LOCHARD ENERGY

JANUARY 2023

WINTON ENERGY RESERVE 1 FACILITY

ECOLOGY IMPACT ASSESSMENT AND TARGETED SURVEY REPORT

Question today
Imagine tomorrow
Create for the future

Winton Energy Reserve 1 Facility
Ecology Impact Assessment and Targeted Survey Report

Lochard Energy

WSP
Level 15, 28 Freshwater Place
Southbank VIC 3006

Tel: +61 3 9861 1111
Fax: +61 3 9861 1144
wsp.com

REV	DATE	DETAILS
A	8/09/2021	Draft for client comment
B	28/04/2022	Draft to include extended study area and reduced impacts
Rev01	12/05/2022	Client Review
Rev02	13/05/2022	updated
Rev03	17/05/2022	Final
Rev04	24/05/2022	Final
Rev05	18/08/2022	Final
Rev06	29/11/2022	Draft for review
Rev06	18/01/2023	Final

	NAME	DATE	SIGNATURES
Prepared by:	Justin Pegg, Patrick Monarca	13/12/2022	
Reviewed by:	Briony Mitchell	19/08/2022 & 12/01/2022	
Approved by:	George Bazeley, Jeff Meynell	19/08/2022; 18/01/2023	

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

APPENDIX F OFFSET AVAILABILITY - 18/08/2022

ACKNOWLEDGEMENTS

Mr. Vic Selvaraju – Greenfield Development Manager – Lochard Energy.

Department of Energy, Environment and Climate Action (DEECA) for access to the Victorian Biodiversity Atlas (VBA) database and Biodiversity Interactive Maps.

Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEW) for access to its Protected Matters Search Tool (PMST).

GLOSSARY

DELWP Advisory list	Department of Environment, Land, Water and Planning (DELWP) Advisory list of rare or threatened flora and fauna.
Biodiversity	The biological diversity of life is commonly regarded as being made up of the following three components: — Genetic diversity — the variety of genes (or units of heredity) in any population. — Species diversity — the variety of species. — Ecosystem diversity — the variety of communities or ecosystems.
Bioregion (region)	A bioregion defined in a national system of bioregionalisation. The majority of the Study Area falls within the Central Victorian Uplands bioregion with smaller areas covered by the Victorian Volcanic Plain bioregion.
CaLP Act	State *Catchment and Land Protection Act 1994*
Canopy tree	See 'Native Canopy Tree'.
CMA	Catchment Management Authority (area).
Construction footprint	The area of proposed impact during the construction of the project, which is located within the study area, and includes all proposed infrastructure along with temporary access and laydown areas.
Department of Energy, Environment and Climate Action (DEECA)	This department was formerly known as: — Department of Environment, Land, Water and Planning (DELWP) — Department of Environment and Primary Industries (DEPI). — Department of Planning, Local Government, and Property and Land Titles (DTPLI).
Department of Climate Change, Energy, Environment and Water (DCCEEW)	The Federal department that develops and implements national policy, programs and legislation to protect and conserve Australia's natural environment and cultural heritage and administers the EPBC Act. DCCEEW was previously known as: — Department of Agriculture, Water and the Environment (DAWE) — Department of the Environment and Energy (DoEE) — Department of Sustainability, Environment, Water, Population and Communities (SEWPAC). — Department of the Environment, Water, Heritage and the Arts (DEWHA). — Department of Environment and Heritage (DEHP). — Department of the Environment and Water Resources (DEWR).
DBH	Diameter at Breast Height. The diameter of the main trunk of a tree measured over bark at 1.3 m above ground level.
Drip Line	The outermost boundary of a tree canopy (leaves and/or branches) where the water drips onto the ground.

Ecological Vegetation Class (EVC)	A type of native vegetation classification that is described through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups in the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.
EES	Environment Effects Statement
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
Exotic	Introduced from outside the area (Ensbey and Johnson, 2009) used in the context of this report to refer to species introduced from overseas.
FFG Act	State *Flora and Fauna Guarantee Act 1988.*
GPS	Global Positioning System – a navigational tool which uses radio receivers to pick up signals from four or more special satellites to provide precise determination of location.
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic components.
Habitat Hectare	A site based measure of quality and quantity of native vegetation that is assessed in the context of the relevant native vegetation type.
Habitat score	The score assigned to a habitat zone that indicates the quality of the vegetation relative to the EVC benchmark – sum of the study area condition score and landscape context score usually expressed as a percentage or as a decimal fraction of 1.
Habitat Zone	A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar quality. This is the base spatial unit for conducting a habitat hectare assessment.
Indigenous	Native to the subject area: not exotic.
Introduced	Not native to the area: not indigenous. Refers to both exotic and non-indigenous Australian native species of plants and animals.
LGA	Local Government Authority – Benalla Rural City Council
Likely	Taken to be a real chance or possibility.
Locality	The area within a 5 km radius of the study area.
Location Category	There are three location categories that indicate the potential risk to biodiversity from removing a small amount of native vegetation. These location categories are identified by DEECA as follows: — Location 3: includes locations where the removal of less than 0.5 hectares of native vegetation could have a significant impact on habitat for a rare or threatened species. — Location 2: includes locations that are mapped as endangered EVCs and/or sensitive wetlands and coastal areas (section 3.2.1) and are not included in Location 3. — Location 1: includes all remaining locations in Victoria.

Mapped wetlands	Mapped wetlands, a mapping layer provided by DEECA, may or may not be visible on the ground and are treated as a patch of native vegetation for the purpose of offsets unless they are covered by a hardened, man-made surface, for example, a roadway.
Matters of National Environmental Significance (MNES)	The following Matters of National Environmental Significance are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): listed threatened species and communities, listed Migratory species, Ramsar wetlands of international importance, Commonwealth marine environment, World Heritage Properties, National Heritage Places, the Great Barrier Reef Marine Park and nuclear actions.
Migratory species	Species listed as Migratory under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 relating to international agreements to which Australia is a signatory. These include Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement and the Bonn Convention on the Conservation of Migratory Species of Wild Animals. Capitalisation of the term 'Migratory' in this report refers to those species listed as Migratory under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.
Native Canopy Tree	A native canopy tree is either: — a mature tree (able to flower) that is greater than three metres in height and is normally found in the upper layer of the relevant vegetation type (EVC); or — a standing dead tree (stag) if it has a trunk diameter of 40 centimetres or more at a height of 1.3 metres above the ground.
Native Vegetation	Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'.
No Net Loss	An outcome where a particular gain in the contribution to Victoria's biodiversity is equivalent to an associated loss in the contribution to Victoria's biodiversity from permitted clearing.
Noxious weed	An introduced species listed under the *Catchment and Land Protection Act 1994* Under the Act, noxious weeds have specific control measure and reporting requirements.
Offset (state)	Protection and management (including revegetation) of native vegetation at a site to generate a gain in the contribution that native vegetation makes to Victoria's biodiversity. An Offset is used to compensate for the loss to Victoria's biodiversity from the removal of native vegetation. Offsets are to be secured in perpetuity with an on-Title conservation covenant.
Offset target (state)	The amount of Offset required, measured in Habitat Units, to ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.
P&E Act	*Planning and Environment Act 1987*

Patch of native vegetation	A patch of native vegetation is either: — 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 layer available in Native Vegetation Information Management (NVIM) and other DEECA systems.
Project area	The areas for which planning approvals are sought as part of the project. This is also discussed as the study area in this report.
Protected species	Those species defined as protected under the *Flora and Fauna Guarantee Act 1988*, *Environment Protection and Biodiversity Conservation Act 1999* or DEECA Advisory Lists.
Ramsar	The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Recruitment	The production of new generations of plants, either by allowing natural ecological processes to occur (regeneration etc.), by facilitating such processes, or by actively revegetating (replanting, reseeding). See revegetation.
Revegetation	Establishment of native vegetation to a minimum standard in formerly cleared areas, outside of a Remnant Patch
Scattered trees	A scattered tree is a native canopy tree (see 'Native Canopy Tree' above) that does not form part of a patch. Scattered trees have two sizes, small and large: — a small scattered tree is less than the large tree benchmark for the species in the relevant EVC — a large tree is equal to or greater than the large tree benchmark for the species in the relevant EVC — a standing dead tree that does not form part of a patch is treated as a large scattered tree if it has a trunk diameter of 40 centimetres or more at a height of 1.3 metres above the ground.
Significant (species)	Important, weighty or more than ordinary; typically used to describe the importance of a species or community of conservation significance at local, regional, state or federal levels.
Significant impact	As defined by DAWE: A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
Species Offset	A Species Offset is required when the removal of native vegetation has a significant impact on habitat for a rare or threatened species. Species Offsets must compensate for the removal of that particular species' habitat.

Species richness	Species richness is simply the number of species present in a sample, community, or taxonomic group. Species richness is one component of the concept of species diversity, which also incorporates evenness, that is, the relative abundance of species.
spp.	Abbreviation of *species plural*
sp.	Abbreviation of *species*
ssp.	Abbreviation for *subspecies*
Threatened species, populations and ecological communities	Species, populations and ecological communities listed as Vulnerable, Endangered or Critically Endangered (collectively referred to as Threatened) under the DEECA's Advisory listings, the FFG Act, or EPBC Act. Capitalisation of the terms 'Threatened', 'Vulnerable', 'Endangered' or 'Critically Endangered' in this report refers to listing under the relevant state and/or Commonwealth legislation.
Tree Protection Zone (TPZ)	Calculated area (based on AS 4970-2009 (Protection of trees on development sites)) of soil volume required to encompass sufficient absorbing tree root systems to ensure the long term survival of a tree. Calculated as (12 x DBH) of the tree. Trees may be considered as lost (and may require an Offset) if impacts of greater than 10% intrusion into the TPZ occur.
Weed	A plant growing out of place or where it is not wanted: often characterised by high seed production and the ability to colonise disturbed ground quickly. Weeds include both exotic and Australian native species of plant naturalised outside of their natural range.

REPORT SUMMARY

INTRODUCTION

WSP Australia Pty Limited (WSP) has been engaged by Lochard Energy to undertake an ecological assessment to support the statutory approvals required for the use and development of the land for an energy hub, and underground transmission line connecting to the Glenrowan Terminal Station (GTS). The underground transmission line will cross the Hume Freeway and follow the existing AusNet easement northwest from the GTS. It will then head east within the road reserve of Lee Road before entering the project area.

This report includes an ecological assessment to determine the project's likely impacts and the likely implications of development under pertinent legislation including the *Environmental Protection and Biodiversity Conservation Act 1999*, (EPBC Act) the *Flora and Fauna Guarantee Act 1988* (FFG Act), and the *Planning and Environment Act 1987* (P&E Act).

METHODS

A database search and literature review were undertaken for an indication of the ecological values of the study area, and potential ecological constraints to the project. This review was used to prepare a list of threatened flora and fauna species, ecological communities, listed migratory species and any significant habitat previously recorded or predicted to occur in the study area and the broader locality (listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Flora and Fauna Guarantee Act 1988* (FFG Act).

A standard site assessment was undertaken by WSP ecologists on 25 July 2021, 2 March 2022 and 15 November 2022. Additional assessments were undertaken by WSP sub-consultants on 8 & 9 December 2022 The assessments involved mapping native vegetation patches and scattered trees as per The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017d) (the Guidelines). Habitat Hectare assessments were undertaken as per the *Vegetation Quality Assessment Manual* (DSE, 2004), and incidental flora and fauna observations were recorded and potential fauna habitat assessed.

Based on the fauna habitat assessment, targeted surveys were undertaken for species of conservation significance thought to possibly occur within the study area. Surveys undertaken and targeted species are presented in Table ES.1.

Table ES.1 Targeted surveys and methodology guidelines

TAXA	TARGET SPECIES	SURVEY DATES	RELEVANT GUIDELINES
Arboreal mammals	Squirrel Glider *Petaurus norfolcensis* Brushed-tailed Phascogale *Phascogale tapoatafa tapoatafa*	23/11/2021 – 15/12/2021	FFG Act Action Statement No. 166 (DSE, 2003)
Frogs	Growling Grass Frog *Litoria raniformis*	23/11/2021 15/12/2021	Significant Impact Guidelines for the Vulnerable Growling Grass Frog (*Litoria raniformis*) (DEWHA, 2009).

TAXA	TARGET SPECIES	SURVEY DATES	RELEVANT GUIDELINES
Frogs	Sloane's Froglet *Crinia sloanei*	20/10/2021 05/10/2021	Survey guidelines for Australia's threatened frogs were generally followed (DEWHA, 2010b). Conservation Advice; *Crinia sloanei* (TSSC, 2019).
Woodland birds	Painted Honeyeater *Grantiella picta*	23/11/2021 15/12/2021	Survey guidelines for Australia's threatened birds (DEWHA, 2010a)
Wetland birds	Australian Little Bittern *Ixobrychus dubius* Lewin's Rail *Lewinia pectoralis* Blue-billed Duck *Oxyura australis* Latham's Snipe *Gallinago hardwickii*	23/11/2021 15/12/2021	Survey guidelines for Australia's threatened birds (DEWHA, 2010a)

RESULTS

The study area is, in general, highly modified from its likely condition pre-European settlement, which was likely to have been a biodiverse diverse grassy woodland most attributable to Plains Woodland Ecological Vegetation Class (EVC) 803, Plains Grassy Woodland EVC 55, Plains Woodland / Herb-rich Gilgai Wetland Mosaic EVC 235 and Box Ironbark Forest EVC 61. Currently, within the proposed project area the remnant understory is highly modified by weeds and agricultural utilisation to degree that indigenous understory species are effectively absent, with the exception of some opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the north western boundary.

Much of the remnant canopy has been cleared, with a proportionately small amount of large old canopy species persisting at the western end of the study area. The highest quality parches of remnant vegetation within the study area occur to the north of the proposed project area between the property boundary and the rail reserve where parches of Plains Woodland EVC 803 are inclusive of a diverse suite of understory species. These areas also support channelised – reformed, wetter depressions supporting Tall Marsh EVC 821.

A total of 83 scattered trees were mapped within the study area, and a total of 77 patches and 8.293 hectares (ha) of native vegetation most attributable to Plains Woodland EVC 803, Spike-sedge Wetland EVC 819, Plains Woodland / Herb-rich Gilgai Wetland Mosaic EVC 235, and Tall Marsh EVC 821 were mapped within the study area.

No species of conservation significance targeted during surveys were observed. No threatened species listed under the FFG Act or EPBC Act were observed, or are considered likely to occur within the project area. Dwarf Brooklime *Gratiola pumilio* – FFG Act endangered, was not recorded, although possibly occurs in wet areas outside of impact areas. One planted Buloke *Allocasuarina luehmannii* – FFG Act endangered, was mapped in the Hume Freeway road reserve, no impacts to this tree are anticipated.

FFG Act Protected Flora species – Jersey Cudweed *Helichrysum luteoalbum* within the project area, Coast Wattle *#Acacia longifolia* subsp. *sophorae*, Orange Wattle *#Acacia saligna* were observed within the study area.

One species of state significance, being the Brown Tree Creeper *Climacteris picumnus victoriae* – listed as near-threatened on the DEECA Advisory List in Victoria (DSE, 2013) was observed during the initial site assessment.

POTENTIAL IMPACTS AND LEGISLATIVE IMPLICATIONS

It is likely that clearance of 1.393 hectares of native vegetation occurring as patches, inclusive of 8 Large trees (6 scattered and 2 patch trees) will be required. Another 8 small tree are being removed. There are no anticipated significant impacts to any EPBC Act or FFG Act listed fauna or flora species.

There are no anticipated impacts to the Brown Tree Creeper *Climacteris picumnus victoriae* – listed as near-threatened on the DEECA Advisory List in Victoria (DSE, 2013)

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

Significant impacts on Matters of National Environmental Significance – MNES, are not anticipated. A referral of this project to DAWE under the EPBC Act is not recommended.

Environment Effects Act 1978

Assessing against both individual and cumulative criteria (relating to ecological matters) an Environmental Effects Statement – EES, is highly unlikely to be triggered due to the small area of impact. As such an EES self-assessment and referral is not considered necessary for ecological matters.

Flora and Fauna Guarantee Act 1988 (FFG Act)

A permit under the FFG Act will be required for the removal of Protected Flora species – Jersey Cudweed *Helichrysum luteoalbum* within the project area.

There are no anticipated impacts to FFG Act listed fauna species.

Planning and Environment Act 1987 (P&E Act)

Planning zones and overlays

The impacts to native vegetation and habitat does not intersect any Overlays pertaining to Vegetation Protection or Environmental Significance. there are not impacts to native vegetation within the Vegetation Protection Overlay covering the Winton-Glenrowan Roadside Reserve and land to the south around the GTS.

Guidelines for the removal, destruction or lopping of native vegetation

Utility Installations are exempt from 52.17 permit requirements under the Benalla Planning scheme if clearance of native vegetation is to the minimum extent necessary and the proponent has written agreement for the works from DEECA.

This is subject to the removal of native vegetation being undertaken in accordance with the written agreement of the Secretary to DEECA (as constituted under Part 2 of the *Conservation, Forests and Lands Act 1987*).

Clearance of native vegetation may not require a 52.17 permit, however 52.17 offset requirements are still to be satisfied.

Impacts to native vegetation for the project area, will result in to 0.316 ha, including 3 large trees as per EnSym data standards (DELWP, 2017b). The offset targets is for a modest (0.328) General Habitat Units, and 8 Large Trees.

The offset requirement includes clearance of the 30 m wide easement adjacent to the overhead distribution lines traversing east from Lee Road to the GTS. This 30 m has been allowed for to provide for an alignment along this section that is yet to be determined. It is likely this offset requirement will be reduced following determination of alignment within this 30 m. It is recommended that the offset requirement be revised following determination of this alignment. It is recommended that if approved for clearance prior to determination of alignment, that approval be conditional on the avoidance and minimisation of impacts to native vegetation along the 30 m wide section of the underground transmission line, adjacent to the existing overhead transmission lines between Lee Road and the GTS and that the offset requirement revised, offsets achieved be for the reduced amount of clearance.

Victoria's Native Vegetation Credit Register – VNVCR, was searched on 2212/2022 for candidate offset sites. The search returned 3 potential sites providing suitable and available native vegetation credits. See Appendix F.

RECOMMENDATIONS

The following recommendations and next steps for the project include:

- All recommendations in Section 5 should be observed and incorporated into the future of the project, particularly regarding the Trenching footprint along Lee Road and Frog proof fencing.
- Submit an application (exemption endorsement form) for written agreement from the Secretary of a delegate of DEECA on compliance with the Utility installations exemption – procedure for the removal, destruction or lopping of native vegetation as per clause 52.17-7 of the Benalla Planning Scheme.
- The offset requirement includes clearance of the 30 m wide easement adjacent to the proposed underground transmission lines traversing east from Lee Road to the GTS. This 30 m has been allowed for to provide for an alignment along this section that is yet to be determined. It is likely this offset requirement will be reduced following determination of alignment within this 30 m. It is recommended that the offset requirement be revised following determination of this alignment. It is recommended that if approved for clearance prior to determination of alignment, that approval be conditional on the avoidance and minimisation of impacts to native vegetation along the 30 m wide section of the underground transmission line, adjacent to the existing overhead transmission lines between Lee Road and the GTS, and that the offset requirement revised and offsets achieved be for the reduced amount of clearance.
- Finalise FFG Act protected numbers and submit an application for removal to DEECA.

1 INTRODUCTION

Lochard Energy (Iona Operations) Pty Ltd (Lochard Energy) has been engaged WSP Australia Pty Limited (WSP) to undertake an ecological impact assessment to support the statutory approvals required for the use and development of the land for an energy hub. The proposed energy hub is known as the Winton Energy Reserve 1 Facility (the project) and will involve the installation of an energy generation facility; a battery energy storage system. The study area is located at 386 Lee Road in Winton, ~9.5 kilometre (km) north-east of Benalla, Victoria.

