*Pterostylis agrestis*	507734	Endangered	Dispersed	Habitat importance map	0.0001
Half-bearded Spear-grass	*Austrostipa hemipogon*	503985	Rare	Dispersed	Habitat importance map	0.0001
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0001
Southern Swainson-pea	*Swainsona behriana*	504944	Rare	Dispersed	Habitat importance map	0.0001
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0001
Spiny Rice-flower	*Pimelea spinescens subsp. spinescens*	504823	Endangered	Dispersed	Habitat importance map	0.0001
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0000
Blue Burr-daisy	*Calotis cuneifolia*	500594	Rare	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Speckled Warbler	*Chthonicola sagittatus*	10504	Vulnerable	Dispersed	Habitat importance map	0.0000
Swift Parrot	*Lathamus discolor*	10309	Endangered	Dispersed	Habitat importance map	0.0000
Barking Owl	*Ninox connivens connivens*	10246	Endangered	Dispersed	Habitat importance map	0.0000
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	10498	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Falcon	*Falco hypoleucos*	10236	Endangered	Dispersed	Habitat importance map	0.0000
Brown Toadlet	*Pseudophryne bibronii*	13117	Endangered	Dispersed	Habitat importance map	0.0000
Eltham Copper	*Paralucia pyrodiscus lucida*	65003	Endangered	Dispersed	Habitat importance map	0.0000
Hardhead	*Aythya australis*	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	10220	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

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

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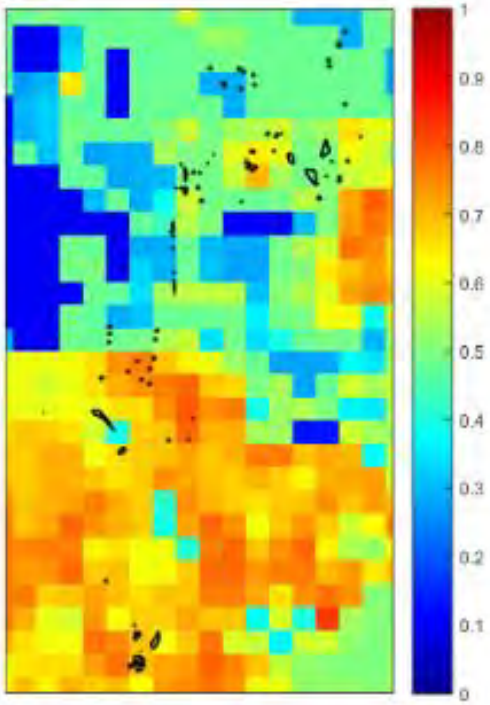
Page 11

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.

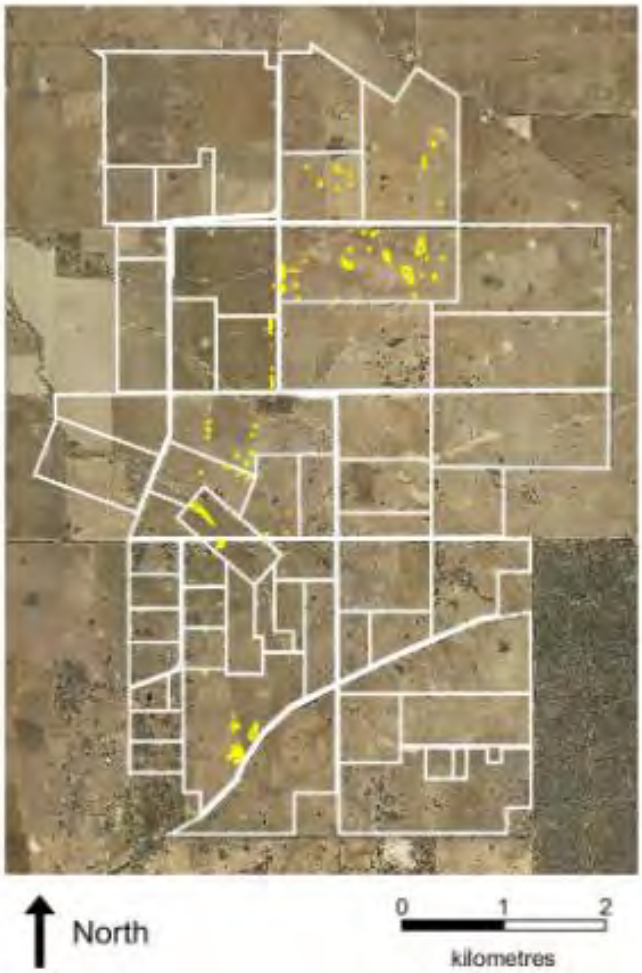
Appendix 3 – Images of mapped native vegetation

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 H THIRD PARTY OFFSET QUOTE

vegetationlink

Our reference: VLQ-6680-D

Your reference: TBA

30 August 2022

Michelle Patrick
NGH Consulting
michelle.p@nghconsulting.com.au

Dear Michelle

RE: Quotation for the supply of native vegetation credits

Vegetation Link is an accredited offset provider with the Department of Environment, Land, Water & Planning (DELWP). We offer a specialised brokerage service to enable permit holders and developers to identify suitable native vegetation credits to meet their planning permit offset requirements.

Based on the information you have provided, I understand you require the following native vegetation offset:

Offset type	Attributes	General habitat units (GHU)	Min. strategic biodiversity value (SBV)	Large trees
General	North Central CMA	3.041	0.454	49

To meet your offset requirements, you can purchase native vegetation credits from a third party as per the options quoted below[1]. This quotation is valid for 14 days, subject to credit availability and landholder pricing.

