Native Vegetation Removal Report: Detailed Assessment Pathway

for

Barnawartha North Solar Farm
Barnawartha North, VIC 3691

Version 2

Date: 30/06/23

Prepared for

Bison Energy

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RED-GUM Environmental Consulting

CERTIFIED ENVIRONMENTAL PRACTITIONER

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PREPARED FOR	Habitat Planning
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EXECUTIVE SUMMARY

Bison Energy ("the proponent") is proposing the development of a solar farm at Barnawartha North, VIC 3691. The development is located within the North East CMA region and the City of Wodonga Local Government Area (LGA).

Red-Gum Environmental Consulting Pty Ltd ('Red-Gum') was commissioned by the proponent's agent (Habitat Planning) to develop this report, which addresses the application requirements for a planning permit to remove native vegetation in accordance with the *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (the Guidelines).

The losses were calculated to be **0.091 hectares of native vegetation patches & scattered trees across one location category** consisting of two (2) standing dead trees (SDT), one (1) Scattered tree along the roadside, one (1) patch of native grasses and one (1) patch of regenerating yellow box (*E. melliodora*) trees with a predominantly native (yet disturbed) understorey in the roadside adjoining the site (which are to be removed to facilitate site access). While the lost (living trees) are native, they are young regeneration surrounded by higher quality trees in the remnant vegetation located within the roadside reserve to the east and west. This access point was the lowest impact option, as the more cleared area to the west was unable to be utilised due to the presence of solid lines on the road from the intersection with the Murray Valley Highway.

The SDTs (1A & 2A) contain some small hollows that may currently be used by woodland birds and or micro bats, however the isolated nature of these trees means they are highly unlikely to contain arboreal mammals. The four lost trees in the roadside do not possess any obvious hollow bearing branches or trunk knots that may be used by woodland birds as nesting sites.

The study area runs alongside the Murray Valley Highway, and is located within the Victorian Riverina (VRiv) bioregion. After site inspection, it was determined that the main solar array site consists of predominantly exotic vegetation, bordered by thin areas of Plains Grassy Woodland (EVC 55) along the highway road reserve which is listed as *Endangered* within the VRiv bioregion. The study area is an exotic dominated, set-stocked paddock with some native rushes (*Juncus flavidus*) scattered throughout, with several scattered paddock trees (which are being avoided). The roadside corridor consists of remnant and regrowth box gum woodland with a mixture of native and exotic dominated understorey.

The lost native vegetation in the **roadside** is within an area mapped as an endangered Ecological Vegetation Class (EVC). Removal of less than 0.5 hectares of native vegetation in this location Category (**location 3**) could have a significant impact on habitat for a rare or threatened species, therefore a *Detailed Assessment Pathway* is required.

The vegetation is also potentially the EPBC-listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Threatened Ecological Community (TEC). The vegetation being lost for the access to the site was assessed against the listing criteria for the TEC and it was determined that the vegetation did not meet the criteria to be the TEC because, whilst the roadside had maintained the key tree canopy species, the patch size was small and the understorey lacked key indicator species required to be considered as an example of the TEC.

The specific-general offset test was applied to the proposal. No (zero) specific offsets are required, as the species offset threshold was not exceeded for any of the listed rare or threatened species (**Appendix A**).

The NVR Report has calculated that a general offset amount (in general habitat units) of **0.026** is required. The offset strategy must ensure the strategic biodiversity score must be a minimum of **0.703,** and there is no large tree offset requirement. The proponent will seek a third party offset via a registered broker (**Appendix D**).

This document provides supplementary information to the Native Vegetation Removal (NVR) Report for the site generated on 14/03/2023 (**Appendix A**) under the Guidelines and represents the base information that must be provided when applying for a permit to remove native vegetation, specifically, Tables 4 and 5 of the guidelines (**Appendix B & C**).

1 LOCATION

Bison Energy ("the proponent") is proposing to develop a Solar Farm just north of the Murray Valley Highway, at Barnawartha North, VIC 3691. The development is located within the North East CMA region and the City of Wodonga Local Government Area (LGA).

Map 1: Location of the study area. Source: Nearmap 2023

Figure 1: Location of the study area. Areas lost in yellow. Source: NVR Report, 14/03/23

2 DESCRIPTION OF THE NATIVE VEGETATION

The study area runs alongside the Murray Valley Hwy and is located within the Victorian Riverina (VRiv) bioregion. After the site inspection, it was determined that the majority of the study area consisted of exotic vegetation, with less than 25% of the vegetation consisting of perennial native vegetation. Where remnant vegetation exists, along the road reserve and through the middle of the study area (seasonally wet area), the Ecological Vegetation Class (EVC) is Plains Grassy Woodland (EVC 55), which is listed as Endangered within the VRiv bioregion.

The site is dominated by the introduced Couch Grass species (*Cynodon dactylis* var *dactylis*), and there are scattered *Juncus flavidus* (native Juncus) throughout, but particularly through the seasonally wet area which runs south to north through the middle of the property, which is being avoided by development impacts. The site has had a heavy grazing history with only grazing tolerant species persisting but in low diversity and scattered densities. There is moderate to heavy pugging from cattle throughout the site.

The study area does not meet the definition of a patch according to the Guidelines, as the Juncus cover (*J. falvidus*) and other scattered native species percentage cover ranges from 1% to 15% in areas where development impacts are occurring. The site photos do not accurately show the percentage cover of Juncus, as it looks dense in the photos but when looking from above, as is required when assessing native vegetation percentage cover, the percentage cover of Juncus is not as high the photographs make it appear (generally 15% and under).

There are two SDTs in the eastern panel section which will be removed and offset. All other trees within the study area property boundary are being avoided through considered loss minimisation designs. In order to facilitate safe site access away from the highway, a new access road is proposed off Old Barnawartha Road, to the east of the main study area. The vegetation along this roadside consists of remnant and regenerating box gum woodland over a predominantly native but disturbed understory.

The losses were calculated to be **0.091 hectares of native vegetation patches & scattered trees across one location category** consisting of two (2) standing dead trees (SDT), one (1) Scattered tree along the roadside, one (1) patch of native grasses and one (1) patch of regen yellow box (*E. melliodora*) trees with a predominantly native but disturbed understorey in the roadside adjoining the site (which are to be removed to facilitate site access). While the lost (living trees) are native, they are young regeneration surrounded by higher quality trees in the remnant vegetation located within the roadside reserve to the east and west. The SDTs (1A & 2A) contain some small hollows that may be used by woodland birds and or micro bats, however they are isolated from other habitat and are unlikely to be utilised by arboreal mammals. The lost trees in the roadside do not possess any obvious hollow bearing branches or trunk knots that may be used by woodland birds as nesting sites and have numerous large habitat trees in their vicinity which are of higher value to fauna (and are being avoided).

The location of lost trees in the roadside is mapped as an endangered Ecological Vegetation Class (EVC).
Removal of less than 0.5 hectares of native vegetation in this location category (**location 3**) could have a significant impact on habitat for a rare or threatened species, therefore an assessment in the **Detailed Assessment Pathway** is required.

Table 1: Lost Vegetation – Ensym Report

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.019	0.920		0.005	General
2-A	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.019	0.920		0.005	General
1-B	Patch	vriv0055	Endangered	0	no	0.140	0.008	0.008	0.850		0.002	General
1-C	Patch	vriv0055	Endangered	0	no	0.250	0.017	0.017	0.850		0.006	General
2-C	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.029	0.850		0.008	General

Map 2: Veg Losses, Barnawartha North, VIC 3691. Source: Nearmap, 2023

3 MAPS, PLANS & PHOTOGRAPHS

Figure 2: Development plan (note access road alignment has been updated since). Source: Bison Energy, 2022

3.1 Lost Vegetation

The losses were calculated to be **0.091 ha** of native vegetation patches & scattered trees, across one (1) location category (location 3). The following photo captions refer to each tree as noted in the Native Vegetation Removal Report (RGE-2023-006)(see Appendix A).