The project will utilise hybrid technology with lithium-ion (Li-ion) batteries and fast-start high-efficiency dual-fuel gas reciprocating engines and will comprise:

- A 200-megawatt (MW) Gas-Powered Generator (GPG) facility
- A Battery Energy Storage System (BESS) facility. The BESS facility will supply and absorb 200 MW real power with 400-megawatt-hour (MWh) energy storage capacity
- A single electrical substation for both battery and GPG which then feeds into the local network
- A ~3 kilometre (km) 220-kilovolt (kV) underground transmission line from the Glenrowan Terminal Station (GTS) to the subject site. The underground transmission line will cross the Hume Freeway and follow the existing AusNet easement north west from the GTS. It will then head east within the road reserve of Lee Road before entering the subject site.

Additionally, a ~200 metre (m) gas pipeline including metering station from the GFG facility to the APA Gas Pipeline within the easement (E-2) will be subject to a pipeline licence in accordance with the *Pipelines Act 2005* (Pipeline Act) for the construction and operation of the pipeline included within the scope of the project. An application will be made to the Minister for Energy, Environment and Climate Change as a post-approval activity, should a planning permit be granted for the project.

The proposed project is located in the Central North Renewable Energy Zone (REZ) and will operate for a period of 25 years on certain days/ times only (not a 24/7 baseload), with minimum permanent onsite manning and shared facilities.

This ecological impact assessment report provides an overview of the ecological values relevant to the proposed project. It also provides as assessment of the project's likely impacts and the likely implications of development under pertinent legislation including, but not limited to, the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), the Victorian *Environmental Effects Act 1975* (EE Act), the *Flora and Fauna Guarantee Act 1988* (FFG Act), and the Victorian *Planning and Environment Act 1987* (P&E Act).

1.1 PROJECT SCOPE

The following scope of work was defined for the project:

- Complete a desktop review of flora and fauna databases, aerial imagery, and relevant biodiversity policies and legislation
- Undertake a site assessment to:
  - Identify and map native vegetation, including mapping of patches and scattered trees, defined as per DEECA's *Guidelines for the removal, destruction or lopping of native vegetation (2017)* (the Guidelines).
  - Complete habitat hectare assessments on patches of native vegetation mapped as per the *Vegetation Quality Assessment Manual – guidelines for applying the habitat hectares scoring method*
  - Map large trees and hollow-bearing trees if present
  - Identify prohibited and environmental weeds/pests and their general location

- Identify any possible occurrences of species or ecological communities listed under the EPBC Act and FFG Act
- Complete a habitat assessment for flora and fauna species of conservation significance to inform a likelihood of occurrence assessment
- Record all incidental observations of native and exotic flora and fauna species.

- Prepare a detailed report on the ecological values and constraints of the study area which includes the following:
  - Workshopping a project area with Lochard Energy to be used for the purposes of assessing ecologically relevant regulatory and legislative implications
  - A description of the site including native vegetation and habitat values
  - A likelihood of occurrence of threatened flora and fauna and communities listed under the EPBC Act, FFG Act and Victorian Advisory Lists.
  - An evaluation of the potential ecological impacts of development along with recommended measures to avoid, minimise, mitigate and offset ecological impacts
  - An evaluation of implications of relevant biodiversity policy and legislation and triggers for permits (e.g. FFG Act permit, EPBC Act referral, permit to remove native vegetation and the requirement of Environmental Effects Statement under the EE Act). This evaluation includes the identification of state offset requirements, considering any relevant exemptions that may apply
  - An evaluation and advice on state approvals in consideration of the *Procedure to Rely on the Utility Installations in Planning Schemes*, fire protection exemption under Clause 52.17 of the Benalla Rural City Planning Scheme and exemptions for maintenance under the EPBC Act
  - An evaluation of the environmental and noxious weeds found in the field, their general locations and implications under the *Catchment and Land Protection Act 1994* (CaLP Act)
  - Recommendations for more detailed investigations including targeted surveys for listed flora and fauna species or full impact assessment should listed communities or species/their habitat be present
  - Maps (prepared using ArcGIS) showing:
    - north point and property boundaries
    - all areas of native vegetation mapped on site
    - all scattered trees mapped on site
    - impacts areas required for installation of the infrastructure
    - any other relevant ecological features from the site assessment.

1.2 PROJECT AREA AND STUDY AREA

Lochard Energy (Iona Operations) Pty Ltd, an energy infrastructure company based in Australia, is seeking to develop the land for an energy hub at 386 Lee Road, Winton (the subject site). The proposed energy hub is known as Winton Energy Reserve 1 facility (the project). The project also includes an underground transmission line to be installed

The study area for this assessment is a 20 m buffer surrounding the proposed project area (inclusive). A 20 m buffer is used to capture any trees which occur just outside of the project area, but within tree protection zones (TPZs) which extend within. The 20 m buffer also provides for the capture of fauna habitats contiguous with the project area, which may be impacted indirectly by the project.

The proposed project area is reduced from what it was initially for the site assessment, utilising 32 hectares (ha) of the 40.1 ha lot, down to a project area of 11.8 ha – excluding the underground transmission line. The underground

transmission line is to be limited to a width of 7 m for construction along Lee Road, while a corridor of 30 m has been allowed for adjacent to the existing overhead transmission lines to allow for an alignment through this section that is yet to be determined. The Hume Highway, and Winton-Glenrowan road reserves are to be underboard.

The project is located approximately 9 km north east of Benalla and 175 km north east of Melbourne within the Rural City of Benalla (Local Government Area) within the Goulburn Broken Catchment Management Authority (CMA) region and the Victorian Riverina Bioregion (DELWP, 2016a). The project area is zoned Farming Zone – FZ, under the Benalla Rural City Planning Scheme, with the south-western portion of the underground transmission line under a Vegetation Protection Overlay.

The proposed project area, original project area, and the study area are shown on Figure 1.1

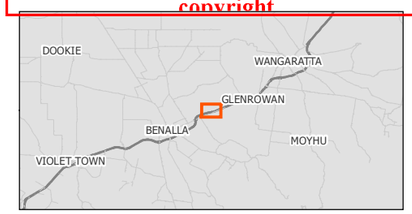
wsp

Lochard Energy
Reserve 1 Facility: Winton

Figure 1
Proposed Project Location

- Watercourse
- Current Study
- Original Project
- Current Project

ADVERTISED PLAN



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:15,000 Date: 12/01/2023

Data sources: - DELWP, Geoscience Australia

C:\Users\AUJB505996\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS125526_Lochard_Winton_En\Mxd\06_Ecology\PS125526_Winton_Ecology_Maps_F003_r1v5.mxd

2 METHODOLOGY

2.1 PERSONNEL

The contributors to this study, their qualifications and project roles are provided in Table 2.1.

Table 2.1 Contributors and their roles

NAME	QUALIFICATIONS	POSITION AND ROLE/S ON PROJECT
Justin Pegg	BSc, M. Env&Sus	Associate Ecologist – Project manager, field survey, reporting
Nic McCaffrey	BSc	Principal Ecologist – Ecology project director
Briony Mitchell	BSc Hons, M. Env	Senior Ecologist – Field survey and review
Samantha Vertucci	BSc Hons	Senior Ecologist – Field survey, reporting
Danelle Scicluna	BEnvSc	Ecologist – Field survey and desktop assessment
Patrick Monarca	BSc Hons	Graduate Ecologist – Field survey
Angela Sun	BSc Hons	GIS Consultant – mapping and data management

^ ^ Current list of accredited native vegetation assessors found here: Microsoft Word - DELWP-VQA-AccreditedAssessorList15Feb2020.wbk.docm (environment.vic.gov.au)

2.2 DATABASE AND LITERATURE REVIEW

A database search and literature review were undertaken for an indication of the ecological values of the study area, and potential ecological constraints to the project. 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 on 22 June 2021 for records of threatened species within a 10 km radial buffer of the study area.

This review was used to prepare a list of threatened flora and fauna species, ecological communities, listed migratory species and any significant habitat previously recorded or predicted to occur in the study area and the broader locality. The following sources of information were consulted:

- The Department of Energy, Environment and Climate Action (DEECA) NatureKit 2.0 online tool (DELWP, 2022)
- the Victorian Biodiversity Atlas(VBA) – 10 km buffer of the study area (DELWP, 2021a)
- Commonwealth EPBC Act Protected Matters Search Tool (PMST) – 10 km buffer of the study area (DAWE, 2021)
- the Commonwealth Department of Climate Change, Energy, Environment and Water (DCCEEW) online Species Profile and Threats Database (DAWE, 2020)
- Victorian Rare or Threatened Species Advisory Lists (DSE, 2013, DEPI, 2014, DSE, 2009)
- The *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017d)
- Biodiversity Information Tools used in Victoria's Native Vegetation Permitted Clearing Regulations and the Native Vegetation Information Management System (DELWP, 2021a)
- Vegetation Quality Assessment Manual (DSE, 2004)
- aerial imagery to determine habitat extents and linkages
- relevant legislation, government policy and strategies.

2.3 SITE ASSESSMENT

A standard site assessment was undertaken by WSP ecologists on 25 July 2021, 2 March 2022 and 15 November 2022. Additional assessments were undertaken by WSP sub-consultants on 8 & 9 December 2022. Results of the assessments are provided in Section 3.2. The following sections detail the methodology of the site assessments.

2.3.1 CATEGORISING VEGETATION WITHIN THE STUDY AREA

Field validation (or ground-truthing) of extant vegetation modelling (DEPI, 2009) was undertaken to map and assess native vegetation as per the Guidelines (DELWP, 2017d).

Native vegetation is defined in planning schemes as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. The Guidelines further classify native vegetation as a patch or a scattered tree as follows.

A patch of native vegetation is:

- an area of vegetation where at least 25 % 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 DEECA systems and tools.

A scattered tree is a native canopy tree that does not form part of a patch.

The locations of scattered trees were recorded with a handheld GPS where they did not meet the criteria for a remnant patch.

2.3.2 HABITAT HECTARE ASSESSMENTS

Habitat hectare assessments were undertaken on remnant patches of native vegetation to determine the condition of the vegetation in the context of the local area and the relevant bioregion (Victorian Riverina). This methodology is outlined in *Vegetation Quality Assessment Manual-Guidelines for applying the habitat hectares scoring method* (DSE, 2004). The habitat hectare method involves making visual and quantitative assessments on various characteristics of native vegetation according to established criteria that are set against an optimum benchmark. This process aims to establish the significance of native vegetation through an objective and repeatable methodology using working documents (benchmark data and field assessment score sheets) that are uniformly applied across Victoria.

In summary, this process begins with the identification of the Ecological Vegetation Class (EVC). Each EVC has a benchmark of optimal values which are found on DEECA 's website (DELWP, 2021a). Site assessments are undertaken using the DSE *Vegetation Quality Field Assessment Sheet* (Version 1.3 October 2004) (DSE, 2004). Further to the site condition criteria, the habitat hectare process also requires an assessment of the site in a landscape context (DSE, 2004).

If a site meets or exceeds all benchmark criteria it will receive a total score of 100, which is a total of the above condition and landscape scores in pristine undisturbed condition. However, in many cases in the regional ecosystems, sites receive a score less than 60, due to their relatively high level of modification. The final habitat score is presented as a percentage and then converted to a score out of 1.00.

Habitat hectare assessments were undertaken on 25 July 2021, 2 March 2022 and 15 November 2022 by Justin Pegg, and Pat Monarca who are currently accredited by Department of Energy, Environment and Climate Action (DEECA) in the Vegetation Quality Assessment method.

2.3.3 REVEGETATION CATEGORISATION

Revegetation is extensive at some sites and can have different implications and exemptions under local planning laws under the local Council Planning Scheme. For the purposes of categorising vegetation in the study area, the following categories are used as presented in Table 2.2.

Table 2.2 Revegetation categories used for mapping

REVEGETATION / PLANTING MAPPING CATEGORY	DESCRIPTION	PLANNING IMPLICATIONS
Indigenous	Indigenous to a local area. Described by Pysek et al (2004) and adopted by Royal Botanic Gardens Melbourne (2016), defined as 'taxa that have originated in a given area without human involvement or that have arrived there without intentional or unintentional intervention of humans from an area in which they are native'.	There are certain exemptions under all Victorian Planning Schemes, Clause 52.17 'planted vegetation', particularly if the vegetation has been planted for aesthetic or amenity purposes. If the vegetation is also covered by an overlay, such as 'Environment Significance Overlay', it will likely require a permit for removal.
Native to Victoria	Non-indigenous to the local area but native to Victoria (e.g. Bangalay *#Eucalyptus botryoides*, Giant Honey-myrtle *#Melaleuca armillaris*). Defined in Victorian Planning Provisions – Definitions – Clause 72 as *'Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'.*	If vegetation is not exempt as above, it may require a permit for removal.
Native to Australia	Non-indigenous Australian native plants or vegetation (non-indigenous to Victoria) (e.g. Sugar Gums *#Eucalyptus cladocalyx*).	Usually do not require a permit for removal but are identified to show these have not been overlooked.
Exotic	Exotic plants evolving/originating oversees (e.g. Monterey Cypress * *Hesperocyparis macrocarpa*).	Do not require a permit for removal for ecology related matters. These are identified to show these have not been overlooked.

2.3.4 FAUNA HABITAT ASSESSMENT

Fauna habitats were assessed by examining characteristics such as the structure and floristics of the canopy, understorey and ground vegetation, the structure and composition of the litter layer, and other habitat attributes important for feeding, roosting and breeding. Fauna habitat assessments were undertaken during the site assessment on 25 July 2021 and 2 March 2022.

2.4 LIKELIHOOD OF OCCURRENCE

The absence of a particular species cannot be definitively determined during a relative short survey timeline. For this study, the likelihood of occurrence of threatened and migratory species and populations was determined based on the criteria shown in Table 2.3 below. This method uses the habitat requirements of the species, outcomes of an on-site habitat assessment, the state of habitat connectivity, records of historical and recent presence as identified in the VBA and modelled presence from the PMST.

Table 2.3 Likelihood of occurrence criteria for threatened flora and fauna species

LIKELIHOOD	DESCRIPTION
Low	Species considered to have a low likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have not been recorded previously in the study area and surrounds and for which the study area is beyond the current distribution range — rely on specific habitat types or resources that are not present in the study area — are considered locally extinct — are a non-cryptic perennial flora species that were specifically targeted by surveys and not recorded.
Moderate	Species considered to have a moderate likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have infrequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, although generally in a poor or modified condition — are unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically during variable seasons or migration — are cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
High	Species considered to have a high likelihood of occurrence include species not recorded that fit one or more of the following criteria: — have frequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, that are abundant and/or in good condition within the study area — are known or likely to maintain resident populations surrounding the study area — are known or likely to visit the study area during regular seasonal movements or migration.
Recorded	Recorded/observed during field surveys.

2.5 TARGETED SURVEY

Targeted fauna survey was undertaken from October to December 2021 for several species/ fauna groups. The surveys undertaken are summarised in Table 2.4.

Table 2.4 Summary of targeted survey effort

TARGET FAUNA GROUP	TARGET SPECIES	DATES	SURVEY METHODOLOGY	RELEVANT GUIDELINES
Arboreal mammals	Squirrel Glider *Petaurus norfolcensis* Brush-tailed Phascogale *tapoatafa*	23/11/2021 – 15/12/2021	Nocturnal surveys were taken over two evenings involving stag-watching and spotlighting. Spotlighting occurred in conjunction with remote-sensor camera trapping for this species. Camera-traps were installed in early November 2021 and deployed for just over a month. As an arboreal and hollow-dependent species, cameras were strategically placed at large, hollow-bearing trees (DBH > 80 cm), that are likely to have hollows. Particular tree species are also targeted, such as Grey Box *Eucalyptus macrocarpa*. This increases the likelihood of detection, where a Squirrel Glider may leave a hollow at night to forage and move down the tree trunk. Cameras are placed on brackets attached to trees, facing a bait station that is attached to the same tree trunk. Cameras were baited with a mix of tuna oil, oats & peanut butter. A diluted honey water is sprayed with a knapsack along branches from the tree canopy to the bait station to attract gliders to the camera location. Configuration of remnant woodland habitat on site meant that a 'concentrated' camera deployment method was utilised, rather than linear transects. A concentrated set of cameras were placed within each woodland patch on suitable trees (approximately 50-100 m part if possible) to increase survey effort and the likelihood of species detection. Both spotlighting and camera surveys should ideally be undertaken in autumn, however, this was not possible due to project timelines. Surveys were therefore conducted in Spring / Summer which was considered adequate for determination of presence or absence of this species, and utilisation of available habitat. Survey at this time would capture a more mobile population during the breeding season and a potentially increased population size with juveniles leaving the nest. Squirrel Gliders typically give birth to a single litter of one or two young between April and November each year, and young leave the nest at 6 months.	FFG Act Action Statement No. 166 (DSE, 2003)

TARGET FAUNA GROUP	TARGET SPECIES	DATES	SURVEY METHODOLOGY	RELEVANT GUIDELINES
Frogs	Growling Grass Frog *Litoria raniformis*	23/11/2021 15/12/2021	Targeted surveys were undertaken early – midsummer following rain. Surveys were undertaken in preferential conditions for this species, and as per the national guidelines (DEWHA, 2009) for assessment of this species, being over two warmer evenings, one week apart, and using call playback and active searching. Surveys are required to occur from November to March when males are calling, with November and December preferred. Surveys were therefore undertaken in the preferred time frame for this species. Timing and weather condition results are provided at section 3.3.4 below.	Significant Impact Guidelines for the Vulnerable Growling Grass Frog (*Litoria raniformis*) (DEWHA, 2009).
Frogs	Sloane's Froglet *Crinia sloanei*	20/10/2021 05/10/2021	Targeted Call-playback surveys were undertaken during spring – summer. Transects were walked, typically 200 m in length, whilst actively searching within suitable habitat. Surveys typically occur during July-August (inclusive) on nights of suitable weather (no wind, no rain), during the peak calling time for males., However, males are known to call throughout spring and after summer rains (TSSC, 2019). The La Nina even 2021/2022 saw above average rainfall, including during summer. As such, survey timing was considered appropriate for species detection. Timing and weather conditions are provided at section 3.3.2 below.	Survey guidelines for Australia's threatened frogs were generally followed (DEWHA, 2010b). Conservation Advice; *Crinia sloanei* (TSSC, 2019). Sloane's Champions (NSW Government, Australian Museum, FrogID, Landcare, undated)

TARGET FAUNA GROUP	TARGET SPECIES	DATES	SURVEY METHODOLOGY	RELEVANT GUIDELINES
Woodland birds	Painted Honeyeater *Grantiella picta*	23/11/2021 15/12/2021	Targeted surveys were undertaken over two days, over a week apart, as recommended during the warmer months to better inform a determination of presence or absence of this species, and subsequently this impact assessment. Painted Honeyeater are migratory and enter Victoria from October to March-April. Surveys occurred during this timeframe. Woodland habitat was targeted for a Rolling Bird Survey. Ecologists stopped at a series of points for a set time (5-20 mins) before moving onto another spot. A number of spots were surveys within each patch of woodland. During the stops, birds seen or heard are recorded. The species is associated with Mistletoe (*Amyema* spp.) and as such, spot search locations targeted areas of mistletoe. Meandering transects were also done whilst moving the next spot location, and also focused on looking within mistletoe.	Survey guidelines for Australia's threatened birds (DEWHA, 2010a)
Wetland birds	Australian Little Bittern *Ixobrychus dubius* Lewin's Rail *Lewinia pectoralis* Blue-billed Duck *Oxyura australis* Latham's Snipe *Gallinago hardwickii*	23/11/2021 15/12/2021	Targeted surveys were undertaken during spring – summer as recommended to better inform a determination of presence or absence of these species, and subsequently this impact assessment. Surveys over two separate days over the warmer months were undertaken. Suitable habitat was actively searched / flushed.	Survey guidelines for Australia's threatened birds (DEWHA, 2010a)

2.6 LEGISLATION AND POLICY

The project was assessed against the following key biodiversity-relevant legislation and policy including:

- EPBC Act
- FFG Act *Planning and Environment Act 1987* (P&E Act) in relation to the Casey Planning Scheme (Planning Scheme)
  - Clause 52.17- *Guidelines for the removal, destruction or lopping of native vegetation* (Guidelines)

- Procedure to rely on the utility installations exemption in planning schemes Electricity distributors (DELWP, 2019)

- *Catchment and Land Protection Act 1994* (CaLP Act)
- *Wildlife Act 1975*
- *Environmental Effects Act 1978* (EE Act).