Option 1: 2 x CTA pathway – offset sites located in the Northern Grampians & Gannawarra area (approx. 3-5 week turnaround from acceptance of quote)	
Cost of native vegetation credits – invoiced by Credit Owner	$137,830.00
Cost of native vegetation credits – invoiced by DELWP	$82,000.00
Transaction fees for **2 x contracts** – invoiced by Vegetation Link	$2,400.00
Total (ex. GST)	**$222,230.00**
Total (inc. GST)	**$244,453.00**

Option 2: CTA pathway – offset site located in the Northern Grampians Shire Council area (approx. 3-5 week turnaround from acceptance of quote)	
Cost of native vegetation credits – invoiced by DELWP	$229,515.00
Transaction fees – invoiced by Vegetation Link	$1,120.00
Total (ex. GST)	**$230,635.00**
Total (inc. GST)	**$253,698.50**

[1] *Note that the transaction fee includes DELWP NVOR transfer and allocation fees and a Vegetation Link fee*

Option 3: CTA pathway – offset site located in the Pyrenees Shire Council area (approx. 3-5 week turnaround from acceptance of quote)	
Cost of native vegetation credits – invoiced by DELWP	$209,610.90
Transaction fees – invoiced by Vegetation Link	$1,120.00
Total (ex. GST)	**$210,730.90**
Total (inc. GST)	**$231,803.99**

If you would like to purchase credits, let us know that you accept the quote and return the attached **purchaser details form** by email. If more than one quotation option is provided above, specify which option you choose.

Upon receipt of the form, we will begin the trade process. Further details of the process for credit allocation is in the FAQ below.

Should you have any queries, please do not hesitate to contact us on 1300 VEG LINK (1300 834 546) or email offsets@vegetationlink.com.au.

Sincerely,

Tesha Mahoney
Biodiversity Offset Broker

FAQs

What is a third party offset?

A third party offset is an offset site owned by another landowner who manages and protects native vegetation on their land. Landowners who establish these offset sites are required to:

- Enter into a Landowner Agreement for the specified offset site. A landowner agreement is in perpetuity and is binding upon the current and future landowners of the site. It permanently restricts use of the site for many purposes.
- Implement a detailed 10-year Management Plan endorsed by the DELWP Native Vegetation Offset Register to manage and improve the biodiversity values of the site.

How is the price of native vegetation offset credit (GHUs, GBEUs etc.) determined?

Landowners who own offset sites set their own price for native vegetation credits. They determine the price based on numerous factors. This includes but not limited to site establishment, the cost to manage the site in perpetuity (e.g., maintain fencing, control pest species), foregone use cost, and administrative costs. Depending on how the site is registered, the credit fee may be paid to either DELWP or directly to the landowner.

Further information about the work some of our landowners are doing can be found on the Vegetation Link website.

What is the process after I accept the quote?

After you accept the quote and return the purchaser table, the following steps will be undertaken:

1. We will set up a contract between the parties involved and send the contract out for signing by all parties.
2. Once the contract is signed by all parties, invoices will be issued for the fees listed in the quotation. We will send you two invoices, one for our transaction fee invoiced by Vegetation Link and one for the credit fee, usually to be paid to DELWP or the landowner. We recommend providing remittances for your payments.
3. Once payments are received, Vegetation Link will send you an allocated credit extract from the Native Vegetation Offset Register and your executed contract as evidence that you have purchased the offset.

How long will the process take? When will I get my credits?

Generally, the process from quote acceptance to having evidence of allocated credits takes between 2-6 weeks. This is dependent on a range of factors including the type of landholder agreement, contract types and organisational workflows. We work as quickly as possible to get your credits to you within this time period.

We note that you **cannot** remove vegetation until you have been given permission by the Responsible Authority (usually the council that has issued your permit).

What happens if I don't have a permit yet?

When people are buying credits before a permit is issued, the following three options are most common:

- You can pay for the offsets before the planning permit is available, and then the offsets are allocated to the permit when it is available. This will incur an additional $50 fee from DELWP. When considering this option, it is important to realise that your estimated offset requirements may be different than the actual permit requirements.
- You can wait for the planning permit to be approved first and then request a quote to meet the requirements in your permit. Should credits be available, you can then start the offset purchase process. We then use the planning permit number for allocating the credits. Allocating credits to the permit is evidence that you have purchased your offset.
- You can request a quote to confirm availability and to get an idea of the cost of offsetting before you apply for a permit. Once you receive the planning permit you can request an updated quote. It is at this point that you can then go through the offset purchase process.

We cannot guarantee credit availability until a) contracts are executed, or b) credits have been held via a pending trade lodged with DELWP Native Vegetation Offset Register.

We cannot guarantee price until a) a quote has been accepted within 14 days, and b) a Credit Trading Agreement is signed within 21 days, and c) the invoice for the credits is paid within 28 days of the date the invoice is issued.

If I sign the contract, does that mean I MUST pay for the credits?

Yes, you have entered into a contract agreeing to pay for the offset credits therein and are required to pay for those credits. The credits must be paid for within 28 days of the date of the invoice.

Can you hold the credits for me, as I want to pay later?

We are unable to hold credits for later payment. Please also see 'What happens if I don't have a permit yet?' above.

For further information, see our website or the DELWP website.