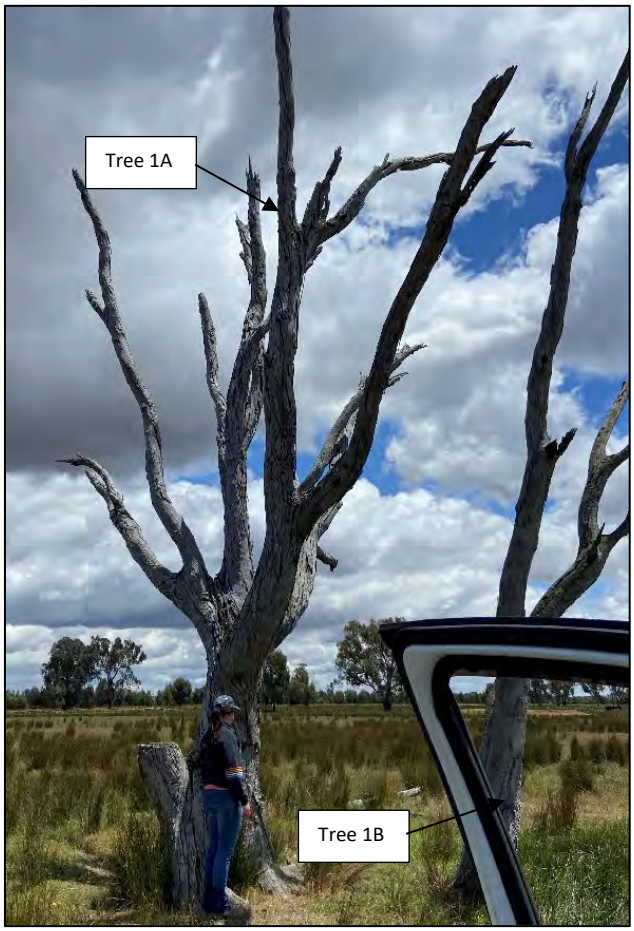

Photo 1: Tree 1A & 2A. Looking north.December 2022

Photo 2: Tree 2C. Looking southeast, February 2023

Photo 3: Roadside patch loss (1C). South-east orientation, March 2023

Photo 4: Paddock patch loss (1B). Northwest orientation, March 2023

Photo 5: Roadside patch loss (1C). North orientation, February 2023

4 ASSESSMENT PATHWAY OF THE APPLICATION

The losses were calculated to be **0.091 ha** of native vegetation across one location category (location 3). The native vegetation on the roadside is in an area mapped as an *Endangered* Ecological Vegetation Class, Plains Grassy Woodland (EVC 55). Removal of less than 0.5 hectares of native vegetation in this location category (location 3) could have a significant impact on habitat for a rare or threatened species, therefore a *Detailed Assessment Pathway* assessment is required.

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	0.091 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.091 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

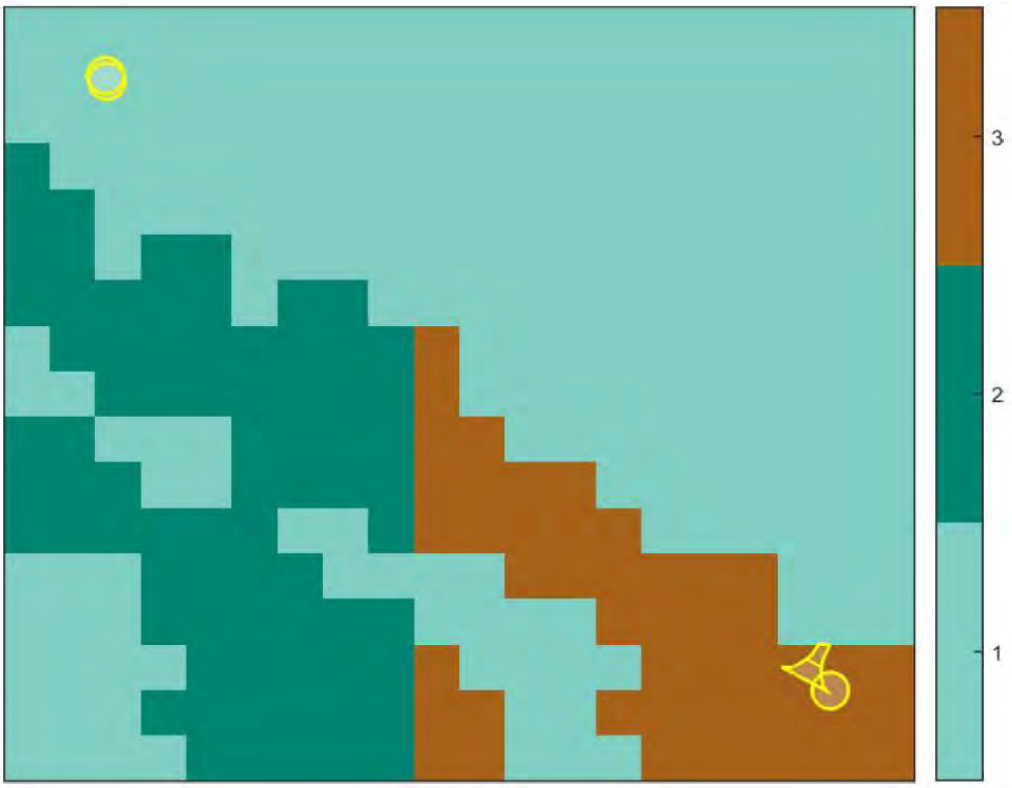

Figure 3: Native vegetation location category map from NVR report 14/3/2023

5 CLEARING FOR DEFENDABLE SPACE

The clearing is not required to create defendable space.

6 PROPERTY VEGETATION PLAN

A Property Vegetation Plan (PVP) for the study area is not required and has not been developed.

7 PREVIOUS CLEARING RELEVANT TO THE SITE

No previous planning permits have been granted for clearing at the same address.

8 AVOID & MINIMISE STATEMENT

8.1 Avoiding Impacts on Native Vegetation

After project inception, Habitat Planning (on behalf of Bison Energy) engaged Red-Gum Environmental Consulting Pty Ltd to conduct a vegetation survey of the site. The site assessment involved the collection of GPS points, species and Diameter at Breast Height (DBH) measurements of any scattered trees and all large trees (according to the large tree benchmark size of EVC 55) within and adjacent to the site. The study site was visited on multiple occasions 14th December 2022, 10th January 2023, 7th February 2023 & 7th March 2023. No threatened flora or fauna was encountered at the times of inspection (**Map 3**).

The total assessed lost was deemed to be **0.091 ha** of native vegetation. Some general design constraints were implemented during the initial design stage:

- Avoid as much native vegetation (trees, native grass, shrubs etc) as possible, while ensuring safe design;
- Wherever possible, avoids the loss of old large trees (>70cm DBH); and
- Minimises the amount of damage to the Tree Protection Zones (TPZ) of all large trees such that <10% of that calculated area is impacted by the construction.

The original design had access to the site originating from the Murray Valley Highway through a natural gap in native vegetation, however the Traffic Impact Assessment Report (TIAR) suggested that Vic Roads would not be supportive of any access off the highway as it would not achieve the traffic siting distances or speed limit reduction that would be required to facilitate safe ingress or egress into/out off the 100km zone.