This legislation and policy is described in detail in Section 6.

2.7 LIMITATIONS

A common limitation of ecological surveys is the short time period over which they are undertaken and the lack of seasonal sampling, which can lead to lack of detection of some species. Site conditions, including the presence of threatened species and extent of threatened communities, can change with time. The results in this report are indicative of the environmental conditions at the time of assessment, including the presence or otherwise of species.

The likely presence of threatened fauna species was determined primarily through habitat assessment, which is a conservative approach likely to include species that are difficult to detect if suitable habitat was observed in the study area, and if that species is known to occur regionally.

The original proposed project area covered a larger area to the south and west of the currently proposed project area. Targeted survey locations were chosen in reference to the originally proposed project area.

Targeted surveys for Painted Honeyeater *Grantiella picta*, and arboreal mammals Squirrel Glider *Petaurus norfolcensis* and Brush-tailed Phascogale *Phascogale tapoatafa tapoatafa* and Wetland Birds; Australian Little Bittern *Ixobrychus dubius*, Lewin's Rail *Lewinia pectoralis*, Blue-billed Duck *Oxyura australis* and Latham's Snipe *Gallinago hardwickii*, were all undertaken at points within or around the originally proposed project area. The currently proposed project area is greatly reduced from this original area, and avoids previously identified likely habitat, and selected survey locations for these target species. Survey results are however considered indicative of target species likelihood of occurrence across the currently project area.

2.8 PLANT IDENTIFICATION

Flora species that could not be identified to species in the field were recorded to the nearest likely family or genus. These were then collected and identified as per protocols of the Flora and Fauna Guarantee Permit (10009535) for the collection of plant material.

2.9 PERMITS

All WSP staff are covered under the Standard Operating Procedures approved by the Department of Economic Development, Jobs, Transport and Resources, Wildlife and Small Institutions Animal Ethics Committee approval (06.20) and Victorian *Wildlife Act 1975* Research Permit (10009535). Additionally, all relevant WSP staff are covered under the Victorian FFG Act Permit to take/keep protected flora (10009535).

3 RESULTS

3.1 DATABASE AND LITERATURE REVIEW

3.1.1 AERIAL IMAGERY

The study area is in close proximity – 300 m, to the Winton Wetlands Natural Features Reserve (NFR) (Google, 2021, DELWP, 2021b, DELWP, 2016c). The Winton Wetlands are an approximately 7000 ha seasonally wet depression and contains multiple DEECA mapped wetlands The Warby Ovens National Park is approximately 10.5 km to the north-west (Google, 2021, DELWP, 2020b). Much of the surrounding lands appear to be predominantly cleared and utilised for agricultural purposes (Google, 2021). Additionally, significant barriers to fauna movement surround the study area, including the Hume Freeway and an existing overhead transmission line to the south and a freight railway line and existing overhead transmission line to the north. The study area is not inclusive of the rail corridor, to the north of the energy hub.

The underground transmission line passes through Native vegetation along Lee Road, passes beneath vegetation along the Hume Freeway and Winton-Glenrowan Road and to treed vegetation around the WGS with connectivity via around roadsides and property boundaries to Eleven Mile Creek. Aerial imagery (Google, 2021) also indicates revegetation along an unidentified, and unmodelled (DEPI, 2013) watercourse north of the Hume Freeway.

Nearmap aerial imagery (Nearmap, 2022) indicates woody vegetation along the underground transmission line to the west of Bowers Road, that was not present during the site assessment. Nearmap imagery also indicates haul-ways across agricultural land to the east of Bowers Road accessing of rail sleepers, and a central area of the energy hub recently subject to cropping or slashing.

3.1.2 LITERATURE REVIEW

3.1.2.1 WINTON WETLANDS

Lake Mokoan, the largest wetland forming the Winton Wetlands NFR, was constructed in 1971 and had a capacity of 365,000 Mega Litres (ML). It was an off river water storage designed to provide water to the Murray and Goulburn irrigation areas. Lake Mokoan was decommissioned in 2004 and is being restored to its natural wetland habitat. It is a current DEECA mapped wetland (wetland ID 67909). The Winton Wetlands Committee of Management is overseeing the restoration project (GBCMA, 2014). There are many more individual wetlands within the Winton Wetland complex, including Bill Friday Swamp (wetland ID 67926) and Ashmeads Swamp (wetland ID 67925). Bill Friday Swamp is the closest wetlands to the study area, which is classified by DEECA as a Temporary freshwater marshes and meadows, which is intermittently inundated. The study area does not occur within the Winton Wetlands NFR.

Winton Wetlands is not classified as a RAMSAR wetland, and none of the RAMSAR wetlands listed in the PMST fall within the study area.

3.1.2.2 MANAGEMENT AGREEMENT

A management agreement was previously entered into by Goulburn Broken CMA and the Landowner for the purpose of managing and improving the health of the land; *Linking Landscapes and Communities: Conserving Grey Box Grassy Woodlands* – ‘GB FAL AG 20920’. This previous arrangement included a grant to the landowner in accordance with the agreement. The area to be managed being 4.5 ha. The grant amount being $1,350. The management plan pertaining to the agreement being for the years 2019 – 2029. The management obligations appear onerous for the compensation amount being:

- No barbed wire is to be used for fencing.
- Retain all standing trees (dead or alive) & fallen timber/branches/leaf litter.

- Exclude livestock. The Land Owner must seek agreement from Goulburn Broken CMA before grazing is permitted
- Take all reasonable steps to prevent fire on the Controlled Land under contract, where this does not affect agreed Management Activities in this plan. Any firebreaks established must be outside of the perimeter of the Controlled Land.
- Control and manage pest plants and animals at the site in line with the CaLP Act (Vic). Note that permits are required to control native fauna.
- Maintain all existing and newly constructed fencing in a stock-proof condition
- Not apply fertiliser to the site or crop the site
- Not remove rocks, or extract or introduce soil
- Not allow supplementary feeding of stock within the site, unless specified in the plan, and under agreement with the Goulburn Broken CMA Representative.
- Not plant non-indigenous plant species on the site.
- Not undertake drainage alterations on the site.
- Establish photo points.

This management area is shown on mapping at Appendix C-1.

3.1.3 VBA AND PMST SEARCH RESULTS

The VBA and PMST were searched on 22 June 2021 for records of species of state and/ or national conservation significance within a 10 km radius of the study area. The results are summarised below in Sections 3.1.3.1 and 3.1.3.2. The full likelihood of occurrence assessment is provided as Appendix B. The likelihood of occurrence tables were updated on 22 November 2021 to reflect the species conservation status in Victoria as a result of the implementation of the *FFG Act Amendment Act 2019* and redundancy on the Victorian DEECA Advisory List.

3.1.3.1 FLORA SPECIES

VBA and PMST searches retuned a total of 27 significant flora species recorded, or predicted to occur, within 10 kms of the study area. Of these, five species are listed under the EPBC Act and 26 are listed under the FFG Act only. Consideration of significant flora species returned by database searches is done with reference to the habitat values of the study area. Summaries of species considered likely to occur are provided in Sections 3.2.2.2 and the Likelihood of Occurrence are presented in Appendix B.

3.1.3.2 FAUNA SPECIES

VBA and PMST searches retuned a total of 67 significant fauna species recorded, or predicted to occur, within 10 kms of the study area. Of these, 23 species are listed under the EPBC Act as threatened and, three of which are also listed under the EPBC Act as migratory, with an additional 9 species listed under the EPBC Act as migratory, without a threatened conservation status. Of the 67 species, 59 are also listed under the FFG Act. Consideration of significant fauna species returned by database searches is done with reference to the habitat values of the study area. The Likelihood of Occurrence are presented in Appendix B2

3.1.3.3 EXTANT VEGETATION MODELLING

Within the study area, extant vegetation modelling (DEPI, 2009) indicated the scattered and fragmented presence of 2.7 ha of Plains Grassy Woodland EVC 55, and 0.04 ha of Box-ironbark EVC 61. EVC 55 is considered endangered within the Victorian Riverina bioregion, and EVC 61 is considered vulnerable (DELWP, 2020a). A map of the modelled EVCs is provided in Appendix C-1.

3.1.3.4 THREATENED ECOLOGICAL COMMUNITIES

EPBC ACT LISTED THREATENED ECOLOGICAL COMMUNITIES

The PMST identified three threatened ecological communities (TECs), listed under the EPBC Act that are likely to occur within the study area. These are listed in Table 3.1 below.

EVC 55, modelled to occur within the study area, is synonymous with the TEC, Grey Box *Eucalyptus microcarpa* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia. No other EVCs are modelled within the study area that could qualify as the remaining two TECs. This will be verified during the site assessment.

Table 3.1 EPBC listed communities

COMMUNITY NAME	LISTING	PRESENCE FOLLOWING SITE ASSESSMENT
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Does not occur
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Does not occur
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Does not occur

3.1.3.5 FFG ACT LISTED THREATENED COMMUNITIES

The EPBC Act listed 'Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia', Plains Woodland EVC 803 and Plains Grassy Woodland EVC 55 are synonymous with the FFG Act Threatened Community 'Grey Box - Buloke Grassy Woodland Community'. Higher quality woodland remnants attributable to EVC 803 with intact and diverse understory align with the description of the 'Victorian Temperate Woodland Bird Community'. EVC 803 is not modelled to occur within the study area, but is modelled within the wider landscape (10 km buffer). This can be viewed in in Appendix C-1.

3.2 SITE ASSESSMENT RESULTS

3.2.1 GENERAL SITE CONDITION

The study area is, in general, predominantly modified from its likely condition pre-European settlement. Prior to colonial settlement the study area would have been a diverse grassy woodland. Currently, within the proposed study area the remnant understory is highly modified by weeds and agricultural utilisation to a degree that indigenous understory species are effectively absent, with the exception of some opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the north western boundary. Much of the remnant canopy has been cleared, with a proportionately small amount of large old canopy species persisting at the western end of the study area.

Much of the roadside to the south is reformed swales and patches of indigenous revegetation, with low coverage of indigenous understory species.

The highest quality patches of remnant vegetation within the study area occur to the north of the proposed project area between the property boundary and the rail reserve where patches of Plains Woodland *EVC 803* are inclusive of a diverse suite of understory species. These areas also support channelised – reformed, wetter depressions supporting Tall Marsh *EVC 821*. Highly modified patches of Plains Woodland / Herb-rich Gilgai Wetland Mosaic *EVC 235* occur between the Hume Freeway and Lee Road. High quality patches of Box Ironbark Forest are supported by Winton – Glenrowan Road.

3.2.2 FLORA

A total of 60 vascular plant species were recorded across the study area during the site assessment, of which 30 were indigenous (50 %), 26 were introduced species (43 %) and three were non-indigenous native species (0.05 %). A list of the species recorded can be located in Appendix A.

3.2.2.1 VEGETATION DESCRIPTIONS

Vegetated areas supported by the study area are best described by being either:

- modified exotic understorey
- planted woody species
- remnant patches.

These vegetation types are discussed below are represented across the study area.

MODIFIED EXOTIC UNDERSTOREY

Understory over much of the study area is dominated by exotic herbs and grasses typical of land modified by a long history of agricultural use. These areas support a suite of opportunistic colonising species, the majority being exotic. Sporadic and scattered occurrences of indigenous species are present at low (below 25 %) coverage.

Exotic graminoids observed include Cocksfoot **Dactylis glomeratus*, Couch **Cynodon dactylon*, Prairie Grass **Bromus Catharticus* and Paspalum **Paspalum dilatatum.*

Exotic herbs observed in these areas include Annual Rye Grass **Lolium perenne*, Ribwort **Plantago lanceolata*, Cat's Ear **Hypochoeris radicata*, Onion Grass **Romulea rosea* and Carpet Weed **Galenia pubescens.*

Opportunistic colonising indigenous species occur sporadically amongst exotic species in these areas, including Wallaby Grasses *Rytidosperma* spp., Native Millet *Panicum decompositum*, and Windmill Grass *Chloris truncata.* Coverage of indigenous understory species occurring amongst modified exotic understory is patchy, sporadic and below 25 % of vegetative cover (the % required to form a patch).

PLANTED WOODY SPECIES

Exotic woody species have been planted sporadically around the residential dwelling. Species in this area include Cypress Pine **Callitris rhomoidea*, English Oak **Quercus robur* and White Cedar **Melia azedarach.*

A 4.5 ha tract of land contiguous with the north-western boundary has been revegetated with indigenous species, such as Grey Box *Eucalyptus microcarpa*, Varnish Wattle *Acacia verniciflua* and Blackwood *Acacia melanoxylon.*

The southern roadside reserve, within the study area, supports large patches of indigenous canopy species including River Red-gums *Eucalyptus camaldulensis*, *Eucalyptus microcarpa*, Yellow Box *Eucalyptus melliodora*, White Box *Eucalyptus albida* and Yellow Gum *Eucalyptus leucoxylon* ssp. *leucoxylon.* Coverage of indigenous understory species amongst these plantings is low.

REMNANT PATCHES

Patches of native vegetation were identified in proximity to the project area boundary. This native vegetation is most attributable to six EVCs. A total of 77 separate patches were mapped across the study area, combing to a total area of 8.393 ha. The extents of each EVC mapped can be viewed in Table 3.2.

Table 3.2 Patches of native vegetation as attributed to Ecological Vegetation Classes mapped within the study area

EVC NUMBER	ECOLOGICAL VEGETATION CLASS	BIOREGION	BIOREGION CONSERVATION STATUS	AREA MAPPED (ha)
55	Plains Grassy Woodland	Victorian Riverina (VRiv)	Endangered	0.206
61	Box Ironbark Forest	VRiv	Vulnerable	0.323
235	Plains Woodland / Herb-rich Gilgai Wetland Mosaic	VRiv	Endangered	0.488
803	Plains Woodland	VRiv	Endangered	6.954

EVC NUMBER	ECOLOGICAL VEGETATION CLASS	BIOREGION	BIOREGION CONSERVATION STATUS	AREA MAPPED (ha)
819	Spike Sedge Wetland	VRiv	Vulnerable	0.01
821	Tall Marsh	VRiv	Depleted	0.411
Total				***8.392***

PLAINS GRASSY WOODLAND

Two patches of Plains Grassy Woodland EVC 55 were mapped within the study area. Plains Grassy Woodland is defined as:

'An open, eucalypt woodland to 15 m tall. Occupies poorly drained, fertile soils on flat or gently undulating plains at low elevations. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer. This variant occupies areas receiving approximately 500 – 700 mm annual rainfall.' (DELWP, 2016b)

EVC 55 Plains Grassy Woodland

Patches of Plains Grassy Woodland within the study area were predominantly due to occurrence of a *Eucalyptus camaldulensis* canopy. One of the Patches – within the road-reserve of the Hume Freeway was planted, with the other, to the north, a remnant patch. Both patches are a substantially modified example of this EVC with low understory species diversity.

Indigenous species present being common and opportunistic, such as Common Wallaby-grass *Rytidosperma caespitosum*, Copper-awned Wallaby-grass *Rytidosperma fulvum*, Slender Wallaby-grass *Rytidosperma racemosum* var. *racemosum* and *Chloris truncata.* Few indigenous herbs that are typical of this EVC were recorded within the patches mapped in the study area.

Weeds found in the patches were mainly common pasture grasses, such as **Bromus catharticus*, and Perennial Rye-grass **Lolium perenne*.

BOX-IRONBARK FOREST

Winton-Glenrowan Road supports two patches of Box-Ironbark Forest *EVC 61*. Box-Ironbark Forest is defined as

'Occurs on gently undulating rises, low hills and peneplains on infertile, often stony soils derived from a range of geologies. The open overstorey to 20 m tall consists of a variety of eucalypts, often including one of the Ironbark species. The mid storey often forms a dense to open small tree or shrub layer over an open ground layer ranging from a sparse to well-developed suite of herbs and grasses.' (DELWP, 2016b)

Box Ironbark Forest supported by the study area are biodiverse with a canopy species including Grey Box *Eucalyptus microcarpa*, White Box *Eucalyptus albens*, Yellow Box *Eucalyptus melliodora* and Mugga *Eucalyptus sideroxylon.*

Understory species present include shrubs such as: Ausfeld's Wattle *Acacia ausfeldii* – FFG Act endangered, Gold-dust Wattle *Acacia acinacea* s.l.,Golden Wattle *Acacia pycnantha*, Saloop *Einadia hastata*, Nodding Saltbush *Einadia nutans*, Curved Rice-flower *Pimelea curviflora s.l.*

Grasses present include Common Wheat-grass *Anthosachne scabra s.l.*, Rough Spear-grass *Austrostipa scabra subsp. Falcata*, Wattle Mat-rush *Lomandra filiformis subsp. filiformis*, Copper-awned Wallaby-grass *Rytidosperma fulvum*, Bristly Wallaby-grass *Rytidosperma setaceum.*

Herbs present include Fuzzy New Holland Daisy *Vittadinia cuneata*, and Shiny Everlasting *Xerochrysum viscosum*, Black-anther Flax-lily *Dianella revoluta s.l.*, Saloop *Einadia hastata*, Nodding Saltbush *Einadia nutans* and Cut-leaf Goodenia *pinnatifida*.

PLAINS WOODLAND / HERB-RICH GILGAI WETLAND MOSAIC

The Transmissions lines supports numerous small, fragmented and highly modified patches of Plains Woodland / Herb-rich Gilgai Wetland Mosaic *EVC 235.* Plains Woodland / Herb-rich Gilgai Wetland Mosaic is defined as:

Open woodland to 15 m tall on broad alluvial plains and along ephemeral drainage lines. Soils are generally poorly drained heavy clays which form distinctive "gilgai" crests and troughs in a fine-scale mosaic. The understorey consists of few, if any shrubs while the ground layer is made up of a combination of "dryland" herbs/grasses and amphibious herbs/grasses tolerant of seasonal inundation. (DELWP, 2016b)

EVC 235 Plains Woodland / Herb-rich Gilgai Wetland Mosaic

Patches of Plains Woodland / Herb-rich Gilgai Wetland Mosaic within the study area were generally either without canopy, being a shrub layer only of either Golden Wattle *Acacia pycnantha,* Silver Wattle *Acacia dealbata,* or Sweet Bursaria *Bursaria spinosa*. Or a seasonally wet depressions supporting plants such as Common Swamp Wallaby-grass *Amphibromus nervosus*, Brown-back Wallaby Grass *Rytidosperma duttonianum*, Common Bog Sedge *Schoenus apogon*, and Toad Rush *Juncus bufonius.*

Occurrences of Plains Woodland / Herb-Rich Gilgai Wetland Mosaic are generally weedy with dominant exotics being Cocksfoot **Dactylis glomerata,* Toowoomba Canary-grass **Phalaris aquatica,* Yorkshire Fog **Holcus lanatus* and Perennial Rye-grass **Lolium perenne.*

PLAINS WOODLAND

Most of the remnant vegetation supported by the study area is most attributable to Plains Woodland EVC 803. Plains Woodland is defined as:

'An open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. Occupies fertile clays and clay loam soils on flat or gently undulating plains at low elevations in areas with <600 mm annual rainfall. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer and chenopods are often present.' (DELWP, 2016b)

EVC 803 Plains Woodland

Patches of Plains Woodland vary in quality structure across the study area. Lower quality patches occurred when either an understory was present or a canopy layer only was present. Higher quality patches were inclusive of both typical canopy species and a relatively archetypal understory. Canopy species present include *Eucalyptus microcarpa, Eucalyptus melliodora, Eucalyptus albens* and *Eucalyptus leucoxylon* ssp. *leucoxylon.* Patches with only an understory present are formed by a predominantly opportunistic indigenous grass species, such as *Rytidosperma* spp., *Panicum decompositum*, and *Chloris truncata.*

SPIKE SEDGE WETLAND

One patch of Spike Sedge Wetland EVC 819 was identified in the study area, to the north of the proposed project area. Spike Sedge Wetland is defined as:

'Low sedgy vegetation of species-poor seasonal or intermittent wetlands, dominated by spike-sedges. Typically treeless, but sometimes with thickets of saplings or scattered more mature specimens of Eucalyptus camaldulensis. Mostly confined to a narrow ring around the upper margins of floodway ponds. Soils are typically heavy clays (e.g. mottled yellow-grey clay, grey loamy clay), occasionally silty near the surface. In some riverine sites, annual inundation is not reliable and the rhizomic rootstocks of Eleocharis acuta appear capable of surviving at least occasional periods of longer dormancy.' (DELWP, 2016b)

EVC 819 Spike Sedge Wetland

A single patch of EVC 819 identified within the study area occurs along the channelised area to the north of proposed project area. This patch was primarily due to coverage of Common Spike-sedge *Eleocharis acuta*. Fringing vegetation was predominantly exotic being, for the most part, Towoomba Canary Grass **Phalaris aquatica*.

TALL MARSH

Two Patches of Tall Marsh EVC 921 were identified in the study area, to the north of the proposed project area. Tall Marsh is defined as:

'Wetland dominated by tall emergent graminoids (rushes, sedges, reeds), typically in thick species-poor swards. Competitive exclusion in core wetland habitat - of optimum growing conditions for species tolerant of sustained shallow inundation. Occupies wetlands usually associated with anabranch creeks. Soils are almost permanently moist. Dominant species are tolerant of relatively deep and sustained inundation, but not total immersion for any sustained period.' (DELWP, 2016b)

The Tall Marsh patch occurs along a channelised drain and is dominated by Cumbungii *Typha domingensis.*

3.2.2.2 CANOPY TREES

Eighty two trees were recorded within the study area. Fifty four of these trees are Large as per the most appropriate EVC benchmark.

A summary of trees mapped are detailed in Table 3.3 below.

A total of 82 scattered trees were mapped within the study area, 54 of these are large. A detailed tree table is provided at Appendix D1. This table includes whether each tree would be counted as scattered tree (ST) or within a patch (canopy tree – large tree (LT)) as per the Guidelines (DELWP, 2017d), the size class of each tree as per the most appropriate EVC, Tree Protection Zone (m), and habitat provided by each tree.

One Large Scattered Trees – Yellow Box Eucalyptus melliodora within the proposed project area.

Table 3.3 Summary of indigenous trees mapped within the study area

SPECIES	LARGE TREES	SMALL TREES	TOTAL
Allocasuarina littoralis Black Sheoak		1	1
Eucalyptus albens White Box		1	1
Eucalyptus camaldulensis River Red-gum	5	8	13
Eucalyptus leucoxylon subsp. leucoxylon Yellow Gum	1		1
Eucalyptus melliodora Yellow Box		1	1
Eucalyptus microcarpa Grey Box	43	22	65
Eucalyptus spp. Eucalypt	2	3	5
Grand Total	**51**	**36**	**87**

3.2.2.3 SIGNIFICANT FLORA SPECIES

Based on database search results, and following site assessment results inclusive of a habitat assessment, no significant flora species are considered likely to occur within the project area. One significant species were observed during site survey – Buloke *Allocasuarina lehmannii* – listed as vulnerable under the FFG Act in Victoria, although this was in the southern roadside reserve – outside the project area. Potential habitat for Dwarf Brooklime *Gratiola pumilo* - listed as endangered under the FFG Act is thought to possibly occur amongst muddy edges of wetter depressions. This species was not observed although possibly occurs in wetter areas outside of impact areas.

See the full likelihood of occurrence assessment attached at Appendix B.

3.2.2.4 FFG ACT PROTECTED FLORA

The following FFG Act Protected Flora species were recorded within the study area:

- Coast Wattle #*Acacia longifolia* subsp. *sophorae*
- Orange Wattle #*Acacia saligna*
- Common Fringe-myrtle *Calytrix tetragona*
- Jersey Cudweed *Helichrysum luteoalbum.*

3.2.2.5 HABITAT HECTARE SCORES

Habitat hectare scoring for all patches of native vegetation assessed within the study area is provided in the appendices at Table D.2. Impacts on these areas are provided in Section 4.4. A summary of the habitat hectare assessment results is provided in Table 3.4 below.

Table 3.4 Habitat Hectare assessments – EVCs identified, areas mapped and average habitat scores.

EVC	SUM OF AREA HA	AVERAGE HABITAT SCORE
Box Ironbark Forest EVC 61	0.32	57.00
Plains Woodland / Herb-rich Gilgai Wetland Mosaic EVC 235	0.49	22.96
Plains Grassy Woodland 55	0.21	28.00
Plains Woodland 803	6.95	21.40

EVC	SUM OF AREA HA	AVERAGE HABITAT SCORE
Spike-sedge Wetland 819	0.01	50.88
Tall Marsh 821	0.41	51.50
Total / Average	**8.39**	**25.69**

3.2.2.6 THREATENED ECOLOGICAL COMMUNITIES

The following TECs were assessed to determine their presence within the study area:

EPBC Act communities:

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

FFG Act threatened communities synonymous with native vegetation modelling:

- 'Grey Box - Buloke Grassy Woodland Community'
- 'Victorian Temperate Woodland Bird Community'.

EPBC ACT THREATENED ECOLOGICAL COMMUNITIES

GREY BOX (EUCALYPTUS MICROCARPA) GRASSY WOODLANDS AND DERIVED NATIVE GRASSLANDS OF SOUTH-EASTERN AUSTRALIA

The 'Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia' (GBGW) TEC was formerly widespread on the drier edge of the temperate grassy eucalypt woodland belt of south-eastern Australia but now, across its range (central New South Wales through northern Victoria and into South Australia), only 10 to 15 % of its original extent remains. This TEC is typically involves a tree canopy of *Eucalyptus microcarpa* alongside Buloke *Allocasuarina luehmannii*, Kurrajong *Brachychiton populneus*, White Cypress Pine *Callitris glaucophylla*, *Eucalyptus albens* and *Eucalyptus camaldulensis.* The shrub or mid layer is variable, ranging from effectively absent, to moderately dense cover. Shrub composition can be variable although generally includes *Acacia*, *Bursaria* and *Cassinia* species. The ground layer also varies in composition, with a mostly grassy and herbaceous understory (DSEWPaC, 2012). Such vegetation may qualify as this Nationally threatened ecological community where it meets certain condition thresholds as described in EPBC Act guidance document, including:

1 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?

2 Is (or was previously) the most common tree species *Eucalyptus microcarpa*

3 Patch size must be a minimum of 0.5 ha

Two patches larger patches of native vegetation with a *Eucalyptus microcarpa* canopy either side of Lee Road did have a sufficient indigenous understory component to qualify as this community. Indigenous Perennial understory species present include Knob Sedge *Carex inversa*, Spear-grass *Austrostipa rudis* ssp. *rudis*, Copper-awned Wallaby-grass *Rytidosperma fulvum*, Sticky New Holland Daisy *Vittadinia australasica var. oricola*, Black-anther Flax-lily *Dianella revoluta*, Common Wheat-grass *Anthosachne scabra s.l.*, Late-flower Flax-lily *Dianella tarda*, Fuzzy New Holland Daisy *Vittadinia cuneata var. cuneata* and Box Mistletoe *Amyema miquelii.*

Table 3.5 Assessment of Grey Box Grassy Woodland and derived native grasslands

SCIENTIFIC DETERMINATION CRITERIA	32	18
Key Diagnostic Characteristics		

SCIENTIFIC DETERMINATION CRITERIA	32	18
"The tree canopy is dominated (≥ 50% canopy crown cover) by Eucalyptus microcarpa (Grey Box). Other tree species may be present in the canopy and, in certain circumstances, may be co-dominant with Grey Box but are never dominant on their own. These associated species are listed in Appendix A."	Yes	Yes
"The mid layer comprises shrubs of variable composition and cover, from absent to moderately dense. The mid layer usually has a crown cover of less than 30% with local patches up to 40% crown cover."	Yes	Yes
"The mid layer comprises shrubs of variable composition and cover, from absent to moderately dense. The mid layer usually has a crown cover of less than 30% with local patches up to 40% crown cover."	Yes	Yes
"The ground layer also is highly variable in development and composition, ranging from almost absent to mostly grassy to forb-rich. Ground layer flora commonly present include one or more of the graminoid genera: *Rytidosperma, Austrostipa, Elymus, Enteropogon, Dianella* and *Lomandra*; and one or more of the chenopod genera: *Atriplex, Chenopodium, Einadia, Enchylaena, Maireana, Salsola* and *Sclerolaena."*	Yes	Yes
"Derived grasslands are a special state of the ecological community, whereby the canopy and mid layers have been mostly removed to <10% crown cover but the native ground layer remains largely intact, with 50% or more of the total vegetation cover being native."	n/a	n/a
Condition Thresholds		
1a. The minimum patch size is 0.5 hectare; AND 1b. The canopy layer contains Grey Box (E. microcarpa) as the dominant or co-dominant tree species; AND 1c. The vegetative cover of non-grass weed species in the ground layer is less than 30% at any time of the year. 2a. At least 50% of the vegetative cover in the ground layer comprises perennial native species at any time of the year; AND 2b. 8 or more perennial native species are present in the mid and ground layers at any time of the year."	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes
<u>Additional criteria</u> that apply to smaller woodland patches (0.5 to <2ha in area) with tree crown cover >10% 2a. At least 50% of the vegetative cover in the ground layer comprises perennial native species at any time of the year; AND 2b. 8 or more perennial native species are present in the mid and ground layers at any time of the year.	Yes	Yes
<u>Additional criteria</u> that apply to larger woodland patches with a well developed canopy (2 ha or more in area) 3a. At least 8 trees/ha are hollow bearing or have a diameter at breast height of 60 cm or more10; AND 3b. at least 10% of the vegetative ground cover comprises perennial native grasses at any time of the year; OR 4a. At least 20 trees/ha have a diameter at breast height of 12 cm or more; AND 4b. at least 50% of the vegetative cover in the ground layer comprises perennial native species.	n/a	n/a
<u>Additional criteria</u> that apply to patches where the canopy is less developed or absent (derived grassland) (≥0.5 ha in area)	n/a	n/a

SCIENTIFIC DETERMINATION CRITERIA	32	18
5a. Woodland density does not meet criteria 3a or 4a, or is a derived grassland with clear evidence that the site formerly was a woodland with a tree canopy dominated or co-dominated by *E. microcarpa;* AND 5b. At least 50% of the vegetative cover in the ground layer is made up of perennial native species at any time of the year; AND 5c. 12 or more native species are present in the ground layer at any time of the year.		
Summary		
Does the patch meet criteria for listed threatened community?	Yes	Yes

FFG ACT THREATENED ECOLOGICAL COMMUNITIES

GREY BOX - BULOKE GRASSY WOODLAND COMMUNITY

The Grey Box - Buloke Grassy Woodland Community is a mainly grassy woodland found on flat or very gently undulating plains in northern Victoria and a few places in central Victoria. It tends to develop in the absence of fire on sites with relatively fertile, fine-grained soils. *Eucalyptus microcarpa* is usually the structurally dominant tree over a lower stratum of *Allocasuarina luehmannii* (DELWP, undated). *Allocasuarina luehmannii* was recorded within the study area, although outside project areas.

Patches of EVC 55 and EVC 803, relating to the community, mapped across the study area, were generally highly modified, or remained relatively intact in very small and fragmented patches i.e. 0.08 ha. Patches of EVC 55 had a canopy dominated by *Eucalyptus camaldulensis*, and as such does not qualify as the community. Some patches of EVC 803 did consist of *Eucalyptus macrocarpa*. However, the quality of those patches did not meet the community condition requirements. Native vegetation supported by the study area is not considered to align with the description of this FFG Act listed community.

VICTORIAN TEMPERATE WOODLAND BIRD COMMUNITY

The Victorian Temperate Woodland Bird Community has been defined as a suite of bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began. There are 24 species defining this group, and the distributions of these birds differ. However many are closely associated with northern Victorian direr woodlands dominated (DELWP, undated).

Patches of native vegetation mapped across the study area were generally highly modified, or remaining relatively intact in very small and fragmented patches i.e. 0.08 ha. Additionally, none of the target species were observed. Native vegetation supported by the study area is considered likely to be a habitat resource of minimal value for these woodland birds, and as such is not considered to align with the description of this FFG Act listed community.

3.2.2.7 WEEDS AND INVASIVE ANIMALS

Five weed species listed under the CaLP Act were recorded across the study area. They are listed below with their classification in Table 3.6. Regionally restricted weeds (R) are not widely distributed but are capable of spreading further. Regionally controlled weeds (C) are usually widespread in a region. To prevent further spread control measures are required. It is the landowners responsibility to prevent the growth and spread of weeds.

Invasive animals listed under the Act observed (visual or evidence (scats and tracks) observed) or likely to enter the study area include foxes, mice, cats and rabbits.

Table 3.6 CaLP Act weed species recorded within the study area

SCIENTIFIC NAME	COMMON NAME	CALP CLASSIFICATION
Eragrostis curvula	African Love-grass	C
Dittrichia graveolens	Stinkwort	C
Genista monspessulana	Montpellier Broom	C
Lycium ferocissimum	African Box-thorn	C
Xanthium spinosum	Bathurst Burr	C

3.2.3 FAUNA

3.2.3.1 OBSERVATIONS

One species of conservation significance was incidentally observed 3 times onsite being the Brown Tree Creeper *Climacteris picumnus victoriae* – listed as near-threatened on the DEECA Advisory List in Victoria (DSE, 2013). The locations of these observations are shown in Appendix C-2. The Brown Tree Creeper is not listed on either the FFG Act or the EPBC Act. Common native fauna species were also observed during the site assessment. These included Yellow-rumped Thornbill *Acanthiza chrysorrhoa,* Australian Magpie *Gymnorhina tibicen,* Superb Fairy-wren *Malurus cyaneus* and Common Froglet *Crinia signifera*. Common Froglet were recorded throughout the channelised watercourse, along the north of the study area.

A nesting White-faced Heron was observed moving through the study area. The nest is located in a tree just outside of the study area near the south-western end of Lee's Road.

3.2.3.2 HABITAT

The habitat resources available for fauna within the study area are described below in Table 3.6.

Table 3.7 Habitat descriptions

HABITAT	DESCRIPTION	VALUES
Remnant understory	Small remnant patches of Plains Woodland and Plains Grassy Woodland, inclusive of understory around the perimeter of the study area, for the most part beyond the project area. Prominent understory species providing habitat values for fauna are Black-anther Flax-lily *Dianella revoluta,* Wallaby Grasses *Rytidosperma fulvum, R. casepitosum* and Red-leg Grass *Bothriochloa macra* .	Remnant grassy understory, with organic litter, rocks and logs, provides various habitat resources for smaller indigenous reptiles and birds, or refuge for frogs here wet depression occur. .
Exotic grassy understory	Exotic grassy understory, highly modified by agricultural use, are primarily dominated by weedy exotic grasses and herbaceous weeds. Chilean Needle Grass was not recorded.	These areas provide foraging resources for common bird species and exotic fauna, such as House Mouse. **Mus musculus.*

HABITAT	DESCRIPTION	VALUES
Channelised seasonally wet depression	The channelised seasonally wet depression, of Tall Marsh, across the north of the study area is a long shallow swale, that provides shallow and tall marsh habitat.	This seasonally wet linear tract provides habitat for native frogs, reptiles, birds local to the study area and dispersing throughout the landscape. Dense tracts of Tall Marsh (dominated by Typha scientific name) are not likely to permanently support larger frog species, such as Growling Grass Frog *Litoria raniformis*, and would provide a temporary source of habitat for the species, when inundated.
Trees and shrubs	Indigenous, native and exotic trees are supported by the study area. Seven of these Trees provide habitat in the form of hollows and/ or cracks.	Individual planted trees may provide limited roosting, foraging and refuge habitat for native birds and microbats. The dense planted native vegetation along the Hume Freeway may support smaller bird species which prefer less open areas, and provide nesting and foraging habitat as well as connectivity for these species in the landscape. Large old trees providing hollows and cracks may possibly be utilised for refuge by a number of common and threatened native arboreal fauna species, or mircobats.

3.2.3.3 HABITAT CONNECTIVITY

There is connectivity of woodland and marsh habitat to a core area through woodland vegetation, from the western end of study area, along the Hume Highway roadside reserve to Seven Mile Creek, and then again along Winton Creek, to a core habitat area in the Winton Wetlands. The rail reserve divides habitat between the Winton Wetlands and the project area.

3.3 TARGETED SURVEY RESULTS

Targeted surveys were undertaken for Woodland birds, Wetland birds, Frogs, and Arboreal mammals. Results indicate an absence of target species. No target species listed under the EPBC Act or FFG Act were observed. One species of state conservations significance was observed being the Brown Treecreeper *Climacteris* picumnus *victoriae* listed as near-threatened on the Victorian Advisory List of threatened vertebrate fauna (DSE, 2013).

Add caption for table and then need to update table numbers that follow

TARGET FAUNA GROUP	TARGET SPECIES	SURVEY RESULTS
Woodland birds	Painted Honeyeater *Grantiella picta*	Painted Honeyeater were **not observed** Detailed results are provided below in section 3.3.1

TARGET FAUNA GROUP	TARGET SPECIES	SURVEY RESULTS
Wetland birds	Australian Little Bittern *Ixobrychus dubius* Lewin's Rail *Lewinia pectoralis* Blue-billed Duck *Oxyura australis* Latham's Snipe *Gallinago hardwickii* Australia Painted Snipe *Rostratula australis*	Australian Little Bittern, Latham's Snipe, Lewin's Rail, Australia Painted Snipe and Blue-billed Duck were **not observed**. Detailed results are provided below in section 3.3.5
Frogs	Growling Grass Frog *Litoria raniformis*	Growling Grass Frog were **not observed**, there were no responses to call playback. No Growling Grass Frogs were observed during active-searching. Detailed results are provided below in section 3.3.4
	Sloane's Froglet *Crinia sloanei*	Sloane's Froglet were **not observed**. There were no responses to call playback. No Sloane's Froglet were observed during active-searching. Detailed results are provided below in section 3.3.3
Arboreal mammals	Squirrel Glider *Petaurus norfolcensis* Brush-tailed Phascogale *Phascogale tapoatafa tapoatafa*	Squirrel Glider and Brush-tailed Phascogale were **not observed** during stag-watches. Camera traps did not return images of either these species. Detailed results are provided below in section 3.3.2

3.3.1 WOODLAND BIRDS SURVEY CONDITIONS AND RESULTS

Surveys targeting Painted Honeyeater *Grantiella picta* – EPBC Act and FFG Act Vulnerable, were located at suitable habitat within or adjacent to the original project area. These survey locations are now outside the currently proposed project area which avoids suitable habitat for the Painted Honeyeater. Results of the woodland bird surveys are detailed in Table 3.8 below. Painted Honeyeater was not recorded during targeted surveys. No birds listed on either of the EPBC Act or the FFG Act were observed during targeted woodland bird surveys.

Table 3.8 Species recorded during woodland bird surveys.