As second design considered the site access off Margerys Road on the west boundary of site. However, the TIAR and project engineers maintained that the option would require significant road upgrades to accommodate access as per the Department of Transport's/Trafficworks' advice previously, and these are cost prohibitive to allowing the development to proceed. For Margerys Road in particular, this would include an upgrade to the intersection and complete asphalting / sealing of Margerys Road and additional turning lanes off the Murray Valley Highway, potentially significantly increasing the projects overall footprint (and potentially native vegetation losses in these areas).

The third option was access of the Old Barnwartha Road, which was eventually decided upon and assessed as part of this NVR. The option meant that while multiple 'natural gaps' in the native vegetation were assessed, many were deemed not suitable by the TIAR (again siting safe distances for egress and ingress as required DoT). The final chosen site impacts 'Location 3' land that is present along Old Barnawartha Road which has resulted in the entire loss assessment being in the 'Detailed assessment pathway'. Every effort had been made the avoid the best of the Location 3 land while attempting to satisfy the DoT requirements and not make the project cost-prohibitive. At the chosen site, originally, nine (9) trees were to have their TPZ affected by more than 10% of their TPZ area (and hence were to be considered lost), however the design was altered and by shifting the site approximately 40m further north, these TPZs were all avoided, hence reducing the losses to just four (4) trees within the roadside.

Map 3, also shows several trees that are not mapped as scattered trees, in particular, the imagery shows 3 trees along the drainage line, 2 north of drainage line and 1 directly on it but just south, 2 along the drainage line further to the SW and some along north boundary. These trees are revegetation and non-local endemic species and therefore were excluded from the assessment. Nonetheless, all trees, regardless of being remnant or revegetation, are to be retained on site (unless shown otherwise by Map 3 and considered 'Lost' in this NVR). The solar array has been designed to avoid these trees and minimise impacts to all retained tree TPZs such that they are impacted <10% as required by the framework.

In addition the site connection to the existing 22KV powerline across Margery's Road was also considered by the assessment and resultant design. The design has been altered to ensure that the new poles will avoid all native groundcovers in those areas and be an overhead cable approximately 18m above ground. Once the powerline is installed, the management of the revegetation it passes over (within private land on the west side of Margery Road) will likely be managed under Clause 52.17-7 which includes will see the 'management' (e.g. lopped) not necessarily removal, of the revegetation line to the minimum extent necessary to maintain the safe and efficient function a Minor utility installation.

Map 3 provides a good example of how effective the avoidance designs were in minimising impacts to native vegetation. The solar array avoids all living trees within the study area property boundary and avoids the roadside corridor vegetation as much as possible, subject to traffic limitations.

Map 3: Trees that were avoided by the minimisation designs, Barnawartha North, VIC 3691. Source: Nearmap, 2023.

8.2 Minimising Impacts on Native Vegetation & Biodiversity

The following strategies are to be implemented to minimise the impacts of the operation on surrounding vegetation:

- Construction of the array layout by small (four tonne excavator), mini-piling rigs and soft tyred vehicles;
- Clear designation of no-go zones at the end of each array that are not to be used by construction traffic;
- Designation of lay down areas and site amenities (temporary or permanent) outside the native grass zones.
- All personnel involved with any development on the site are to be 'tool-boxed' on the importance of minimising their impact on retained vegetation, adherence to the defined extent of works area and any permit conditions.
- Machinery to be used on the project shall be thoroughly cleaned before entering the site to remove all seeds of invasive weeds and non-natives that could invade the site.
- The site extent will be clearly defined prior to the construction period commencing.
- No soil will be removed from site and low impact measures will be utilised to install the solar array so that native grass seed banks are not permanently compromised.
- Any noxious weeds within the loss area will be sprayed before works commence.

9 OFFSET STRATEGY

9.1 General Offset

A general offset is required when a proposal to remove native vegetation is not deemed (by application of the specific-general offset test) to have a significant impact on habitat for any rare or threatened species. The NVR Report has calculated that a general offset amount (in general habitat units) of **0.026** is required.

The offset strategy will also ensure that the strategic biodiversity score of the offset must be a minimum of **0.703** and there is no large tree offset requirement. The proponent will seek to secure the required offsets via a third party. A description and map of the site is described in **Appendix D.**

10 IMPACTS ON THREATENED SPECIES AND COMMUNITIES

10.1 Threatened ecological communities

After site inspection, it was determined that where native vegetation persists, it consists of Plains Grassy Woodland (EVC 55), which is listed as Endangered within the VRiv bioregion. The vegetation is also potentially the EPBC-listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC. The vegetation being lost for the access to the site was assessed against the listing criteria for the TEC and it was determined that the vegetation did not meet the criteria to be the TEC because, whilst the roadside had maintained the key tree canopy species, the patch was too small and the understorey lacked key indicator species required for the patch to be considered an example of the TEC.

10.2 Threatened species

The NVR report generated on 14/3/2023 identified 44 species (25 flora, 20 fauna) whose habitat may occur within the specified geographical region. It is highly unlikely that any threatened flora or fauna will be located within the site given the level of past disturbance and lack of trees in the areas proposed to be 'lost'. The following sections consider their likelihood of being affected by the works. See Tables 3, 4 & 5 for likelihood of occurrence assessment for threatened species and communities.

10.2.1 Database searches

A database search and literature review was undertaken. Relevant and available documents were reviewed for information on past land uses, presence of vegetation communities as well as flora and fauna. Relevant databases were searched for records of threatened species and communities within a 1 km radius of the study area.

This review was used to prepare a list of threatened flora and fauna species, ecological communities, migratory species and any significant habitat previously recorded or predicted to occur in the study area and the broader locality (listed and preliminary listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Flora and Fauna Guarantee Act 1988 (FFG Act). The following sources of information were consulted:

- The Department of Energy, Environment and Climate Action's (DEECA) NatureKit online mapping tool (DEECA 2019);
- The Victorian Biodiversity Atlas (DEECA 2023) – 2 km search radius of the study area;
- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) – 1 km search radius of the study area (DoEE 2019);
- The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Species Profile and Threats Database;

10.2.2 Field assessment methodology

A variety of methods were employed during the field assessment stage. **Table 2** provides a summary of methodologies used.

Table 2: Field assessment methods employed.

Intended Target	Methodology
Diurnal Birds	Area search, where the observer walked across the site and length of the access road.
	Point Count method, where observations were made from 2 points for 15 minutes each.
Nocturnal Birds	Day habitat search. Search habitat for pellets, and likely hollows.
Non-Flying Mammals	Search for scats and signs - 30 minutes searching relevant habitat, including trees for scratch marks.

10.2.3 Results

Table 3 considers the likelihood of threatened species occurring in the proposed development site following site assessment and consideration of the database search results. Five categories for the 'likelihood of occurrence' of species has been used (listed below). The categories are based on recorded sightings listed in credible databases, the presence or absence of suitable habitat, other features of the site, results of the field survey and professional judgement. Species with a Potential, Likely or Recorded likelihood status are considered further in this report.

'Recorded' The species/community was or has been observed on the site.
'Likely' A medium to High probability that a species uses the site
'Potential' A suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as 'likely' or 'unlikely' to occur.
'Unlikely' A Very Low to Low probability that a species uses the site.
'No' Habitat on the site and in the vicinity in unsuitable for the species.

Table 3: Threatened species and communities within 5 km radius of the site.