LOCATION	COMMON NAME	SPECIES NAMES	TYPE	23-NOV	15-DEC
Spot 1 Two large trees. Mistletoe *Amyema* sp. present. Near dam. Remnant understory effectively absent. Outside current project area	Whistling Kite	*Haliastur sphenurus*	S	6:20pm - 6:40pm No wind, 100% cloud cover, humid.	Timing and conditions were not recorded. Surveys undertaken at dusk prior to sunset.
	Willie Wagtail	*Rhipidura leucophrys*	S		
	Australian Raven	*Corvus coronoides*	S		
	Galah	*Eolophus roseicapillus*	S		
	Masked Lapwing	*Vanellus miles*	S		
	Grey Teal	*Anas gracilis*	S		
Spot 2 Stand of trees, 9 large.	Laughing Kookaburra	*Dacelo novaeguineae*	S	6:42pm - 7:12pm	Not recorded
	Magpie-lark	*Grallina cyanoleuca*	S		
	Grey Fantail	*Rhipidura albiscarpa*	S		

LOCATION	COMMON NAME	SPECIES NAMES	TYPE	23-NOV	15-DEC
Mistletoe *Amyema* sp. present. Remnant understory effectively absent. Near dam. Outside current project area.	Australian Raven	*Corvus coronoides*	S		
	Willie Wagtail	*Rhipidura leucophrys*	S		
	Sulphur-crested Cockatoo	*Cacatua galerita*	S		
	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	S		
	Common Myna	**Acridotheres tristis*	S		
	White-plumed Honeyeater	*Lichenostomus penicillatus*	S		
	Australian Reed Warbler	*Acrocephalus australis*	H		
	Black Shouldered Kite	*Elanus axillaris*	S		
	Australian Magpie	*Gymnorhina tibicen*	S		
	Welcome Swallow	*Hirundo neoxena*	S		
	Galah	*Eolophus roseicapillus*	S		
Spot 3 Stand of trees, 12 large. Mistletoe present. Remnant understory effectively absent. Near dam. Outside current project area.	Australian Wood Duck	*Chenonetta jubata*	S	7:15pm - 7:40pm	Not recorded
	Magpie-lark	*Grallina cyanoleuca*	S		
	Australian Magpie	*Gymnorhina tibicen*	S		
	Red Wattlebird	*Anthochaera carunculata*	S		
	Willie Wagtail	*Rhipidura leucophrys*	S		
	Sulphur-crested Cockatoo	*Cacatua galerita*	S		
	Red-rumped Parrot	*Psephotus haematonotus*	S		
	Welcome Swallow	*Petrochelidon neoxena*	S		
	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	S		
Spot 4 Golden Wattle *Acacia pycnantha* present. Mistletoe *Amyema* sp. present. Outside current project area.	Australian Raven	*Corvus coronoides*	S	7:40pm - 7:51pm Sunset 8:11 pm	Not recorded

3.3.2 ARBOREAL MAMMALS SURVEY CONDITIONS AND RESULTS

3.3.2.1 STAG-WATCHES AND SPOTLIGHTING

Two stag-watches, followed by spotlighting, were undertaken after dusk at two larger trees at apparently used hollows (one person on each hollow). Stag-watches were undertaken to target Squirrel Glider *Petaurus norfolcensis* and Brush-

tailed Phascogale *tapoatafa* – FFG Act vulnerable. Locations of stag-watches and trees targeted during surveys are detailed in Table 3.9 below. An image of a hollow targeted during stag-watches is shown in Photo 3.1. No Squirrel Glider or Brush-tailed Phascogales were observed.

No other nocturnal species were observed during the surveys. One night a White-faced Heron was observed sitting on its nest in the canopy of a remnant tree in the wider study area, outside of the project area.

Table 3.9 Stagwatch dates, trees targeted and results.

STAGWATCH DATES	STAGWATCH LOCATION	TREES TARGETED	RESULTS
23 November 2021	1	28. 29, 33, 37	No fauna observed exiting from hollows, indigenous or exotic.
23 November 2021	2	28, 29, 30	
15 December 2021	1	Hollow bearing trees to the north of the study area along the habitat corridor linking to the west.	
15 December 2021	2		

Photo 3.1 A used hollow in tree 29. The smoothed edges indicate use by fauna, but no animals were observed exiting the hollow dutring spotlighting.

3.3.2.2 CAMERA TRAPS

Cameras were deployed on 23 November 2021 and retrieved on 15 December 2021. Camera traps were intended to target Squirrel Glider *Petaurus norfolcensis* – FFG Act vulnerable, and Brush-tailed Phascogale *Phascogale tapoatafa tapoatafa* – FFG Act vulnerable. Target species were not observed. Numerous common fauna were observed, including some a Sacred Kingfisher *Todiramphus sanctus* and Agile Antechinus *Antechinus agilis.* Some species were too close to the cameras field of view to be able to be identified (i.e. only some fur showing) or the image was too blurry after a bird had flown by. Results are provided in Table 3.10 and one of the installations is sown on Photo 3.2. Locations of camera traps is shown in Appendix C-2.

Table 3.10 Camera trap results – species and numbers per camera.

COMMON NAME	TOTAL	CAM 1	CAM 2	CAM 3	CAM 4	CAM 5	CAM 6
Agile Antechinus *Antechinus agilis*	1					1	
Australian Magpie *Gymnorhina tibicen*	2				1		1

COMMON NAME	TOTAL	CAM 1	CAM 2	CAM 3	CAM 4	CAM 5	CAM 6
Common Ringtail Possum *Pseudocheirus peregrinus*	3		1	1	1		
Laughing Kookaburra *Dacelo novaeguineae*	3	1		1	1		
Sacred Kingfisher *Todiramphus sanctus*	2	1					1
Willie Wagtail *Rhipidura leucophrys*	2					1	1
Brown Treecreeper Climacteris *Picumnus victoriae*	4	3			1		
Cattle **Bos* taurus	2	1	1				
White-plumed Honeyeater *Ptilotula penicillata*	1					1	

Photo 3.2 Camera trap and bait installed on tree 29.

3.3.3 SLOANES FROGLET SURVEY CONDITIONS AND RESULTS

Sloane's Froglet is listed as endangered under both the EPBC Act and FFG Act. Surveys were conducted 20 October 2021 and 05 October 2021. Conditions and locations are detailed in Table 3.11.

Table 3.11 Sloan's Froglet survey locations and conditions

SURVEY LOCATION DESCRIPTION	SURVEY 1 5/10/2021	SURVEY 2 21/10/2021	SPECIES OBSERVED
Surveys undertaken at four sites – 1, 2, 3 & 4 along the north western boundary throughout most appropriate habitat in the revegetation area and channelised drain. Locations shown in mapping at Appendix C.	*Start temperature: 13.1°C* *Wind: 0 km/hr* *Relative humidity: 71%* *Start time: 21:07* *End time: 22:03* *End temperature: 12.0°C*	*Temperature: 19.9°C* *Wind: 1 km/hr* *Relative humidity: 72 %* *Start time: 20:41* *End time: 22:12* *End temperature: 16.9°C*	Plains Froglet *Crinia parasignifera* Common Froglet *Crinia signifera.*

3.3.4 GROWLING GRASS FROG SURVEY CONDITIONS AND RESULTS

Growling Grass Frog is listed as Vulnerable under both the EPBC Act and FFG Act. Call-playback and active searching surveys for the species were undertaken in November and December 2021. The surveys were conducted after sunset on

two nights by two ecologists. Conditions and locations are detailed in Table 3.12. Growling Grass Frog habitat is mapped in Appendix C-2.

Table 3.12 Growling Grass Frog survey locations and conditions.

SURVEY SITE ID	SURVEY LOCATION DESCRIPTION	SURVEY 1	SURVEY 2	WATER QUALITY – SURVEY 1 ONLY	SPECIES OBSERVED
2	Channelised Deep Marsh. Water not flowing. Indigenous coverage primarily Cumbungi *Typha domingensis.* Weedy exotics dominate fringes such Canary Grass **Phalaris aquatica.*	*Temperature: 14 C* *Wind: 2.8 km/hr* *Relative humidity: 71%* *Start time: 21:07* *Duration: 24 mins*	*Temperature: 22.1C* *Wind: 0 km/hr* *Relative humidity: 53 %* *Start time: 22:05* *Duration: 30 mins*	*Water temperature: 15.2°C* *Water pH: 8.3* *Electrical conductivity: 172 µS*	Plains Froglet *Crinia parasignifera* Common Froglet *Crinia signifera.* Mosquitofish **Gambusia holbrooki* absent
3	Water not flowing. Fringing vegetation (2x native rushes *Juncus spp.*), dominated by Spikerush *Eleocharis acuta* (emergent and fringing) with Water Ribbons *Cycnogeton procerum* present	*Temperature: 15 C* *Wind: 2.8 km/hr* *Relative humidity: 69 %* *Start time: 21:37* *Duration: 18 mins*	*Temperature: 18.7 C* *Wind: 0 km/hr* *Relative humidity: 50 %* *Start time: 22:41* *Duration: 25 mins*	*Water temperature: 113.7°C* *Water pH: 7.6* *Electrical conductivity: 124 µS*	

3.3.5 WETLAND BIRDS SURVEY CONDITIONS AND RESULTS

Wetland Birds were surveyed during the daytime on the 5 and 21 October 2021. Wetland bird surveys were targeting migratory species. Conditions and locations are detailed in Table 3.13. No migratory wetland species were observed, with only one wetland species heard and observed, the Australian Reed Warbler. Wetland bird habitat is mapped in Appendix C-2.

Table 3.13 Wetland bird survey locations and conditions.

SURVEY SITE ID	SURVEY LOCATION DESCRIPTION	SURVEY 1 5/10/2021	SURVEY 2 21/10/2021	SPECIES OBSERVED
1	Channelised Deep Marsh. Water not flowing. Indigenous coverage primarily Cumbungi *Typha domingensis.* Weedy exotics dominate fringes such Canary Grass **Phalaris aquatica.*	*Start time: 18:00* *Duration: 20 mins*	*Start time: 18:07* *Duration: 30 mins*	No target wetland bird species observed during targeted bird surveys.

SURVEY SITE ID	SURVEY LOCATION DESCRIPTION	SURVEY 1 5/10/2021	SURVEY 2 21/10/2021	SPECIES OBSERVED
2	Water not flowing. Fringing vegetation (2x native rushes *Juncus spp.*), dominated by Spikerush *Eleocharis acuta* (emergent and fringing) with Water Ribbons *Cycnogeton procerum* present.	*Start time: 17:35* *Duration: 20 mins*	*Start time: 17:41* *Duration: 25 mins*	

4 POTENTIAL ECOLOGICAL IMPACTS

4.1 PROJECT AREA

For the purpose of this impact assessment, a nominal construction footprint considered to be the entire newly proposed project area (provided March 2022), and area required for construction of the underground transmission line being 7 m wide down the centre of Lee Road, and 30 m wide across private land to the GTS, with the exclusion of the Hume Freeway, and Winton Glenrowan Road, which is to be under bored. The project area (i.e. the defined construction footprint) is shown in Appendix C-2.

4.2 POTENTIAL IMPACTS ON MNES

The project has been assessed as unlikely to significantly impact any EPBC Act listed Matters of Matters of National Environmental Significance (MNES). EPNC Act listed species targeted during surveys, and subsequent impact assessments are summarised in Table 4.1. Threatened Ecological communities)TEC) identified and subsequent impact assessment is summarised in Table 4.2. Impacts to EPBC Act listed species and communities are detailed in sections 4.2.2 and 4.2.1 below.

Table 4.1 EPBC Act listed species possibly impacted by the proposal

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	LIKELIHOOD OF IMPACT
Crinia sloanei	Sloane's Froglet	EN, en	Low – not observed during targeted survey. Direct impacts to possible habitat for the most part avoided.
Gallinago hardwickii	Latham's Snipe	M	
Grantiella picta	Painted Honeyeater	VU, vu	
Litoria raniformis	Growling Grass Frog	VU, vu	
Rostratula australis	Australian Painted Snipe	En, cr	

Table 4.2 EPBC Act listed communities possibly impacted by the proposal

NAME	CONSERVATION STATUS	LIKELIHOOD OF IMPACT
Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia	EN, en	**1** Lee Road – minimal impact along road shoulder at patch 18 ~ 0.111 ha. This is further discussed in section 5.1.2. **2** Lee Road – impact at patch 32 avoided **3** Winton-Glenrowan Road – avoided by underbore.

Conservation Status used in the table above:

EPBC Act: EN = Endangered, VU = Vulnerable, M = Migratory

FFG Act: en = endangered, vu = vulnerable

4.2.1 IMPACTS TO EPBC ACT LISTED SPECIES

4.2.1.1 SLOANE'S FROGLET

The Consultation Documentation regarding Listing Eligibility and Conservations of Sloane's Froglet *Crinia sloanei* – EPBC Act Endangered, notes the known population of this species to be throughout Grey Box Grassy Woodlands and Derived Native Grasslands as close as Chiltern to the north of Wangaratta, although this species is sparsely distributed across north central Victoria and NSW (TSSC, 2019). One observation of the species was recorded in 1993 within 10 km of the construction footprint. In total 95 % of all Sloane's Froglets recorded since 2000 have been in three stronghold areas, within peri-urban landscapes. These three areas are Albury – Thurgoona, Howlong and Corowa - Wahgunyah and Rutherglen. The Tall Marsh Channel falls outside of the project area, and as such, residual impact, such as construction noise, sedimentation and run-off, during the breeding season may be applicable.

As detailed in section 3.3.3, This species was not detected during targeted surveys. Targeted surveys were not undertaken during the peak calling period, although were undertaken following sufficient rain such that ephemeral pools in the channelised drain along the north of project area were holding water. The peak calling time for males is from June to August (preferred survey time July & August), though they will also call throughout spring and after summer rains. Males usually call while floating in water of temporary ponds or shallow inundated areas connected to larger wetlands (TSSC, 2019). As such, channelised wetland habitat on the southern side of the rail corridor is not considered optimal for the species, as it isn't connected to large wetlands across Winton Wetlands.

4.2.1.2 LATHAM'S SNIPE

Latham's Snipe *Gallinago hardwickii* is listed as migratory under the EPBC Act. Latham's Snipe occurs in permanent and ephemeral wetlands. Latham's Snipe usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies), they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity (DoEE, 2021).

Possible habitat was identified for Latham's Snipe in the ephemeral drainage line running along the south of the rail reserve. This species was not observed during targeted survey and would not be expected to reside within the project area permanently (being migratory), but also as foraging habitat is limited. The species also a non-breeding migratory species, that does not breed within Australia. As such critical habitat for species or population persistence is not present. It is thought that this species is unlikely to be impacted by the construction or operational phase of the facility.

4.2.1.3 AUSTRALIAN PAINTED SNIPE

Australian Painted Snipe *Rostratula australis* is listed as Endangered under the EPBC Act. The Australian Painted Snipe occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, *Muehlenbeckia* spp. (lignum), open timber or samphire (DSEWPaC, 2013). It forages at night within muddy banks.

Possible habitat was identified for the Australian Painted Snipe in the ephemeral drainage line running along the south of the rail reserve, although limited suitable foraging habitat was present. The species resides within dense aquatic vegetation during the day and density was lacking, apart from sections of Typha (Tall Marsh EVC 821). The species doesn't typically reside around channels, rather preferring wetlands. This species was not observed during targeted survey. Direct impacts to potential habitat for this species are anticipated to be avoided. It is thought that this species is unlikely to be significantly impacted by the construction or operational phase of the facility.

4.2.1.4 PAINTED HONEYEATER

Although the Painted Honeyeater *Grantiella picta* – EPBC Act Vulnerable, prefers Box-ironbark woodlands and vegetation communities inclusive of *Acacia* spp., (Menkhorst, 2017), it was not observed during targeted survey. Possible habitat for this species within the study area was woodland areas with larger, old trees hosting *Amyema* spp..

These areas were targeted during surveys. As detailed in section 6.2.3.1 below. No direct impacts to current habitat for this species are anticipated. Impacts to 0.028 ha of regrowing habitat either side of the Winton - Glenrowan Road is to be avoided by underboring. It is thought that this species is unlikely to be significantly impacted by the construction or operational phase of the facility.

At the time of survey mistletoe was no longer flowering, so this may have affected targeted survey outcomes, however woodland habitat supporting Mistletoe is not being removed.

4.2.1.5 GROWLING GRASS FROG

Suitable habitat for the Growling Grass Frog *Litoria raniformis* was observed along the Tall Marsh channel. The channel would typically provide suitable dispersal and foraging habitat during the breeding season, as it connects to both Seven Mile Creek and Winton Creek, nearby the construction footprint, ultimately allowing connectivity to the northern side of the rail corridor and access for the species to the Winton Wetlands. Connectivity is essential for population viability. Connectivity between waterbodies can be through waterways, such as slow-flowing creeks or rivers, drainage lines, swales, or wet depressions.

Growling Grass Frog are a pond breeding species. Growling Grass Frog inhabit both permanent and ephemeral wetlands, lakes, swamps and ponds, and sometimes slow flowing sections of river or streams (Clemann and Gillespie, 2012). Populations of Growling Grass Frog are often found where groups of neighbouring, permanent waterbodies are present, which are usually somewhat connected via tributaries or drainage lines, creating a dispersal-matrix throughout the local area (Heard et al., 2014, Heard et al., 2004, Heard, 2012, Hamer and Organ, 2008). As such, although the species is considered regionally extinct, Winton Wetlands would provide suitable viable habitat for a population.

Winton Wetlands provide a matrix of wetland habitats that may be habitat for the Growling Grass Frog in the future if the species population recovers by natural recovers via artificial means. There is currently a re-introduction plan for the species into Winton Wetlands. The species was not recorded during targeted survey. The last record within 10 km of the project area was in 1970. Additionally, the Tall Marsh Channel is located outside of the construction footprint. Direct residual impacts under the EPBC Act, to an important populations as per the Significant Impact Guidelines for this species (DEWHA, 2009) is considered unlikely.

As a precaution, frog proof fencing during construction has been recommended along and around possible although unlikely habitat – see mapping at Appendix C-2, and recommendations on frog proof fencing at section 5.1.3.3.

4.2.2 IMPACTS TO THREATENED ECOLOGICAL COMMUNITIES

Impacts to Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia is limited to 5 small road shoulder fragments of patch 18 totalling ~ 0.111 ha, inclusive of 1 large tree. See mapping at Appendix C-2. The large tree (#80), although considered impacted due to TPZ incursion, will be physically retained. A significant impact to this Threatened Ecological Community – TEC is considered unlikely based on the Significant Impact Assessment (SIA) below

4.2.2.1 SIGNIFICANT IMPACT ASSESSMENT

Assessing against the significant impact criteria for an endangered TEC, as per the Significant Impact Assessment Guidelines (DoEE, 2013), a significant impact to this TEC is not anticipated. The TEC is listed as Endangered under the EPBC Act.A significant impact assessment has been provided in Table 4.3 below.

Table 4.3 Significant impact assessment - Grey Box *(Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands

SIGNIFICANT IMPACT CRITERIA	MITIGATION	LIKELIHOOD OF SIGNIFICANT IMPACT	ASSESSMENT
Reduce the extent of an ecological community	Construction footprint for trenching/augering	Low	Minimal impacts to small fragmented road edges of this community totalling ~0.111 ha.

	Road minimised to 7 m – see section 5.1.2.		This is not considered to materially reduce the extent of this community.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	Trenching to be undertaken along existing road.	Low	As there is not considered to be any increase in fragmentation to this community.
Adversely affect habitat critical to the survival of an ecological community	n/a	Low	Minimal impacts to small fragmented road edges of this community totalling ~0.111 ha. These impacts are not considered to be to areas critical to the survival of this community.
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	It is recommended that existing surface hydrology is reinstated as it currently functions so that ecology along Lee Road is not altered.	Low	Surface hydrology is not to be altered. Impact to community unlikely.
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	n/a	Low	No substantial change in species composition is anticipated as edge effects are already in play along the roadside
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to either: — assisting invasive species, that are harmful to the listed ecological community, to become established — 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	Standard Controls And Procedures as detailed in 5.2	Low	A substantial reduction in the quality or integrity of an occurrence of this ecological community is not anticipated. Management controls will be included in the CEMP.
Interfere with the recovery of an ecological community.	There is no Recovery Plan for the species. Management, if required, should follow the Conservation Advice document for the TEC .	Low	Interference with the recovery of this ecological community is not anticipated.

Source: (DSEWPaC, 2012)

4.3 POTENTIAL IMPACTS ON FFG ACT LISTED ECOLOGICAL VALUES

4.3.1 FLORA

Following desktop and site assessment, two species of conservation significance are thought considered to have a likelihood of impact, which is considered low for both species. One planted Buloke is within the road reserve outside of the project area. There is the possibility of Dwarf Brooklime remains, although habitat for this species falls just outside the impact area, in the channelised depressions south of the train line. The project will require removal of Protected Flora species – Jersey Cudweed *Helichrysum luteoalbum* within the project area.

Table 4.4 FFG Act listed threatened flora possibly impacted by the proposal

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	LIKELIHOOD OF IMPACT
Allocasuarina luehmannii	Buloke	en	**Low** – Recorded in southern roadside reserve. TPZs do not intersect proposed project area.
Gratiola pumilo	Dwarf Brooklime	en	**Low –** Not recorded, but possibly occurs amongst muddy edges of wetter depressions. Not observed although possibly occurs in wetter areas outside of impact areas.

Conservation Status used in the table above:
EPBC Act: EN = Endangered, VU = Vulnerable, M = Migratory
FFG Act: en = endangered, vu = vulnerable

4.3.2 FAUNA

There was initially thought potential for impacts to 14 fauna species listed under the FFG Act. However none of these species were observed during targeted survey, and much of the habitat supported by the original study area will be avoided. Targeted surveys were not undertaken for Brown Toadlet *Pseudophryne bibronii*. However there are considered to be minimal impacts to possible habitat for this species if it is present. These species and their likelihood of impact are detailed in Table 4.5 below.

Table 4.5 FFG Act listed fauna species possibly impacted by the proposal

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	LIKELIHOOD OF IMPACT
Ardea alba	Great Egret	vu	**Low** – not observed during targeted survey. Direct impacts to habitat not anticipated.
Crinia sloanei	Sloane's Froglet	EN, en	
Grantiella picta	Painted Honeyeater	VU, vu	**Low** – not observed during targeted survey. Minimal impacts to possible habitat.
Hieraaetus morphnoides	Little Eagle	vu	**Low** – not observed during targeted survey. Direct impacts to habitat not anticipated.
Ixobrychus dubius	Australian Little Bittern	en	
Lewinia pectoralis	Lewin's Rail	vu	
Litoria raniformis	Growling Grass Frog	VU, vu	
Neophema pulchella	Turquoise Parrot	vu	
Oxyura australis	Blue-billed Duck	vu	
Petaurus norfolcensis	Squirrel Glider	vu	**Low** – not observed during targeted survey. Minimal impacts to possible habitat.
Pseudophryne bibronii	Brown Toadlet	en	**Low** – Minimal impacts to possible habitat.
Rostratula australis	Australian Painted Snipe	EN, cr	**Low** – not observed during targeted survey. Direct impacts to habitat not anticipated.
Tringa glareola	Wood Sandpiper	en	**Low** – not observed during targeted survey. Direct impacts to habitat not anticipated.

Varanus varius	Lace Monitor	en	**Low** – not observed during targeted survey. Minimal impacts to possible habitat.

Conservation Status used in the table above:
EPBC Act: EN = Endangered, VU = Vulnerable, M = Migratory
FFG Act: en = endangered, vu = vulnerable

4.4 VEGETATION CLEARING

Vegetation clearance as per the Guidelines, within the project area, inclusive of scattered trees accounted for as area, is summarised in terms of EVC and bioregional conservation significance for the project area in Table 4.6 below. This total area of 1.453 differs slightly from the EnSym calculated total of 1.393 ha by 0.06 ha due to EnSym dissolving overlaps. In addition, Table 4.7 below summarises tree impacts numerically. Impacts are mapped in Appendix C-2.

Table 4.6 Native vegetation - clearance for the proposed project - hectares

EVC	ENDANGERED	VULNERABLE	TOTALS
Box Ironbark Forest EVC 61		0.369 ha	0.369 ha
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0.151 ha		0.151 ha
Plains Woodland EVC 803	0.933 ha		0.933 ha
Grand Total	1.084	0.369	1.453 ha

EVC = Ecological Vegetation Class

BCS = Bioregional Conservation Significance

4.4.1 SCATTERED TREE, AND LARGE TREES IN PATCHES

There is a total of 16 trees possibly impacted by the project. Eight of these are Large. A summary of scattered tree impacts is provided in Table 4.7 below. Situation of possibly impacted trees is shown in mapping at Appendix C-2. Details of trees possibly impacted is tabulated at Appendix D1.

An arborist has been engaged to confirm that impacts to trees along Lee Road is minimal, due to limited tree root growth beneath Lee Road (pers. Comm. Cameron Ryder). Arborist advice was that if trenching was to be down the southern side of Lee Road that trees 74, 75 and 78 could be considered retained.

Table 4.7 Scattered trees impacted within the project area.

	LARGE TREES		SMALL TREES		GRAND TOTAL
SITUATION	REMOVE	RETAIN	REMOVE	RETAIN	
Trees in Patches	2	27		6	35
Scattered trees	6	14	8	20	48
Totals	8	41	**8**	**26**	**83**

EVC = Ecological Vegetation Class

5 MITIGATION MEASURES

The Guidelines (DELWP, 2017d) and other legislation, such as the EPBC Act, require that all efforts must be made to avoid and minimise impacts to native vegetation before resorting to offsets. Recommended measures to avoid and mitigate impacts to both native vegetation and ecological values observed during the site assessment are detailed in Sections 5.1 and 5.2 below.

5.1 AVOIDANCE AND MINIMISATION OF IMPACTS ON NATIVE VEGETATION - PLANNING

Avoidance and minimisation has been considered in the project to date where possible, as per the Assessors' Handbook (DELWP, 2017a), including the introduction of a construction footprint. The Assessors' Handbook requires that the proponent demonstrates avoidance and minimisation in the following ways:

- any strategic level planning over the study area
- site level planning
- that no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

5.1.1 STRATEGIC LEVEL PLANNING

The apparent absence of large amounts of remnant vegetation assisted this site being chosen as a candidate for the project.

5.1.2 STUDY AREA LEVEL PLANNING

EnSym testing of the initial project area of the energy facility originally proposed supported 2.026 ha of native vegetation inclusive of 37 Large Trees required to be cleared.

Following subsequent recommendations to avoid and minimise impacts to native vegetation and habitat values, and re design of the proposed energy facility the proposed project footprint has been reduced, and impacts to the western sector of the site are to be avoided entirely, and all native vegetation across these areas retained. The now reduced project area of the energy facility mostly contains areas clear of native vegetation, supporting up to 0.316 ha of native vegetation inclusive of 3 Large trees.

Impacts include clearance of the 30 m wide easement adjacent to the overhead distribution lines traversing east from Lee Road to the GTS. This 30m has been allowed for provide for an alignment along this section that is yet to be determined. It is likely this offset requirement will be reduced. It is recommended that the offset requirement be revised following determination of this alignment. It is recommended that if approved for clearance, that this be conditional on the avoidance and minimisation of impacts to native vegetation along the 30m wide section of the underground transmission line adjacent to the existing overhead transmission lines between Lee Road and the GTS. And that the offset requirement revised, offsets achieved be for the reduced amount of clearance.

Impacts to the revegetation area under a management agreement with the Goulburn Broken CMA (section 3.1.2.2) are to be avoided.

5.1.3 SITE LEVEL PLANNING - FURTHER AVOIDANCE AND MINIMISATION OF DIRECT IMPACTS

Site level mitigations is to be undertaken by means of:

- Trenching footprint along Lee Road

- Hume underbore
- Frog proof fencing.

These three mitigation measures are discussed below.

5.1.3.1 TRENCHING FOOTPRINT ALONG LEE ROAD

Lee Road is to be trenched down to minimise impacts to native vegetation along this stretch of the project. Impacts along Lee Road have been minimised to a width of 7 m along Lee Road. The width of the road is apparently approximately 5m, however it appears that road shouldering has resulted in reformed land along stretches of Lee Road, to a width of approximately 7 m.

Arborist has been engaged to confirm that impacts to trees along Lee Road is minimal, due to limited tree root growth beneath Lee Road (pers. Comm. Cameron Ryder). Arborist advice was that if trenching was to be down the southern side of Lee Road that trees 74, 75 and 78 could be considered retained.

This native vegetation also qualifies as the EPBC Act listed The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands, to which impacts have been minimised to 0.111 ha.

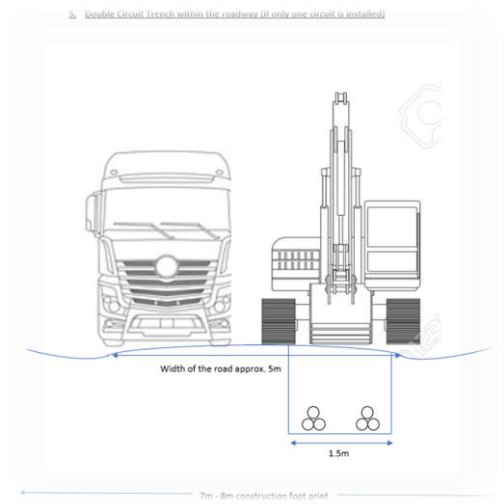


Diagram of trenching method – Lee Road

It is recommended that existing surface hydrology is reinstated as it currently functions so that ecology along Lee Road is not altered.

5.1.3.2 HIGH QUALITY VEGETATION UNDER VPO3

The south eastern tip of the underground transmission line crosses beneath Vegetation Protection Overlay (VPO3). VPO3 pertains to Schedule 3 to Clause 42.02 titled *Regent Honeyeater Habitat/Lurg Ironbark Vegetation Protection Area.* The bore beneath the Hume Freeway had been extended to avoid High quality Box Ironbark Forest EVC 61 supported by the Winton-Glenrowan roadside reserve covered by VPO3. This native vegetation also qualifies as the EPBC Act listed The Grey Box (Eucalyptus microcarpa) Grassy Woodlands.

5.1.3.3 FROG PROOF FENCING

It is recommended a temporary frog-proof fence is erected during the construction period. Frog proof fencing is recommended to limit frogs dispersing from possible habitat identified in proximity to the project footprint. Fencing placement recommendations is shown in Appendix C-2. Frog proof fencing recommendations are provided below:

- At least 0.5 m high, have an overhanging lip (between horizontal to 45° downwards) of at least 100 mm on the side opposite the construction zone, and be buried into the soil at least 100 mm. The fence should consist of a single piece of material from the top of the lip to the bottom of the buried section.
- Use opaque sheeting (e.g., high-density polyethylene or sheet metal). Where drainage needs to be achieved through the fence it can have small perforations, as small as possible with a maximum perforation diameter of 10 mm or a diameter that prevents the movement of juvenile frogs.
- Standard sediment fencing (i.e., geotextile/silt fence) can only be used for short-term use as it requires significant maintenance.
- Frogs will use adjacent vegetation to climb up and over the fence. Vegetation that may overhang the fence should not be planted or allowed to grow

  - Can be stand-alone or affixed to another fence or structure – this may be possible along the northern boundary of main works area using existing fencing.

- Dewatering, if required should be done in a way so that sediment and turbid water does not pollute aquatic habitat mapped in Appendix C-2. It is recommended that a sucker-truck be used, and water disposed of to landfill if the pollution risk cannot be controlled using on-site / local dewatering methods.

Plate 1: Temporary fence for Growling Grass Frog (Source: Austin O'Malley)

Plate 2: Temporary fence for amphibians, made of silt fencing (Source: Jake Urlus, Tactecol)

FURTHER AVOIDANCE AND MINIMISATION RECOMMENDATIONS

- An original width of 50 m required for the underground transmission easement over land from Lee Road to the Hume Freeway has been preliminarily reduced to and indicative 30 m impact area, this is recommended to be further reduced by the constructor upon award. As design of the underground transmission line is yet to be finalised, which will be done by the constructor, it is assumed that satisfaction of 52.17 offset requirements will be a permit condition to be achieved by the constructor. It is recommended that the constructor make further effort to avoid and minimise impact to naïve vegetation during finalisation of design between Lee Road and the Hume Freeway.
- Further reduction of impacts to scattered trees within, and surrounding the project area is recommended. If trees do not have to be removed due to the works, but fall within the construction footprint, erect standard TPZs to ensure the retention of additional trees.
- It is recommended that access to the project area be via existing routes.
- It is recommended that efforts be made to avoid impacts to the fenced off revegetation area and throughout remnant understory around the channelised drain along the north of the study area (outside the construction footprint). These areas possibly provide habitat for significant fauna species, and provide east-west connectivity for native fauna. It is recommended that this area is included as a no-go zone in the Construction Environmental Management Plan (CEMP). Detailed further in Section 5.2Further to the avoidance and minimisation of impacts reported above, no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

5.2 STANDARD CONTROLS AND PROCEDURES

Prior to, during and after construction, the mitigation process is typically managed through a CEMP. A CEMP typically outlines all practicable measures to minimise and mitigate impacts on biodiversity from the construction and operational phase to the management and maintenance phases. The contractors will develop a CEMP that will include standard flora and fauna mitigation measures.

The following sections outline strategies to mitigate ecological impacts at the planning stage and during proposed works. Prior to the commencement of any works, adequate briefing and induction of construction crews should occur to ensure that environmental values are given due consideration during construction.

5.2.1 MINIMISING LOSS OF VEGETATION, HABITAT AND CONNECTIVITY DURING CONSTRUCTION

5.2.1.1 VEGETATION AND HABITAT

Recommended controls are as follows:

- Brief contractors regarding the protection of vegetation and the purpose for avoidance and minimisation.

Select the appropriate type and size of machine so that disturbance and impact to tree roots in proximity to works are minimised. These recommendations should be included in a CEMP and developed prior to construction commencing. Environmental controls during construction should include:

- No dewatering into the channelised wetter areas along the northern boundary.
- No stockpiles within proximity to the channelised wetter areas along the northern boundary. No stockpiles within TPZ of trees to be retained.

5.2.1.2 WEED AND DISEASE MANAGEMENT

To ensure weeds and diseases are not brought onto work sites, or existing weeds and diseases (if they occur) are not spread to other sites, the following steps should be taken:

- Prepare a contractor environmental hygiene manual (or follow an existing one) outlining the necessary actions required to prevent weeds and diseases entering and/or leaving the site including:
  - all machinery and vehicles should be free of weed propagules and/or material carrying potential diseases prior to commencement of work
  - if possible, begin work in areas close to native vegetation and move to areas dominated by introduced species or ensure machinery is thoroughly cleaned between sites.
- Where possible, avoid working at times of prolific seed set of noxious weeds to avoid their spread by machinery (generally spring time for most of the noxious weeds present on site).

These recommendations should be included in a CEMP, developed prior to construction taking place.

If areas of suitable frog habitat are to be impacted within the construction area, Chytrid Fungus controls for construction vehicles and personnel should also be implemented. The necessity of this control can be further specified following targeted frog surveys.

5.2.1.3 MINIMISING LITTER

Impacts to the ecological value of an environment from litter can be minimised through the implementation of waste management. This should include ensuring waste and recycling bins are at all construction sites and break areas as well as minimising waste from construction materials. Waste management should be included in the project CEMP.

6 LEGISLATION AND POLICY

This section addresses any permits, approvals, management plans and offset requirements that may be required for the project under federal, State and local government environmental legislation, following implementation of the specified mitigation measures and containing all works to the designated construction footprint.

6.1 COMMONWEALTH

6.1.1 *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* (EPBC ACT)

The EPBC Act is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as MNES. There are nine MNES to which the EPBC Act applies. These are:

- World heritage sites
- National heritage places
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- Listed threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- Nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

A 'significant impact' is defined under the EPBC Act as 'an impact that is important, notable, or of consequence, having regard to its context or intensity' (Department of the Environment, 2013). If a project is likely to have a significant impact on one of the nine MNES, the 'action' must be referred to the DCCEEW. This 'referral' is then released to the public for comment.

Significant impacts on MNES are not anticipated. A referral of this project to DCCEEW under the EPBC Act is not recommended.

6.2 STATE

6.2.1 *ENVIRONMENT EFFECTS ACT 1978* (EE ACT)

Under *Victoria's Environmental Effects Act 1978*, projects that could have a 'significant effect' on Victoria's environment can potentially require an Environmental Effect Statement (EES). This Act applies to any public works 'reasonably considered to have or be capable of having a significant effect on the environment'. The Minister for Planning and Environment is the responsible person for assessing whether this Act applies.

Before commencing any public works to which this Act applies, the proponent must initiate an EES to be prepared and submit it to the Minister for the Minister's assessment of the environmental effects of the works.

The triggering of an Environment Effects Statement is dependent on the extent of impact within the study area and whether the impact triggers one or more of the criteria. A preliminary assessment based on the ecological aspects has been undertaken in accordance with the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Ministerial Guidelines) (DSE, 2006).

Ecologically relevant assessment criteria for the types of potential effects on the environment that might be of significance and therefore warrant referral of a project include (DSE, 2006):

- Potential clearing of 10 hectares or more of native vegetation
- 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.

To assess the potential for requiring an EES referral, a simple rating system was used to assess environmental aspects of the proposal against each EES referral criterion outlined in the Ministerial Guidelines with commentary included to explain the basis for the assigned rating. The ratings were:

- **Criteria not met** – the proposal is unlikely to meet this criterion and would not trigger the need to submit a referral under the EES Act.
- **Uncertain** – based on current information it is unclear whether the proposal would meet the criteria.
- **Criteria met** – the proposal is likely to meet this criterion and may trigger the need for a referral.
- **Not applicable** – not applicable to an assessment of ecological values. Requires assessment by other disciplines.

Assessing against both individual and cumulative criteria (relating to ecological matters) an EES is highly unlikely to be triggered due to the small area of impact. As such an EES self-assessment and referral is not considered necessary for ecological matters. An assessment against both individual assessment individual and cumulative criteria (relating to ecological matters) set out in the Ministerial Guidelines (DSE, 2006) is provided in Table 6.1 & Table 6.2 below.

Table 6.1 Individual potential environmental effects – one criteria needs to be met to trigger a referral

INDIVIDUAL CRITERIA	RATIONALE
Potential clearing of 10 ha or more of native vegetation from an area that: is of an Ecological Vegetation Class (EVC) identified as endangered; or is, or is likely to be, of very high conservation significance; and is not authorised under an approved Forest Management Plan or Fire Protection Plan.	**Criteria not met** Up to a total of 1.08 hectares (ha) of native vegetation, of endangered EVC may be impacted, will be required for the proposed project. This is approximately 10 % of the referral trigger amount of 10 ha. The rating of 'very high conservation significance' is no longer relevant as this is from the previous native vegetation policy Victoria's Native Vegetation Management Framework which ceased in 2013.