Scientific Name	Common Name	EPBCAct status	FFG Act status	Preferred habitat	Likelihood
Birds					
Numenius madagascariensis	Eastern Curlew	Critically Endangered	Critically endangered	Found in intertidal mudflats, in coastal lakes, inlets, bays and estuarine habitats	No. No suitable habitat. Site highly disturbed.
Pedionomus torquatus	Plains-wanderer	Critically Endangered	Critically endangered	The Plains-wanderer inhabits sparse, treeless, lowland native grasslands.	No. Site lacks the higher quality native grasslands required by this species.
Lathamus discolor	Swift Parrot	Critically Endangered	Critically endangered	Forests and woodlands dominated by winter flowering eucalypts	Potential – May frequent remnant trees on occasion to roost and feed (Season dependent)
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	Critically endangered	Occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets.	No – No suitable permanent aquatic habitat.
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Critically endangered	Found in box-ironbark eucalypt associations.	Potential – Known populations close by at Chiltern. May frequent remnant trees on occasion to roost and feed
Botaurus poiciloptilus	Australasian Bittern	Endangered	Critically endangered	Occur within Spinifex grasslands in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans.	No –Site contains no spinifex habitat.

Scientific Name	Common Name	EPBCAct status	FFG Act status	Preferred habitat	Likelihood
Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered	Not listed	Found in tall mountain forests and woodlands, with dense shrubby understoreys in summer. In winter, will move to lower altitudes into drier, more open forests and woodlands	Unlikely – Majority of the site is cleared of connected vegetation; however the roadside may provide some habitat value.
Rostratula australis	Australian Painted Snipe	Endangered	Critically endangered	Occurs on the fringes of swamps, dams and marshy areas, where grasses, low scrub or open timber is present.	No – Lacking suitable grass/shrub midstory.
Grantiella picta	Painted Honeyeater	Vulnerable	Vulnerable	Inhabits Boree / Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands	Unlikely – Lack of preferred tree species.
Hirundapus caudacutus	White-throated Needletail	Vulnerable	Vulnerable	Feed, drink and rest on the wing in large groups. May rest at night in forested country.	Unlikely – Species predominantly an aerial species and unlikely to use ground habitat.
Falco hypoleucos	Grey Falcon	Vulnerable	Vulnerable	Occurs in shrubland, grassland and wooded watercourses of arid and semi-arid regions	Unlikely – Very few records from the local area. Tends to be associated with more arid regions.
Polytelis swainsonii	Superb Parrot	Vulnerable	Endangered	Occurs in riverine forests in the Riverina, and box-gum woodlands in the tablelands and slopes of Victoria.	Possible - May frequent remnant trees on occasion to roost and feed
Fish					
Galaxias rostratus	Flathead Galaxias	Critically Endangered	Vulnerable	Inhabits including billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters.	No – No suitable aquatic habitat in the study area.
Craterocephalus fluviatilis	Murray Hardyhead	Endangered	Critically endangered	Prefers open water, shallow, slow flowing or still habitats, with sand or silt substrates.	No - No suitable aquatic habitat present in the study area.
Macquaria australasica	Macquarie Perch	Endangered	Endangered	Clear water and deep, rocky holes with lots of cover.	No - No suitable aquatic habitat present in the study area.
Maccullochella macquariensis	Trout Cod	Endangered	Endangered	Stream positions with high abundance of large woody debris	No - No suitable aquatic habitat present in the study area.
Maccullochella peelii	Murray Cod	Vulnerable	Endangered	Slow flowing turbid rivers and billabongs.	No - No suitable aquatic habitat present in the study area.

Scientific Name	Common Name	EPBCAct status	FFG Act status	Preferred habitat	Likelihood
Bidyanus bidyanus	Silver Perch, Bidyan	Critically endangered	Endangered	Occurs in freshwaters throughout much of the Murray-Darling basin, prefers fast-flowing waters.	No - No suitable aquatic habitat present in the study area.
Nannoperca australis Murray-Darling Basin lineage	Southern Pygmy Perch (Murray-Darling Basin lineage)	Vulnerable	Vulnerable	Prefers slow flowing or still waters, usually with dense aquatic vegetation and plenty of cover.	No - No suitable aquatic habitat present in the study area.
Frogs					
Crinia sloanei	Sloane's Froglet	Endangered	Endangered	Associated with periodically inundated areas in grassland, woodland and disturbed areas.	Possible – Scattered records from the local area and presence cannot be ruled out.
Litoria raniformis	Growling Grass Frog	Vulnerable	Vulnerable	Still or slow-flowing water bodies such as lagoons, amongst emergent vegetation.	Unlikely – Farm dams on site unlikely to meet habitat requirements.
Insects					
Synemon plana	Golden Sun Moth	Vulnerable	Vulnerable	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which ground layer is dominated by wallaby grasses Austrodanthonia spp.	No – No suitable native grassland habitat in study area.
Keyacris scurra	Key's Matchstick Grasshopper	Endangered	Threatened	Found in native grasslands, preference towards kangaroo grass and known food plants (particularly Asteraceae).	No – No suitable native grassland habitat in study area.
Mammals					
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, (southeastern mainland population)	Endangered	Endangered	Primarily forest-dependent species that occupies a wide range of habitat types, although all appear to be characterised by relatively high (> 600 mm/yr) and predictable seasonal rainfall.	No – Too far from densely forested connected habitat.
Phascolarctos cinereus	Koala	Endangered	Not listed	Temperate, sub-tropical and tropical forest, woodland and semi-arid communities.	Unlikely – No records within the local area around the study area.
Nyctophilus corbeni	Corben's Long-eared Bat	Vulnerable	Endangered	Inhabits a variety of vegetation types, including mallee, buloke	No – No records in the local area.
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	Requires foraging resources and roosting sites.	Unlikely – Limited habitat along highway not

Scientific Name	Common Name	EPBCAct status	FFG Act status	Preferred habitat	Likelihood
					suitable for roosting.
Flora					
Lepidium monoplocoides	Winged Pepper-cress	Endangered	Endangered	Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, dominated by Bulloak Black Box or Poplar Box with a field layer of surrounding tussock grasses.	Unlikely – Grazing and spraying history means no native herbs persist in the study area. Road reserve high exotic load.
Swainsona recta	Small Purple-pea, Mountain Swainson-pea, Small Purple Pea	Endangered	Critically endangered	Occurs predominantly in grassy woodlands with an understory dominated by Kangaroo grass, snows grass and spear grass.	No - Grazing and spraying history means no native herbs persist in the study area.
Amphibromus fluitans	River Swamp Wallaby-grass	Vulnerable	Not listed	Moderately fertile wetlands, some bare ground and seasonally-fluctuating water levels.	No – No suitable habitat. Heavy grazing history for study area.
Senecio macrocarpus	Large-fruit Fireweed	Vulnerable	Critically endangered	Occurs in grassland, sedgeland, woodland and shrubland, generally on relatively heavy soils.	No- Grazing and spraying history means no native herbs persist in the study area.
Prasophyllum validum	Sturdy Leek-orchid, Mount Remarkable Leek-orchid	Vulnerable	Not listed	Prefer relatively dry woodland habitats in inland Victoria.	No – No records for this species from region. Known from central Victoria and Adelaide areas.
Prasophyllum petilum	Tarengo Leek Orchid	Endangered	Not listed	Occurs in Grassy woodland in association with River Tussock Poa, Black Gum and tea-trees, with a grassy ground layer dominated by Kangaroo Grass.	No – No suitable habitat in study area, lacks key associated species.
Caladenia concolor	Crimson Spider-orchid, Maroon Spider-orchid	Vulnerable	Endangered	Grows in sclerophyll forest on clay loams or gravelly soils within dry eucalypt forest, heathland, closed scrub and grassland.	No –Lack of suitable habitat, dominated by exotics and subject to grazing pressures.
Reptile					
Delma impar	Striped Legless Lizard	Vulnerable	Endangered	Requires complex floristically diverse grass structures, including areas of tussocks, containing rocks with little to no disturbance.	No – Lack of suitable habitat, no rock features, no tussock grasses.
Aprasia parapulchella	Pink-tailed Legless Lizard	Vulnerable	Endangered	Occurs in grassland & woodland with rock	No – No suitable rocky habitat.

Table 4: Threatened species within a 5km radius (Victorian Biodiversity Atlas (DEECA 2023))

Scientific Name	Common Name	FFG Status	Preferred habitat	Likelihood
Maccullochella macquariensis	Trout Cod	Endangered	Stream positions with high abundance of large woody debris	No- Lack of suitable aquatic habitat.
Maccullochella peelii	Murray Cod	Endangered	Slow flowing turbid rivers and billabongs.	No - Lack of suitable aquatic habitat.
Oxyura australis	Blue-billed Duck	Vulnerable	Found in temperate wetland with large, deep freshwater.	No – Lack of suitable aquatic habitat.
Eucalyptus sideroxylon subsp. sideroxylon	Mugga	Endangered	Occurs in sclerophyll woodland on lighter, poorer soils.	No – Confined to the Chiltern area.

Table 5: Threatened ecological communities within 5 km of site

TEC Name	FFG	EPBC	Likelihood
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		Critically endangered	Yes. Likely to be present in area. Although areas being impacted do not meet EPBC TEC criteria
Victorian Temperate Woodland Bird Community	Listed		Yes. However, impacts to habitat of TEC species is minimal and no significant impact from development is expected.
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Endangered	No. Key indicator species are not present on site.
Natural Grasslands of the Murray Valley Plains		Critically endangered	No. Key indicator species are not present on site.
Weeping Myall Woodlands		Endangered	No. Key indicator species are not present on site.
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		Endangered	No. Key indicator species are not present on site.

10.3 Matters of National Environmental Significance - Significant Impact Guidelines 1.1

The purpose of these guidelines is to assist any person who proposes to take an action to decide whether or not they should submit a referral to the Australian Government Department of Climate Change, Energy, the Environment and Water for a decision by the Australian Government Environment Minister (the minister) on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Under the EPBC Act an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance. The Significant Impact Guidelines 1.1 are a 'self-assessment' process, including detailed criteria, to assist persons in deciding whether or not referral may be required.

In this instance, the criterion below has been used to assess the likely impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC whose formation has been identified as occurring within the region as well as [1]Woodland birds and Sloane's Froglet.

Table 5: Significant Impact Criteria for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC.

Significant Impact Criteria (*for Critically Endangered Communities)	Likelihood of Significant Impact	Justification
1. Reduce the extent of an ecological community.	Unlikely	*The works are being conducted in a fashion that will only remove small areas of viable habitat. The area being impacted does not meet the EPBC Act criteria to be considered an example of the TEC.*
2. Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines;	Unlikely	*The works are narrow and will not further fragment the roadside.*
3. Adversely affect habitat critical to the survival of an ecological community	Unlikely	*The site is not critical habitat that is critical to the survival of the TEC, it is within an already fragmented roadside disconnected from contiguous vegetation.*
4. Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns;	Unlikely	*The works are minor in the TEC, surface drainage patterns will be altered slightly but will not destroy critical landforms or landscape features.*

[1] Fauna considered collectively as "Woodland Birds" include the Regent Honeyeater, Swift Parrot & Superb parrot.

Significant Impact Criteria (*for Critically Endangered Communities)	Likelihood of Significant Impact	Justification
5. Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.	Unlikely	*Works are within a very narrow workspace and require minimal clearing.*
6. Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: **a.** Assisting invasive species, that are harmful to the listed ecological community, to become established, or **b.** Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.	Unlikely	***A**: The works site is already weed affected by pasture-based weeds and Vehicle hygiene protocols will be followed to ensure machinery does not bring any new weeds onto the study site.* ***B**: Not relevant to the scope of works or proposed development as it is currently designed.*
7. Interfere with the recovery of an ecological community.	Unlikely	*Due to the small footprint of the works, and the small number of trees being removed, it is unlikely that the works will set the recovery of this TEC back in the immediate area or wider region.*
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC SIC		
The areas being impacted by the development proposal do not meet the EPBC listing criteria for the TEC. The development is to be passive and will have very low indirect impacts for the surrounding area and other potential areas of the EPBC listed TEC. In summary, considering the above criterion, the works and the existing site conditions, *it is highly unlikely* that the project will have, or is likely to have, a significant impact on a matter of national environmental significance – in this case White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC.		

Table 6: Significant Impact Criteria for [2]Woodland birds.

Significant Impact Criteria (*for Endangered and Critically Endangered species)	Likelihood of Significant Impact	Justification
1. Lead to a long-term decrease in the size of a population	No	*The works are being conducted in a fashion that will only remove small areas of foraging habitat and hence will not directly impact any of these species or their viable breeding habitat.*
2. Reduce the area of occupancy of the species	No	*The works are being conducted in a fashion that will only remove small areas of foraging habitat. No large hollow bearing remnant trees (high value habitat) are to be removed.*
3. Fragment an existing population into two or more populations	No	*The works will only remove small areas of foraging habitat within an already fragmented roadside disconnected from contiguous vegetation.*
4. Adversely affect habitat critical to the survival of a species	No	*The works will only remove small areas of foraging habitat. No large hollow bearing remnant trees (high value habitat) are to be removed.*
5. Disrupt the breeding cycle of a population	Unlikely	*The works may disrupt foraging activities in the short term (during construction) but are not likely to disrupt breeding cycles or viable breading habitat.*
6. Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely	*The works will only remove small areas of foraging habitat along the roadside.* *Two SDT with small hollows will be removed, however these trees are isolated paddock trees disconnected from the neighbouring roadside corridor.*
7. Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Unlikely	*Vehicle hygiene protocols will be followed to ensure machinery does not bring any new invasive species onto the study site.*
8. Introduce disease that may cause the species to decline, or	Unlikely	*Vehicle hygiene protocols will be followed to ensure machinery does not bring any new diseases onto the study site.*
9. Interfere with the recovery of the species.	Unlikely	*Due to the small footprint of the works, and the small number of trees being removed, it is unlikely that the works will set the recovery of these species back in the immediate area or wider region.*
Woodland Birds SIC		
In summary, considering the above criterion, the works and the existing site conditions, *it is highly unlikely* that the project will have, or is likely to have, a significant impact on a matter of national environmental significance – in this case Woodland birds (Regent Honeyeater, Superb Parrot and Swift Parrot).		

[2] Fauna considered collectively as "Woodland Birds" include the Regent Honeyeater, Swift Parrot & Superb parrot.

Table 7: Significant Impact Criteria for Sloane's froglet (*Crinia Sloanei*).

Significant Impact Criteria (*for Endangered Species)	Likelihood of Significant Impact	Justification
1. Lead to a long-term decrease in the size of a population	Unlikely	*The works are being conducted in a fashion that will avoid the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat.*
2. Reduce the area of occupancy of the species	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat.*
3. Fragment an existing population into two or more populations	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat.*
4. Adversely affect habitat critical to the survival of a species	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat.*
5. Disrupt the breeding cycle of a population	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat.*
6. Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property. The only vegetation to be removed consists of 4 trees along the roadside and 2 SDT within the solar array*
7. Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Unlikely	*Vehicle hygiene protocols will be followed to ensure machinery does not bring any new invasive species onto the study site.*
8. Introduce disease that may cause the species to decline, or	Unlikely	*Vehicle hygiene protocols will be followed to ensure machinery does not bring any new diseases onto the study site.*
9. Interfere with the recovery of the species.	Unlikely	*The works are avoiding the drainage line and associated dams throughout the property hence will not directly impact this species or viable breeding habitat. It is not likely that the works will set the recovery of these species back in the immediate area or wider region.*
Sloane's Froglet SIC		
In summary, considering the above criterion, the works and the existing site conditions, *it is highly unlikely* that the project will have, or is likely to have, a significant impact on a matter of national environmental significance – in this case Sloanes Froglet (*Crinia sloanei*).		