INDIVIDUAL CRITERIA	RATIONALE
Potential long-term loss of a significant proportion (e.g. 1 to 5 per cent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria.	**Criteria not met** The proposed works will not lead to a loss of a significant population of any flora or fauna species. Impacts to threatened flora are expected to be avoided or minor with only one Buloke *Allocasuarina lehmannii* – listed as vulnerable in Victoria under the FFG Act, identified in the southern roadside reserve – outside the project area. Wetter areas, outside of potential impact areas are thought to be possible habitat for Dwarf Brooklime, although none was observed. Potential habitat for Dwarf Brooklime *Gratiola pumilo* - listed as endangered under the FFG Act is thought to possibly occur amongst muddy edges of wetter depressions. This species was not observed although possibly occurs in wetter areas outside of impact areas. With regard to fauna, one species of conservation significance in Victoria was identified being the Brown Tree-creeper. This species is listed as near-threatened on the now superseded Victorian Advisory Lists and not listed on the FFG Act. There are no anticipated impacts to FFG Act listed fauna.
Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'.	**Criteria not met** There are no Ramsar or other important wetlands near the project.
Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term.	**Criteria not met** The proposal is unlikely to have substantial long-term aquatic impacts as all works will occur on land. Winton Wetlands approximately 1.8 km to the north of the study area. All works will need have standard construction controls to minimise any impacts such as sediment-laden run-off.
Potential extensive or major effects on the health, safety or well-being of a human community, due to emissions to air or water or chemical hazards or displacement of residences.	**Not applicable**
Potential greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum, directly attributable to the operation of the facility.	**Not applicable**

Table 6.2 Combined potential environmental effects – two or more need to be met to trigger a referral

COMBINED CRITERIA	RATIONALE
Potential clearing of 10 ha or more of native vegetation, unless authorised under an approved Forest Management Plan or Fire Protection Plan.	**Criteria not met** Up to a total of 1.393 hectares clearance of native vegetation, accounted for as per the Guidelines with scattered trees accounted for as area, will be required for the proposed project. This is approximately 3 % of the referral trigger amount of 10 ha.
Matters listed under the Flora and Fauna Guarantee Act 1988 (FFG Act): 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.	**Criteria not met** No FFG Act listed ecological communities occur within the study area. Impacts to threatened flora are expected to be avoided or minor with only one Buloke *Allocasuarina lehmannii* – listed as vulnerable in Victoria under the FFG Act, identified in the southern roadside reserve – outside the project area. Potential habitat for Dwarf Brooklime *Gratiola pumilo* - listed as endangered under the FFG Act is thought to possibly occur amongst muddy edges of wetter depressions. This species was not observed although possibly occurs in wetter areas outside of impact areas. With regard to fauna, Only one species of conservation significance in Victoria was identified being the Brown Tree-creeper. This species is listed as neat threatened on the now superseded Victorian Advisory Lists. There are no anticipated impacts to FFG Act listed fauna.
Potential extensive or major effects on landscape values of regional importance, especially where recognised by a planning scheme overlay or within or adjoining land reserved under the National Parks Act 1975.	**Not applicable** The study area is not covered by land reserved under the *National Parks Act 1975*. Landscape values are not included in the assessment of ecological values.
Potential extensive or major effects on land stability, acid sulphate soils or highly erodible soils over the short or long term.	**Not applicable**
Potential extensive or major effects on beneficial uses of water bodies over the long term due to changes in water quality, stream flows or regional groundwater levels.	**Not applicable**
Potential extensive or major effects on social or economic well-being due to direct or indirect displacement of non-residential land use activities.	**Not applicable**
Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development.	**Not applicable**
Potential significant effects on the amenity of a substantial number of residents, due to extensive or	**Not applicable**

COMBINED CRITERIA	RATIONALE
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.	**Not applicable**
Potential extensive or major effects on Aboriginal cultural heritage.	**Not applicable**
Potential extensive or major effects on cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the Heritage Act 1995.	**Not applicable**

6.2.2 *FLORA AND FAUNA GUARANTEE ACT 1988* (FFG ACT)

The Victorian FFG Act was established to provide a legal framework for enabling and promoting the conservation of all Victoria's native flora and fauna, and to enable management of potentially threatening processes. One of the main features of the Act is the listing process, whereby native species and communities of flora and fauna, and the processes that threaten native flora and fauna, are listed in the schedules of the Act. This assists in identifying those species and communities that require management to survive and identifies the processes that require management to minimise the threat to native flora and fauna species and communities within Victoria.

Under the FFG Act, a permit from DEECA is also required to 'take' (to kill, injure, disturb or collect) listed flora species that are members of protected taxa from public land (this does not apply to private land unless listed species are present and the land is declared 'critical habitat' for the species). Protected flora are:

- plants that have been declared to be protected under section 46 of the FFG Act
- plants that are listed as threatened under section 10 of the FFG Act
- plants that belong to communities that are listed as threatened under section 10 of the FFG Act.

A permit under the FFG Act will not be required for the removal of Protected Flora within a listed community within the construction footprint.

The *FFG Act Amendment Act 2019* came into effect on 1 June 2020. As part of the amendments, all taxa of flora and fauna listed under the FFG Act, along with all taxa on the DEECA Advisory lists (except those that are 'poorly known' or 'near threatened') and any taxa nominated by public submissions, were assessed in accordance with the common assessment method by a Scientific Advisory Committee overseen by DEECA. This process was completed with the gazetting of a new list in May 2021, which was published by DEECA in June 2021, with listings subsequently within the VBA in July 2021.

The *FFG Act Amendment Act 2019* also introduces changes to the categories of protected flora and the way they are regulated, including introducing two categories: 'restricted use protected flora' and 'generally protected flora'. Restricted use protected flora are exclusively threatened by take for commercial/personal use, and the taking of these species incidental to clearing for development works, will not require a permit to take. Generally protected flora are threatened by take for reasons other than or additional to commercial/personal use (e.g. development clearing) and will require a permit to take for any purpose. The protected flora list is currently being reviewed, but for now, all protected flora are classified as generally protected flora. As such, a permit to 'take' will be required for impact to Jersey Cudweed *Helichrysum luteoalbum* – FFG Act Protected, observed within the construction footprint.

- Common Fringe-myrtle *Calytrix tetragona*, Coast Wattle #*Acacia longifolia* subsp. *Sophorae* and Orange Wattle #*Acacia saligna* were observed in the study area although outside of impact areas.

Buloke *Allocasuarina lehmannii* – vulnerable, was observed in the Hume Road reserve, although is unlikely to be impacted. Possible habitat for Dwarf Brooklime – endangered, was identified however this species is considered unlikely to be impacted.

There are no anticipated impacts to FFG Act threatened fauna species, or FFG Act threatened ecological communities.

6.2.3 *PLANNING AND ENVIRONMENT ACT 1987* (P&E ACT)

The P&E Act provides the legal framework for the operation of Victoria's planning system, commonly referred to as *the Planning Scheme*. Sections of the Benalla Planning Scheme of relevance to ecological matters are brought about by Clause 12.01, and subsequently Clause 52.17.

The objective of Clause 12.01-2S is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This clause calls for policy documents to be considered as relevant:

- *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017d) (the Guidelines).
- *Assessor's handbook – applications to remove, destroy or lop native vegetation* (DELWP, 2018) (the Assessors handbook).

Clause 52.17 of the Benalla Planning Scheme requires a permit for the clearance of native vegetation as per the Guidelines, and specifically with respect to the three-step approach of *avoidance, minimisation* and *offsetting* of native vegetation clearance.

Ecological maters are also required to be considered under Clauses 42.01 pertaining to an Environmental Significance Overlay (ESO), and clause 42.02 pertaining to a Vegetation Protection Overlay, where these overlays are mapped across land.

6.2.3.1 PLANNING ZONES AND OVERLAYS

This southern section of the proposed project area is lined by Road Zone 1 (RZ1) associated with the Hume Freeway. A Farming Zone encompasses the entire study area, and lines the adjacent property to the east of the study area. The study area crosses the Railway line (Public Use Zone 4 (PUZ4)), north of the rail reserve to encompass another section of farming zone. North of the study area is predominantly Public Park and Recreation Zone (PPRZ). None of these Zones impose any additional planning requirements in relation to ecological values, and as such are not detailed further.

The south eastern tip of the underground transmission line crosses beneath Vegetation Protection Overlay (VPO3). VPO3 pertains to Schedule 3 to Clause 42.02 titled *Regent Honeyeater Habitat/Lurg Ironbark Vegetation Protection Area.* The bore beneath the Hume Freeway had been extended to avoid native vegetation supported by the Winton-Glenrowan roadside reserve covered by VPO3.

6.2.3.2 GUIDELINES FOR THE REMOVAL, DESTRUCTION OR LOPPING OF NATIVE VEGETATION (THE GUIDELINES)

The Guidelines (DELWP, 2017d) have been designed to manage the risk to Victoria's biodiversity associated with the removal of native vegetation. The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria under the *Planning and Environment Act 1987*.

6.2.3.3 ASSESSMENT PATHWAY

The assessment pathway determines the information that accompanies an application and the decision guidelines that are considered in determining the outcome of an application (DELWP 2017b). The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed. The three assessment pathways are:

1 Basic – limited impacts on biodiversity.

2 Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.

3 Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

The assessment pathway of an application is determined in accordance with Table 6.3.

Table 6.3 Permit application pathway determination

EXTENT	LOCATION CATEGORY		
	Location 1	Location 2	Location 3
<0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
<0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
≥ 0.5 hectare	Detailed	Detailed	Detailed

Source: Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017b).

ALL ASSESSMENT PATHWAYS

Application requirements for all applications for a permit to remove native vegetation involve the following:

1 Information about the vegetation to be removed including:

- **a** the assessment pathway and reason for the assessment pathway. This includes the location category of the native vegetation to be removed. See paragraph above.
- **b** a description of the native vegetation to be removed accounted for as per the Guidelines – see section 3.2.2.1
- **c** Maps showing the native vegetation and property in context and vegetation to be removed as accounted for by the Guidelines. See Appendix C
- **d** the offset requirement, determined in accordance with the Guidelines.

2 Topographic and land information relating to the native vegetation to be removed.

3 Recent, dated photographs of the native vegetation to be removed. See section 3.2.2.1.

4 Details of any other native vegetation approved to be removed, or that was removed without the required approvals within 5 years of the permit application. Not applicable.

5 An avoid and minimise statement. See Section 5.1

6 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.

Impacts to native vegetation fall in Location 2. The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the state-wide 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.

6.2.3.4 UTILITIES EXEMPTION

Habitat hectare assessments were carried out during a site assessment on all native vegetation as per the Guidelines and against the most appropriate benchmark. Results of habitat hectare assessment and required clearance areas are detailed in Section 3.2.2.5.

The table of exemptions under clause 52.17-7 of the Benalla Planning Scheme lists Utility Installations as exempt from Clause 52.17 permit requirements if clearance is to the minimum extent necessary and the proponent has written agreement for the works from DEECA. The exemption is as follows:

Native vegetation that is to be removed, destroyed or lopped to the minimum extent necessary:

- *to maintain the safe and efficient function a Minor utility installation;*
- *or by or on behalf of a utility service provider to maintain or construct a utility installation in accordance with the written agreement of the Secretary to the Department of Environment, Land, Water and Planning (as constituted under Part 2 of the Conservation, Forests and Lands Act 1987).*

The purpose of the second part of the exemption is to enable the removal of native vegetation for construction works for a utility installation, without the need to obtain a planning permit. This is subject to the removal of native vegetation being undertaken in accordance with the written agreement of the Secretary to DEECA (as constituted under Part 2 of the *Conservation, Forests and Lands Act 1987*). The written agreement may require compliance with the Utility installations exemption – procedure for the removal, destruction or lopping of native vegetation. This document includes a set of obligations that align with the no net loss objective (DELWP, 2017c). Clearance of native vegetation may not require a 52.17 permit, however 52.17 offset requirements are still to be satisfied.

6.2.3.5 NATIVE VEGETATION REMOVAL REPORT

Impacts to native vegetation equate to 1.393 ha extent inclusive of scattered trees as area, as per EnSym data standards (DELWP, 2017b). This impact includes 8 Large trees. An Native vegetation removal report – NVR, is provided at Appendix E, offset requirements are detailed in Table 6.4 below.

Table 6.4 Summarised vegetation clearance calculations and offset requirements

VEGETATION CLEARANCE	
Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	1.393 ha
Extent of past removal	0
Extent of proposed removal	1.393 ha
No. Large trees proposed to be removed	8
Location category	Location 2
OFFSET REQUIREMENTS (IF PERMIT WAS GRANTED)	
General offset amount	0.328 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Benalla Rural City Council
Minimum strategic biodiversity value score	0.324
Large trees	8 large trees

Source: NVR report dated 17/01/2023 - Appendix E

6.2.3.6 OFFSET REQUIREMENTS

The offset targets for the project is for a modest General Habitat Units requirement of 0.328 only, and 8 Large Trees. General habitat units are typically readily available, these general units may or may not be inclusive of a portion of the large trees required. Large tree offsets may need to be sourced separately to general units.

This offset requirement includes clearance of the 30 m wide easement adjacent to the overhead distribution lines traversing east from Lee Road to the GTS has been allowed for provide for an alignment along this section that is yet to be determined. It is likely this offset requirement will be reduced. It is recommended that the offset requirement be revised following determination of this alignment. It is recommended that if approved for clearance, that this be

conditional on the avoidance and minimisation of impacts to native vegetation along the 30m wide section of the underground transmission line adjacent to the existing overhead transmission lines between Lee Road and the GTS, and that the offset requirement revised and offsets achieved be for the reduced amount of clearance. Victoria's Native Vegetation Credit Register – VNVCR, was searched on 2212/2022 for candidate offset sites. The search returned 3 potential sites providing suitable and available native vegetation credits. See Appendix F.

6.2.3.7 AVOID AND MINIMISE

The three-step approach (avoid, minimise, offset) is the key policy in relation to the removal of native vegetation to achieve no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. It is a precautionary approach that aims to ensure that the removal of native vegetation is restricted to only what is reasonably necessary, and that biodiversity is appropriately compensated for any removal of native vegetation that is approved (DELWP, 2017d).

The assessors' handbook (DELWP, 2017a) calls for the avoidance and minimisation statement to describe:

- any strategic level planning over the site
- what site level planning has been done
- that no feasible opportunities exist to further avoid and minimise impacts on native vegetation without undermining the key objectives of the proposal.

These points are addressed as appropriate in Section 5.1 discussing avoidance and minimisation if impacts to native vegetation.

6.2.4 WILDLIFE ACT 1975

The *Wildlife Act 1975* is the primary legislation in Victoria for the protection of wildlife. The Act requires that wildlife research (i.e. fauna salvage and relocation) is regulated through a permit system, which is managed by DEECA.

Authorisation for fauna removal/relocation must be obtained under the *Wildlife Act 1975* through a licence granted by DEECA. Any persons involved in fauna removal, salvage capture or relocation of fauna during mitigation measures must hold a current Management Authorisation under the *Wildlife Act 1975*.

No identified habitat provided by Large, old trees bearing hollows and cracks, possible utilised by native fauna, is proposed to be cleared. Authorisation under the *Wildlife Act 1975* will not be required.

6.2.5 CATCHMENT AND LAND PROTECTION ACT 1994 (CALP ACT)

6.2.5.1 DECLARED NOXIOUS WEEDS

The project area supports a number of weeds that are declared noxious under the CaLP Act. Plants occurring on this list are known to, or have the potential to, result in detrimental environmental and/or economic impact.

Under the CaLP Act, declared noxious weeds are categorised into four groups depending on their known and potential impact and specific circumstances for each region. These categories are:

- State Prohibited Weeds (S)
- Regionally Prohibited Weeds (P)
- Regionally Controlled Weeds (C)
- Restricted Weeds (R).

Regionally Controlled weeds are usually widespread but it is important to prevent further spread. It is the responsibility of the landowner to control these weeds on their property and on adjacent roadside reserves. Restricted Weeds are considered to be a serious threat to primary production, Crown land, the environment and/or community health if they were traded in Victoria.

Regionally prohibited weeds are not widely distributed in a region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a region and they must be managed with that goal. Land owners, including public authorities responsible for crown land management, must take all reasonable steps to eradicate regionally prohibited weeds on their land.

The field survey identified that study area supports four regionally controlled (C) and two restricted weeds (R) and one prohibited weed (P). These weeds are listed in Table 3.6, and below:

- African Love-grass *Eragrostis curvula* - C
- Stinkwort *Dittrichia graveolens* - C
- Montpellier Broom *Genista monspessulana* - C
- African Box-thorn *Lycium ferocissimum* - C
- Bathurst Burr *Xanthium spinosum* – C

Measures to control both noxious weeds and pest animals during construction must be contained within the CEMP.

7 CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

A desktop and site assessment were undertaken within the study area for the proposed project. The desktop and site assessments informed an impact assessment, including an assessment of likely regulatory and legislative implications of the project.

The study area is, in general, highly modified from its likely condition pre-European settlement. This study area was likely to have been a biodiverse diverse grassy woodland most attributable to Plains Woodland EVC 803. Currently, within the proposed project area the remnant understory is highly modified by weeds and agricultural utilisation to degree that indigenous understory species are effectively absent, with the exception of some opportunistic colonising species recruiting across areas reserved for the purposes of revegetation along much of the north western boundary. Much of the remnant canopy has been cleared, with a proportionately small amount of large old canopy species persisting at the western end of the study area. The highest quality patches of remnant vegetation within the study area occur to the north of the proposed project area, between the property boundary and the rail reserve where patches of Grey Box Grassy Woodland *ECV 803* are inclusive of a diverse suite of understory species. These areas also support channelised, reformed, wetter depressions supporting Tall Marsh *EVC 821*.

For the purpose of this impact assessment, a nominal construction impact footprint is considered to be the entire proposed project area. Within this construction footprint, the following ecological values and impacts are applicable:

- There are no EPBC Act listed MNES anticipated to be significantly impacted by development of the project area. A referral to DCCEW under the EPBC Act is not recommended.
- Assessing against both individual and cumulative criteria set out in the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (DSE, 2006), an EES is highly unlikely to be triggered due to the small area of impact. As such, an EES self-assessment and referral is not considered necessary for ecological matters.
- A permit under the FFG Act will be required for the removal of Protected Flora species – Jersey Cudweed *Helichrysum luteoalbum*, Coast Wattle *Acacia longifolia* subsp. *sophorae*, Orange Wattle *Acacia saligna* within the project area. There are not anticipated impacts to FFG Act threatened ecological communities.

The table of exemptions under clause 52.17-7 of the Benalla Planning scheme lists Utility Installations as exempt from 52.17 permit requirements if clearance of native vegetation is to the minimum extent necessary and the proponent has written agreement for the works from DEECA. This is subject to the removal of native vegetation being undertaken in accordance with written agreement (to be sought) of the Secretary to DEECA (as constituted under Part 2 of the *Conservation, Forests and Lands Act 1987*). Clearance of native vegetation may not require a 52.17 permit, however 52.17 offset requirements are still to be satisfied. Based on the current construction footprint, impacts up to a total of 1.393 ha of native vegetation, including 8 Large Trees will be required. Approval of the DEECA region and offsets – 0.328 general habitat units, and 8 Large Trees will be required for these losses.

7.2 RECOMMENDATIONS

The following recommendations and next steps for the project include:

- All recommendations in Section 5 should be observed and incorporated into the future of the project, particularly regarding the Trenching footprint along Lee Road and Frog proof fencing.

- Submit an application (exemption endorsement form) for a written agreement from the Secretary of a delegate of DEECA on compliance with the Utility installations exemption – procedure for the removal, destruction or lopping of native vegetation as per clause 52.17-7 of the Benalla Planning Scheme.
- The offset requirement includes clearance of the 30 m wide easement adjacent to the proposed underground transmission lines traversing east from Lee Road to the GTS. This 30 m has been allowed for to provide for an alignment along this section that is yet to be determined. It is likely this offset requirement will be reduced following determination of alignment within this 30 m. It is recommended that the offset requirement be revised following determination of this alignment. It is recommended that if approved for clearance prior to determination of alignment, that approval be conditional on the avoidance and minimisation of impacts to native vegetation along the 30 m wide section of the underground transmission line, adjacent to the existing overhead transmission lines between Lee Road and the GTS, and that the offset requirement revised and offsets achieved be for the reduced amount of clearance.
- Finalise FFG Act protected number and submit an application for removal to DEECA.

8 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) to Lochard Energy (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal under the Consultancy Agreement between WSP and the Client signed 10-9-2019.

QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions*) are based in whole or in part on information provided by the Client and other parties identified in the report (*Information)*, those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the Report.

USE AND RELIANCE

This Report should be read in its entirety and must not be copied, distributed or referred to in part only. The Report must not be reproduced without the written approval of WSP. WSP will not be responsible for interpretations or conclusions drawn by the reader. This Report (or sections of the Report) should not be used as part of a specification for a project or for incorporation into any other document without the prior agreement of WSP.

WSP is not (and will not be) obliged to provide an update of this Report to include any event, circumstance, revised Information or any matter coming to WSP's attention after the date of this Report. Data reported, and Conclusions drawn are based solely on information made available to WSP at the time of preparing the Report. The passage of time; unexpected variations in ground conditions; manifestations of latent conditions; or the impact of future events (including (without limitation) changes in policy, legislation, guidelines, scientific knowledge; and changes in interpretation of policy by statutory authorities); may require further investigation or subsequent re-evaluation of the Conclusions.

The Report does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise. It is the responsibility of the Client to accept (if the Client so chooses) any Conclusions contained within the Report and implement them in an appropriate, suitable and timely manner.

In the absence of express written consent of WSP, no responsibility is accepted by WSP for the use of the Report in whole or in part by any party other than the Client for any purpose whatsoever. Without the express written consent of WSP, any use which a third party makes of this Report or any reliance on (or decisions to be made) based on this Report is at the sole risk of those third parties without recourse to WSP. Third parties should make their own enquiries and obtain independent advice in relation to any matter dealt with or Conclusions expressed in the Report.