10.4 Assessment of impacts to the receiving environment

The following section assesses whether the proposal (as discussed and reviewed in this assessment) is likely to have a significant effect on the receiving environment and its biodiversity (non-threatened). *Direct and indirect* impacts as well as short and long term effects have been considered.

10.4.1 Is the proposal likely to impact soil quality or stability?

Soil Quality – No. Land Stability - Yes. There is likely to be mobilisation of some soil given the nature of the proposal (construction). The site is susceptible to compaction by traffic immediately after periods of heavy rainfall. Mitigation measures are to extend (but not be limited to) the following:

- Development of an Erosion and Sediment Control Plan (ESCP) which is progressively implemented.
- Vehicle movements around the site will be restricted to clear areas and away from any existing trees and flagging exclusion fencing to be installed.
- When rain is predicted, an assessment will be made prior to works beginning. If heavy rain is predicted, work will not commence.
- No stockpiles will be established under native vegetation in any area on site or in within the study area.
- Maintenance and checking of the erosion and sedimentation controls will need to be undertaken on a regular basis. Sediment will be cleared from behind barriers on a regular basis and all controls will be managed in order to work effectively at all times.
- Rehabilitation of any disturbed areas should be completed as soon as possible after completion of works where practical to do so.

10.4.2 Is the activity likely to affect a waterbody, watercourse or wetland or natural drainage system?

No. If ESCP controls are implemented and length of slope guidelines are adhered to, then the risk to water quality is extremely low.

10.4.3 Is the activity likely to change flood or tidal regimes, or be affected by flooding?

No.

10.4.4 Does the proposal involve the use, storage or transport of hazardous substances or the use or generation of chemicals which may build up residues in the environment?

No. Some diesel will be stored in ‘slip-on’ tanks in the back of utility vehicles and they will not be left on-site outside of working hours.

10.4.5 Does the activity involve the generation or disposal of gaseous, liquid or solid wastes or emissions?

Yes. However only the operation of machinery should produce emissions, no further disposal of liquids, gases or solid wastes is expected.

10.4.6 Will the activity involve the emission of dust, odours, noise, vibration, or radiation in the proximity of residential/urban areas or other sensitive locations?

Yes. The project may emit some dust and noise but this is expected to be minimal and the time period short. Given the current level of disturbance and providing the recommendations contained within this report are adhered to, it is unlikely that the proposal will result in extensive or harmful outcomes regarding these activities.

10.4.7 Is any vegetation to be cleared or modified?

Yes, the site is predominantly introduced pasture grasses with some native rushes below scattered native trees. Two (2) patches and three (3) scattered trees will be removed.

10.4.8 Is the activity likely to have a significant effect on threatened flora or fauna species, populations, or their habitats, or critical habitat; or an endangered ecological community or its habitat?

No. Whilst six trees are proposed to be lost/removed, they are not large remnant native trees with hollow bearing potential. It is unlikely that the loss of these small trees will displace any rare or threatened species that may be using the site opportunistically.

10.4.9 Does the activity have the potential to endanger, displace or disturb fauna (including fauna of conservation significance) or create a barrier to their movement?

Endanger – No.
Displace – No.
Disturb – Yes. Threatened and declining woodland dependent birds may be using the area opportunistically during winter, hence the construction activities may prove to disturb foraging activities for a short period. The construction activities will avoid all existing large remnant native trees within the developable area.

10.4.10 Is the activity likely to impact on an ecological community of conservation significance?

Yes. The site was likely (historically at least) part of endangered EVC and losses are predicted to be <0.5 ha, however no large hollow bearing trees or other important habitat features are being removed. Therefore, theoretically, the EVC should not be impacted negatively. Mitigation measures should ensure that impacts are minimised.

10.4.11 Is the activity likely to cause a threat to the biological diversity or ecological integrity of an ecological community?

No. The current site has an extensive history of disturbance and is highly modified. Furthermore any areas of native vegetation that offer true harbor and feeding opportunities, will be un-affected by the works.

10.4.12 Is the activity likely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area?

Vermin – No.
Feral Species – No.
Noxious Weeds - Possible. The movement of vehicles, plant, equipment and people on and off the subject site/s has the potential to introduce noxious weeds to the area. The area is also impacted by several pasture grass weed species. Wherever possible, removal of weeds should be undertaken prior to seed developing, which for most species occurs during the warmer months (i.e. spring and summer).

Additionally, the following strategies are to apply to weed management within the site:

- Minimal impact techniques are to be used, ensuring no native species are damaged during weed control activities.
- Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint.
- Herbicide application is to be administered by authorised personnel only (e.g. ChemCert Accreditation– AQF 3), in accordance with the directions on the container (application rates, MSDS requirements), legislation and any applicable Workcover requirements.
- All machinery used within the site is to be thoroughly cleaned by removing all plant material, dust or soil, and any accumulation of grease from the machine prior to the commencement of the

construction.

- Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.
- If required, only topsoil from areas with no noxious or highly invasive weed species should be re-used in rehabilitation (it is generally assumed that if there is no evidence of noxious or invasive weeds in an area, the topsoil in this area is not contaminated with the seeds of such weeds).

11 Conclusion

The factors considered when determining whether an action, development or activity is likely to significantly affect threatened species, populations or ecological communities, or their habitats are either:

1. ***Direct impacts*** that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat; or
2. ***Indirect impacts*** that occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities and loss of shade/shelter, etc.

Given that no (zero) large remnant hollow bearing trees are to be removed as part of the project, it is unlikely that the project will displace any of the species potentially utilising the site opportunistically for foraging or passing through the site.

The site was likely part of an Endangered EVC historically, however it is now an exotic dominated paddock with scattered paddock trees. The roadside corridor consists of remnant & regenerative box gum woodland, with a predominantly native but disturbed understory.

The Significant Impact Criteria has been used to assess the likely impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC whose formation has been identified as potentially intersecting the site as well as [3]Woodland birds and Sloane's Froglet. Based on the proposed works and the existing site conditions, it is highly unlikely that the project will have, or is likely to have, a significant impact on any matters of national environmental significance.

Red-Gum Environmental Consulting are of the opinion that the activities as proposed *will **not** have a significant effect on any of the identified threatened species and ecological communities and their conservation as noted within this report*.

The losses were calculated to be **0.091 ha** of native vegetation patches & scattered trees across one location category consisting of two (2) standing dead trees (SDT), one (1) scattered tree along the roadside, one (1) patch of native grasses and one (1) patch of regenerating Yellow Box (*E. melliodora*) trees with a predominantly native yet disturbed understorey in the roadside adjoining the site (which are to be removed to facilitate site access).

[3] Fauna considered collectively as "Woodland Birds" include the Regent Honeyeater, Swift Parrot & Superb parrot.

12 References

Commonwealth of Australia 2013. *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. *Environment Protection and Biodiversity Conservation Act 1999*. Australian Government, Department of the Environment. https://www.dcceew.gov.au/sites/default/files/documents/nes-guidelines_1.pdf.

NSW Government 2023, Office of Environment and Heritage. Threatened Species profiles. https://www.environment.nsw.gov.au/threatenedspeciesapp/

Department of the Environment 2023. Species Profile and Threats Database, Department of the Environment, Canberra. Available from: https://www.environment.gov.au/sprat .

13 APPENDICES

Appendix A: 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: 14/03/2023
Time of issue: 1:13 pm

Report ID: RGE_2023_006

Project ID	BarnawarthaNSF_LostVeg_VicGrid94

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	0.091 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.091 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species.The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map).

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]	0.026 general habitat units
Vicinity	North East Catchment Management Authority (CMA) or Wodonga City Council
Minimum strategic biodiversity value score[2]	0.703
Large trees	0 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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

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

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.

Appendix 1: Description of native vegetation to be removed

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

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

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

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

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
1-A	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.019	0.920		0.005	General
2-A	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.019	0.920		0.005	General
1-B	Patch	vriv0055	Endangered	0	no	0.140	0.008	0.008	0.850		0.002	General
1-C	Patch	vriv0055	Endangered	0	no	0.250	0.017	0.017	0.850		0.006	General
2-C	Scattered Tree	vriv0055	Endangered	0	no	0.200	0.031	0.029	0.850		0.008	General

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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
Wedge Diuris	*Diuris dendrobioides*	504416	Endangered	Dispersed	Top ranking map	0.0009
Wedge Diuris	*Diuris dendrobioides*	504416	Endangered	Dispersed	Habitat importance map	0.0006
Mugga	*Eucalyptus sideroxylon subsp. sideroxylon*	504493	Rare	Dispersed	Habitat importance map	0.0000
Yarran Wattle	*Acacia omalophylla*	500069	Endangered	Dispersed	Habitat importance map	0.0000
Southern Pygmy Perch (Murray-Darling lineage)	*Nannoperca australis (Murray-Darling lineage)*	903231	Vulnerable	Dispersed	Habitat importance map	0.0000
Western Silver Wattle	*Acacia decora*	500027	Vulnerable	Dispersed	Habitat importance map	0.0000
Superb Parrot	*Polytelis swainsonii*	10277	Endangered	Dispersed	Habitat importance map	0.0000
Rough-grain Love-grass	*Eragrostis trachycarpa*	501197	Rare	Dispersed	Habitat importance map	0.0000
Crimson Spider-orchid	*Caladenia concolor*	504347	Endangered	Dispersed	Habitat importance map	0.0000
Narrow Goodenia	*Goodenia macbarronii*	501513	Vulnerable	Dispersed	Habitat importance map	0.0000
Northern Sandalwood	*Santalum lanceolatum*	503005	Endangered	Dispersed	Habitat importance map	0.0000
Squirrel Glider	*Petaurus norfolcensis*	11137	Endangered	Dispersed	Habitat importance map	0.0000
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0000
Deane's Wattle	*Acacia deanei subsp. paucijuga*	504201	Rare	Dispersed	Habitat importance map	0.0000
Dookie Daisy	*Brachyscome gracilis*	505494	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Falcon	*Falco hypoleucos*	10236	Endangered	Dispersed	Habitat importance map	0.0000
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0000
Umbrella Grass	*Digitaria divaricatissima var. divaricatissima*	501045	Vulnerable	Dispersed	Habitat importance map	0.0000

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Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0000
Veiled Fringe-sedge	*Fimbristylis velata*	501369	Rare	Dispersed	Habitat importance map	0.0000
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0000
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0000
Tick Indigo	*Indigofera adesmiifolia*	503780	Vulnerable	Dispersed	Habitat importance map	0.0000
Australian Painted Snipe	*Rostratula australis*	10170	Critically endangered	Dispersed	Habitat importance map	0.0000
Purple Diuris	*Diuris punctata*	501064	Vulnerable	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	507229	Endangered	Dispersed	Habitat importance map	0.0000
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0000
Dense Mint-bush	*Prostanthera decussata*	502739	Rare	Dispersed	Habitat importance map	0.0000
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0000
Barking Owl	*Ninox connivens connivens*	10248	Endangered	Dispersed	Habitat importance map	0.0000
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Intermediate Egret	*Ardea intermedia*	10186	Endangered	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0000
Regent Honeyeater	*Anthochaera phrygia*	10603	Critically endangered	Dispersed	Habitat importance map	0.0000
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0000
Australasian Shoveler	*Anas rhynchotis*	10212	Vulnerable	Dispersed	Habitat importance map	0.0000
Hardhead	*Aythya australis*	10215	Vulnerable	Dispersed	Habitat importance map	0.0000
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000

Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000
Eastern Great Egret	*Ardea modesta*	10187	Vulnerable	Dispersed	Habitat importance map	0.0000
Baillon's Crake	*Porzana pusilla palustris*	10050	Vulnerable	Dispersed	Habitat importance map	0.0000
Musk Duck	*Biziura lobata*	10217	Vulnerable	Dispersed	Habitat importance map	0.0000

Habitat group

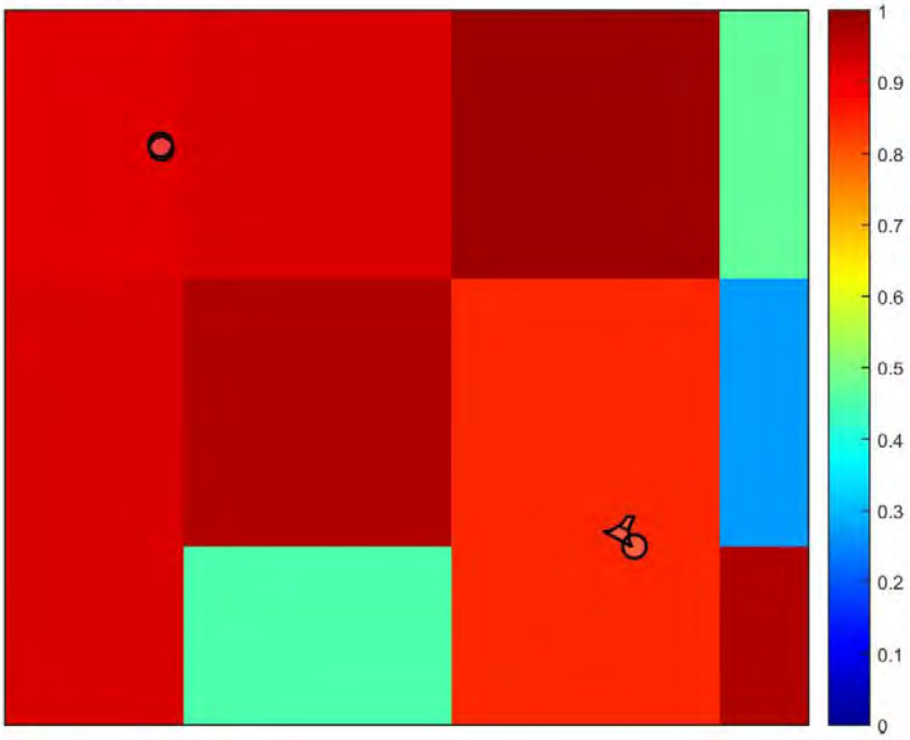
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

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

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

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4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.

Appendix B: Table 4 of the Guidelines

Table 4: Application requirements for all applications for a permit to remove native vegetation

Number	Application requirement
1	Information about the native vegetation to be removed, including: • The assessment pathway and reason for the assessment pathway. This includes the location category of the native vegetation to be removed. • A description of the native vegetation to be removed that includes: - whether it is a patch or a scattered tree (or both) - the extent (in hectares) - the number and circumference (in centimetres measured at 1.3 metres above ground level) of any large trees within a patch - the number and circumference (in centimetres measured at 1.3 metres above ground level) of any scattered trees, and whether each tree is small or large - the strategic biodiversity value score - the condition score - if it includes endangered Ecological Vegetation Classes - if it includes sensitive wetland or coastal areas. • Maps showing the native vegetation and property in context and containing: - scale, north point and property boundaries - location of any patches of native vegetation and the number of large trees within the patch proposed to be removed - location of scattered trees proposed to be removed, including their size • The offset requirement, determined in accordance with section 5 of the Guidelines, that will apply if the native vegetation is approved to be removed. *Note: A report from DELWP systems and tools contains information required to address this application requirement.*
2	Topographic and land information relating to the native vegetation to be removed, showing ridges, crests and hilltops, wetlands and waterways, slopes of more than 20 percent, drainage lines, low lying areas, saline discharge areas, and areas of existing erosion, as appropriate. This may be represented in a map or plan.
3	Recent, dated photographs of the native vegetation to be removed.

Number	Application requirement
4	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.
5	An avoid and minimise statement. The statement describes any efforts to avoid the removal of, and minimise the impacts on the biodiversity and other values of native vegetation, and how these efforts focussed on areas of native vegetation that have the most value. The statement should include a description of the following: • Strategic level planning – any regional or landscape scale strategic planning process that the site has been subject to that avoided and minimised impacts on native vegetation across a region or landscape • Site level planning – how the proposed use or development has been sited or designed to avoid and minimise impacts on native vegetation. • That no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.
6	A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* that applies to the native vegetation to be removed.
7	Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary. This statement must have regard to other available bushfire risk mitigation measures. This statement is not required when the creation of defendable space is in conjunction with an application under the Bushfire Management Overlay.
8	If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8.
9	An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified, and can be secured in accordance with the Guidelines. A suitable statement includes evidence that the required offset: • is available to purchase from a third party, or • will be established as a new offset and has the agreement of the proposed offset provider, or • can be met by a first party offset.

Appendix C: Table 5 of the Guidelines

Table 5: Additional application requirements for applications in the Detailed Assessment Pathway

Number	Application requirement
10	A site assessment report of the native vegetation to be removed, including: • A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches. • The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.
11	Information about impacts on rare or threatened species habitat, including: • The relevant section of the *Habitat importance map* for each rare or threatened species requiring a species offset. • For each rare or threatened species that the native vegetation to be removed is habitat for, according to the Habitat importance maps: - the species' conservation status - the proportional impact of the removal of native vegetation on the total habitat for that species - whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat. *Note: A report from DELWP systems and tools contains information required to address this application requirement.*

Appendix D: Offset Strategy – **Available Offset Credits**

vegetationlink

Our reference: VLQ-9024-B

Your reference: Barnawartha North Solar Farm

16 March 2023

Olivia Hynam
Red-Gum Environmental Consulting
Olivia.Hynam@red-gum.com.au

Dear Olivia

RE: Quotation for the supply of native vegetation credits

Vegetation Link is an accredited offset provider with the Department of Energy, Environment and Climate Action (DEECA). 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	Vicinity	General habitat units (GHU)	Min. strategic biodiversity value (SBV)	Large trees
General	North East CMA	0.026	0.703	-

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

Fixed price trade pathway - offset site located in the Towong Shire area (approx. 3-4 week turnaround from acceptance of quote)	
Cost of native vegetation credits – invoiced by DEECA	$3,900.00
Transaction fees – invoiced by Vegetation Link	$870.00
Total (ex. GST)	$4,770.00
Total (inc. GST)	$5,247.00

If you would like to purchase credits, let us know that you accept the quote and return the attached **purchaser details form** by email. Upon receipt of the form, we will begin the trade process. Further details of the process for credit allocation are 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

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

Vegetation Link Pty Ltd
ABN: 92 169 702 032
www.vegetationlink.com.au
1300 VEG LINK (1300 834 546) | offsets@vegetationlink.com.au | PO Box 10 Castlemaine VIC 3450

Appendix E: Incidental Flora and Fauna Species Lists

Table 8: Observed Flora species (10/01/2023 & 07/03/2023)

Species	Common name	Status
Amphibromus nervosus	Common Swamp Wallaby Grass	Native
Amyema miquelli	Box Mistletoe	Native
Arctotheca calendula	Capeweed	Introduced
Austrostipa aristiglumis	Plains Grass	Native
Austrostipa nodosa	Spear Grass	Native
Avena fatua	Wild Oats	Introduced
Bromus catharticus	Prairie Grass	Introduced
Bromus diandrus	Great Brome	Introduced
Carthamus lanatus	Saffron Thistle	Introduced
Centaurea solstitialis	St Barnaby's Thistle	Introduced
Chloris truncata	Windmill Grass	Native
Cirsium vulgare	Spear Thistle	Introduced
Dysphania pumilio	Clammy Goosefoot	Native
Dichanthium sericeum	Silky blue grass	Native
Cynodon dactylon var dactylon	Couch Grass	Introduced
Digitaria sanguinalis	Summer Grass	Introduced
Echium plantagineum	Patterson's Curse	Introduced
Eragrostis cilianensis	Stinkgrass	Introduced
Eragrostis curvula	African Lovegrass	Introduced
Eucalyptus albens	White Box	Native
Eucalyptus camaldulensis	River Red Gum	Native
Eucalyptus blakelyi	Blakelys Red Gum	Native
Eucalyptus macrocarpa	Grey Box	Native
Eucalyptus melliodora	Yellow Box	Native
Eucalyptus microcarpa	Grey Box	Native
Eucalyptus polyanthemos	Red Box	Native
Festuca perennans	Annual Rye Grass	Introduced
Hordeum sp.	Barley Grass	Introduced
Hypochaeris radicata	Cat's Ear	Introduced
Juncus bufonius	Toad Rush	Introduced
Juncus effusus subsp. effusus	Soft Rush	Introduced
Juncus flavidus	Rush	Native
Lactuca serriola	Prickly Lettuce	Introduced
Lolium perenne	Perennial Rye Grass	Introduced
Lomandra	Mat Rush	Native
Lythrum hissopifolia	Lesser Loosestrife	Native
Malva sp.	Mallow	Introduced
Mentha pulegium	Penny Royal	Introduced
Microlaena	Weeping grass	Native
Paspalum dilatatum	Paspalum	Introduced
Paspalum distichium	Water Couch	Native
Phalaris aquatica	Toowoomba Canary Grass	Introduced
Plantago hispida	Hairy Plaintain	Native
Polygonum aviculare	Wireweed	Introduced
Ranunculus repens	Creeping Buttercup	Introduced
Romulea rosea	Onion Grass	Introduced
Rumex brownii	Slender Dock	Introduced
Rytidosperma caespitosum	Common Wallaby-grass	Native
Rytidosperma setaceum	Bristly Wallaby-grass	Native
Setaria parviflora	Slender Pigeon Grass	Introduced
Sida currugata	Variable Sida	Native
Silybum maryanum	Variegated Thistle	Introduced

Species	Common name	Status
Solanum nigrum	Black Nightshade	Introduced
Sonchus oleraceus	Sow Thistle	Introduced
Sporobolus	Rat-tail Grass	Introduced
Vulpia bromoides	Squirrel-tail Fescue	Introduced
Walwhalleya proluta	Rigid Panic	Native
Xanthium spinosum	Bathurst Burr	Introduced

Table 9: Observed Fauna species list (10/01/2023).

Species	Common name	Status
Acridotheres tristis	Indian Mynah	Introduced
Gymnorhina tibicen	Magpie	Native
Eolophus roseicapilla	Galah	Native
Psephotus haematonotus	Red-rumped Grass Parrot	Native
Cacatua tenuirostris	Long-billed Corella	Native
Merops ornatus	Rainbow Bee Eater	Native
Chenonetta jubata	Australian Wood Duck	Native
Pardalotus striatus	Striated Pardalote	Native
Lepus europaeus	Hare	Introduced
Oryctolagus cuniculus	Rabbit	Introduced
Vulpes vulpes	Red Fox	Introduced
Grallina cyanoleuca	Magpie Lark	Native
Ardea pacifica	White-Necked Heron	Native
Egretta novaehollandiae	White Faced Heron	Native