DISCLAIMER

No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the Conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies corporate and its officers, employees and agents assumes no responsibility and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.

9 REFERENCES

CLEMANN, N. & GILLESPIE, G. R. 2012. National Recovery Plan for the Southern Bell Frog *Litoria raniformis*. *In:* DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT (ed.). Melborune.

DAWE 2020. Species Profile and Threats Database (SPRAT). *In:* COMMONWEALTH DEPARTMENT OF AGRICULTURE, W. A. T. E. (ed.). Online.

DAWE. 2021. *Protected Matters Seach Tool* [Online]. Department of Agriculture, Water and the Environment. [Accessed].

DEHP 2015. Environmental Authority EPML00876713: Blair Athol. Department of Environment and Heritage Protection.

DELWP 2016a. EVC Benchmarks by Bioregion. Victorian Government Department of Environment Land Water and Planning.

DELWP 2016b. EVC Benchmarks for Vegetation Quality Assessment. Department of Environment Land Water and Planning.

DELWP 2016c. NV2005_QUAL - Native Vegetation - Modelled Quality (Site condition and landscape context) 2005. Department of Environment, Land, Water and Planning, East Melbourne, Victoria.

.

DELWP 2017a. Assessor's handbook; Applications to remove, destroy or lop native vegetation. *In:* PLANNING, D. O. E. L. W. A. (ed.).

DELWP 2017b. EnSym native vegetation regulation tool spatial data standards; For applications to remove native vegetation and protect native vegetation at an offset site. *In:* DEPARTMENT OF ENVIRONMENT, L., WATER AND PLANNING (ed.).

DELWP 2017c. Exemptions from requiring a planning permit to remove, destroy or lop native vegetation - Guidance. Department of Environment, Land, Water and Planning

DELWP 2017d. Guidelines for the removal. destruction or lopping of native vegetation. Department of Environment Land Water and Planning.

DELWP 2018. Assessor's handbook: Applications to remove, destroy or lop native vegetation. Department of Environment Land Water and Planning.

DELWP 2019. Procedure to rely on the utility installations exemption in planning schemes Electricity distributors - September 2019. Department of Environment, Land, Water and Planning.

DELWP 2020a. Bioregional Conservation Status for each BioEVC. *In:* PLANNING, D. O. E. L. W. A. (ed.). DSE (Department of Sustainability and Environment).

DELWP 2020b. Parks and Conservation Reserves (PARKRES). *In:* DEPARTMENT OF ENVIRONMENT, L., WATER & PLANNING (ed.).

DELWP. 2021a. *Victorian Biodiversity Atlas (VBA)* [Online]. East Melbourne: Department of Environment, Land, Water and Planning. Available: https://vba.dse.vic.gov.au/vba/ [Accessed].

DELWP 2021b. Victorian Wetland Inventory (Current). *In:* DEPARTMENT OF ENVIRONMENT, L., WATER & PLANNING (ed.).

DELWP 2022. NatureKit. East Melbourne: Department of Environment, Land, Water and Planning.

DELWP undated. Characteristics of Threatened Communities - Flora and Fauna Guarantee Act 1988 – Threatened List. Department of Environment, Land, Water and Planning.

DEPARTMENT OF THE ENVIRONMENT 2013. Matters of National Environmental Significance, Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. *In:* ENVIRONMENT, D. O. (ed.). Canberra, ACT: Commonwealth of Australia.

DEPI 2009. Native Vegetation - Modelled Extent 2005. *In:* ARTHUR RYLAH INSTITUTE (ed.). Biodiversity and Ecosystem Services (DEPI).

DEPI 2013. Watercourse Network 1:25,000 - Vicmap Hydro. *In:* INDUSTRIES, D. O. E. A. P. (ed.).

DEPI 2014. Advisory list of rare or threatened plants in Victoria -2014. Department of Environment and Primary Industries.

DEWHA 2009. Significant Impact Guidelines for the Vulnerable Growling Grass Frog (Litoria raniformis). Nationally threatened species and ecological communities EPBC Act Policy Statement 3.14. . *In:* AUSTRALIAN GOVERNMENT, D. O. T. E., WATER, HERITAGE AND THE ARTS. (ed.). Canberra. .

DEWHA 2010a. Survey guidelines for Australia's threatened birds - Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999.

DEWHA 2010b. Survey guidelines for Australia's threatened frogs: Guidelines for detecting frogs listed as threatened under the EPBC Act *In:* DEPARTMENT OF THE ENVIRONMENT, W., HERITAGE AND THE ARTS (ed.).

DOEE 2013. Matters of National Environmental Significance - Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. Canberra: Commonwealth Department of the Environment.

DOEE 2021. Species Profile and Threats Database (SPRAT).

DSE 2003. Action Statement; Flora and Fauna Guarantee Act 1988. No. 166 - Squirrel Glider *Petaurus norfolcensis*. *In:* ENVIRONMENT, D. O. S. A. (ed.).

DSE 2004. Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – guidelines for applying the habitat hectares scoring method version 1.3 East Melbourne: Department of Sustainability and Environment.

DSE 2006. Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978. Department of Sustainability and Environment.

DSE 2009. Advisory List of Threatened Invertebrate Fauna In Victoria - 2009. Department of Sustainability and Environment.

DSE 2013. Advisory List of Threatened Vertebrate Fauna in Victoria. East Melbourne: Department of Sustainability and Environment.

DSEWPAC 2012. Grey Box Grassy Woodlands and Derived Native Grasslands of South Eastern Australia: A guide ot the identification, assessment and management of a nationally threatened ecological community.

DSEWPAC 2013. Approved Conservation Advice for Rostratula australis (Australian painted snipe). *In:* CANBERRA: DEPARTMENT OF SUSTAINABILITY, E., WATER, POPULATION AND COMMUNITIES. (ed.).

ENSBEY, R. & JOHNSON, A. 2009. *Noxious and Environmental Weed Control Handbook, A Guide to Weed Control in Non-crop, Aquatic and Bushland Situations. 4th Edition*, NSW Department of Primary Industries.

GBCMA 2014. Bolburn Broken Waterway Strategy *In:* GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY (ed.). Shepparton.

GOOGLE. 2021. *Google Maps* [Online]. Imagery 2015 Sinclair Knight Merz: Google. Available: https://www.google.com.au/maps/place/Melbourne+VIC/@-37.971237,144.4926947,9z/data=!3m1!4b1!4m5!3m4!1s0x6ad646b5d2ba4df7:0x4045675218ccd90!8m2!3d-37.8136276!4d144.9630576 [Accessed 2021].

HAMER, A. J. & ORGAN, A. 2008. Aspects of the ecology and conservation of the growling grass frog Litoria raniformis in an urban-fringe environment, southern Victoria. Proceedings of the Biology and Conservation of Bell Frogs Conferenc. . *Australian Zoologist* 34**,** 393-407.

HEARD, G., MCCARTHY, M. 2012. Metapopulation viability of the Growling Grass Frog in Melbourne's urban growth areas. *In:* PREPARED FOR BIODIVERSITY AND ECOSYSTEMS SERVICES DIVISION, D. O. S. A. E. (ed.). Melbourne.

HEARD, G., ROBERTSON, P. & SCROGGIE, M. 2004. The ecology and conservation status of the growling grass frog (Litoria raniformis) within the Merri Creek Corridor. *Second report: additional field surveys and site monitoring.*

HEARD, G., SCROGGIE, M., CLEMANN, N. & RAMSEY, D. S. L. 2014. Wetland characteristics influence disease risk for a threatened Amphibian. *In Ecological Applications,* 24 650-662.

MENKHORST, P. E. A. 2017. *The Australian Bird Guide,* Clayton South, VIctoria. 3169., CSIRO.

NEARMAP 2022. Nearmap. *In:* NEARMAP (ed.).

PYŠEK, P., RICHARDSON, D. M. & WILLIAMSON, M. 2004. Predicting and explaining plant invasions through analysis of source area floras: some critical considerations. *Diversity and Distributions,* 10**,** 179-187.

ROYAL BOTANIC GARDENS MELBOURNE. 2016. *Flora of Victoria* [Online]. National Herbarium of Victoria, Royal Botanic Gardens Melbourne. Available: https://vicflora.rbg.vic.gov.au/ [Accessed].

ROYAL BOTANIC GARDENS OF VICTORIA 2021. Vicflora: Flora of Victoria.

TSSC 2019. Conservation Advice; Crinia sloanei. *In:* ENVIRONMENT, D. O. (ed.).

APPENDIX A

SPECIES LISTS

A1 FLORA SPECIES LIST

Table A.1 Flora species observed on site

ORIGIN	SCIENTIFIC NAME	COMMON NAME	FFG ACT PROTECTED	CONSERVATION STATUS	CALP ACT
*	*Acacia baileyana*	Cootamundra Wattle		*	-
	Acacia dealbata	Silver Wattle			-
#	*Acacia longifolia subsp. sophorae*	Coast Wattle	P	#	-
	Acacia paradoxa	Hedge Wattle			-
#	*Acacia saligna*	Orange Wattle	P		-
	Allocasuarina lehmannii	Buloke	L		
	Amyema miquelii	Box Mistletoe			-
*	*Arctotheca calendula*	Cape weed		*	-
*	*Asparagus asparagoides*	Bridal Creeper		*	R
	Austrostipa rudis subsp. rudis	Veined Spear-grass			-
	Austrostipa scabra subsp. falcata	Rough Spear-grass			-
*	*Avena fatua*	Wild Oat		*	-
	Bothriochloa macra	Red-leg Grass			-
*	*Bromus catharticus*	Prairie Grass		*	-
*	*Bromus hordeaceus*	Soft Brome		*	-
*	*Callitris rhomoidea (naturalised)*	Cypress Pine			-
	Calytrix tetragona	Common Fringe-myrtle	P		-
	Carex inversa	Knob Sedge			-
*	*Cassinia sifton*	Drooping Cassinia		*	-
	Chloris truncata	Windmill Grass			-
*	*Cynodon dactylon var. dactylon*	Couch		*	-
*	*Dactylis glomerata*	Cocksfoot		*	-
	Dianella revoluta s.l.	Black-anther Flax-lily			-
#	*Dichanthium sericeum subsp. sericeum*	Silky Blue-grass		#	-
*	*Dittrichia graveolens*	Stinkwort		*	C
	Eleocharis acuta	Common Spike-sedge			-
	Epilobium billardierianum	Variable Willow-herb			-
*	*Eragrostis curvula*	African Love-grass		*	C

ORIGIN	SCIENTIFIC NAME	COMMON NAME	FFG ACT PROTECTED	CONSERVATION STATUS	CALP ACT
*	*Erigeron bonariensis*	Flaxleaf Fleabane	-	*	-
*	*Erodium botrys*	Big Heron's-bill	-	*	-
	Eucalyptus camaldulensis	River Red-gum	-	X	-
	Eucalyptus leucoxylon subsp. leucoxylon	Yellow Gum	-	-	-
	Eucalyptus melliodora	Yellow Box	-	-	-
	Eucalyptus microcarpa	Grey Box	-	-	-
	Eucalyptus spp.	Eucalypt	-	-	-
*	*Heliotropium europaeum*	Common Heliotrope	-	*	-
*	*Hypericum perforatum subsp. veronense*	St John's Wort	-	*	-
	Juncus semisolidus	Plains Rush	-	-	-
	Juncus subsecundus	Finger Rush	-	-	-
	Helichrysum luteoalbum	Jersey Cudweed	P	-	-
*	*Lolium perenne*	Perennial Rye-grass	-	*	-
	Lomandra multiflora subsp. multiflora	Many-flowered Mat-rush	-	-	-
	Lythrum hyssopifolia	Small Loosestrife	-	-	-
*	*Malva parviflora*	Small-flower Mallow	-	*	-
*	*Melia azedarach*	White Cedar	-	-	
	Panicum decompositum var. decompositum	Native Millet	-	-	-
*	*Phalaris aquatica*	Toowoomba Canary-grass	-	*	-
	Pimelea curviflora s.l.	Curved Rice-flower	-	-	-
#	*Pittosporum undulatum*	Sweet Pittosporum	-	#	-
*	*Plantago lanceolata*	Ribwort	-	*	-
*	*Quercus robur*	English Oak	-	*	-
*	*Romulea rosea*	Onion Grass	-	*	-
	Rumex bidens	Mud Dock	-	-	-
	Rytidosperma caespitosum	Common Wallaby-grass	-	-	-
	Rytidosperma duttonianum	Brown-back Wallaby-grass	-	-	-
	Rytidosperma fulvum	Copper-awned Wallaby-grass	-	-	-

ORIGIN	SCIENTIFIC NAME	COMMON NAME	FFG ACT PROTECTED	CONSERVATION STATUS	CALP ACT
*	*Solanum nigrum s.l.*	Black Nightshade	-	*	-
	Themeda triandra	Kangaroo Grass	-	-	-
*	*Trifolium angustifolium var. angustifolium*	Narrow-leaf Clover	-	*	-
*	*Vicia sativa*	Common Vetch	-	*	-
*	*Xanthium spinosum*	Bathurst Burr	-	*	C

Table A.2 Fauna species observed onsite

ORIGIN	COMMON NAME	SPECIES NAME	CONSERVATION STATUS
	Australian Magpie	*Gymnorhina tibicen*	-
	Australian Raven	*Corvus coronoides*	-
	Australian Reed Warbler (heard)	*Acrocephalus australis*	-
	Australian Wood Duck	*Chenonetta jubata*	-
	Black-faced Cuckooshrike	*Coracina novaehollandiae*	-
	Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	nt
*	Cattle	*Bos taurus*	-
	Common Froglet	*Crinia signifera*	-
*	Common Myna	*Acridotheres tristis*	-
	Common Ringtail Possum	*Pseudocheirus peregrinus*	-
	Galah	*Eolophus roseicapilla*	-
	Grey Fantail	*Rhipidura albiscarpa*	-
	Grey Teal	*Anas gracilis*	-
	Laughing Kookaburra	*Dacelo novaeguineae*	-
	Long-billed Corella	*Cacatua tenuirostris*	-
	Magpie-lark	*Grallina cyanoleuca*	-
	Masked Lapwing	*Vanellus miles*	-
	Plains Froglet	*Crinia parinsignifera*	-
	Purple Swamphen	*Porphyrio*	-
	Red Wattlebird	*Anthochaera carunculata*	-
	Red-rumped Parrot	*Psephotus haematonotus*	-
	Sacred Kingfisher	*Todiramphus sanctus*	-
	Sulphur-crested Cockatoo	*Cacatua galerita*	-

ORIGIN	COMMON NAME	SPECIES NAME	CONSERVATION STATUS
	Superb Fairy-wren	*Malurus cyaneus*	-
	Welcome Swallow	*Petrochelidon neoxena*	-
	Whistling Kite	*Haliastur sphenurus*	-
	White-faced Heron	*Egretta novaehollandiae*	-
	White-plumed Honeyeater	*Lichenostomus penicillatus*	-
	White-winged Chough	*Corcorax melanorhamphos*	-
	Willie Wagtail	*Rhipidura leucophrys*	-
	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	-

KEY

Conservation Status in Australia (EPBC)
Listing under the federal Environment Protection and Biodiversity Conservation Act 1999 (Environment Protection and Biodiversity Conservation Act):
EX = Extinct, CR = Critically Endangered, EN = Endangered, VU = Vulnerable, M= Migratory

Conservation Status in Victoria (Victorian Advisory List)
ex = Extinct, rx = Regionally Extinct, ew = Extinct in the wild, cr = Critically Endangered, en = Endangered, vu = Vulnerable, nt = near threatened, dd = Data Deficient

Status under the Flora and Fauna Guarantee Act 1988
L = listed as threatened, N = Nominated for listing as threatened, I = Rejected for listing as threatened; taxon invalid, D = Delisted as threatened, X = Rejected for listing as threatened; taxon ineligible

Origin
* = Introduced, # = native but some strands may be alien

APPENDIX B

LIKELIHOOD OF OCCURRENCE ASSESSMENT

B1 LIKELIHOOD OF OCCURRENCE AND IMPACT ASSESSMENT – FLORA

A search of the DELWP's Victorian Biodiversity Atlas (VBA) and the Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool (PMST) was undertaken within a 10-kilometre radius of the study area to identify threatened species with potential to occur. Table B.1 below identifies the results of these searches and the assessment of each species' likelihood of occurrence within the study area based on the availability of habitat observed during the field assessment.

The brief habitat descriptions for flora are appropriated from the species descriptions on VicFlora, website by (Royal Botanic Gardens of Victoria, 2021), and species-specific publicly-available Commonwealth and State government resources, including conservation advice.

Table B.1 Threatened flora species with potential to occur within the study area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Acacia ausfeldii	Ausfeld's Wattle	VBA		en	1	21/12/2020	Scattered through north-central Victoria where it grows in dry forest and Mallee communities.	Low – not recorded in study area	Low – not recorded within the project area
Acacia deanei subsp. paucijuga	Deane's Wattle	VBA		vu	6	23/10/2001	Grows on red soil plains, dry stony hillsides, rocky gorges and valley floors, in sandy or gravelly clay soils.	Low – No habitat in the study area	Low – not recorded within the project area
Allocasuarina luehmannii	Buloke	VBA		vu	2	21/12/2020	Usually growing in woodland with Eucalyptus microcarpa, on non-calcareous soils.	Recorded in southern roadside reserve.	Low – TPZs do not intersect proposed project area.
Amphibromus fluitans	River Swamp Wallaby-grass	VBA and PMST	VU		2	28/01/2006	Largely confined to permanent swamps, principally along the Murray River between Wodonga and Echuca, uncommon to rare in the south (e.g. Casterton, Moe, Yarram), probably due to historic drainage of wetlands.	Low – Possible habitat to the north of the proposed project area throughout channelised wetter depressions	Low – not recorded within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Brachyscome chrysoglossa	Yellow-tongue Daisy	VBA		en	1	11/05/2003	Species occurs across the east coast of Australia, from the western region of Victoria (near Jeparit and Horsham) to mid Queensland. In Victoria, the Yellow-tongue Daisy grows on clay soils that are subject to inundation.	Low – Possible habitat to the north of the proposed project area around channelised wetter depressions. Not observed	Low – not recorded within the project area
Corymbia maculata	Spotted Gum	VBA		vu	1	25/01/2006	Only known in Victoria from the Tara Range, south of Buchan. Widely planted as an ornamental.	Considered a non-indigenous native species local to the study area.	n/a
Cyperus leptocarpus	Button Rush	VBA		en	1	13/08/1962	In open damp places such as sandy stream-banks and drying lake margins; widespread but scattered and uncommon.	Low – Possible habitat to the north of the proposed project area around channelised wetter depressions. Not observed.	Low – not recorded within the project area
Digitaria divaricatissima var. divaricatissima	Umbrella Grass	VBA		en	5	1/03/2008	Rare in Victoria and collected in recent times only from Dimboola, Mildura, Charlton, Tocumwal, Mitiamo and Springhurst areas, and Mt Arapiles. Mostly on heavier soils prone to occasional flooding.	Low – suitable habitat highly modified. Not observed	Low – not recorded within the project area
Diuris punctata var. punctata	Purple Diuris	VBA		en as *Diuris punctata*	1	25/11/1904	Occurring in the open forests, woodlands and grasslands of the fertile lowlands, now much reduced through clearing for agriculture and restricted to relatively few, isolated sites, but sometimes locally abundant.	Low – suitable habitat highly modified. Not observed	Low – not recorded within the project area
Eucalyptus cadens	Warby Range Swamp Gum	PMST	VU	en			Tumble-down swamp gum grows in woodlands, often in or around springs, soaks and waterbodies in the south-eastern foothills of the Pilot Range near Beechworth and Wooragee and in the eastern foothills of the Warby Range	Low – outside typical distribution, no VBA records within 10km	Low – not recorded within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Eucalyptus sideroxylon subsp. sideroxylon	Mugga	VBA		en	9	30/09/2014	Occurs in Queensland, New South Wales, Victoria and in South Australia (sparingly established). In Victoria the species is confined to northern Warby Range, South of Winton and the Chiltern area.	Low – not observed. Unlikely habitat within study area.	Low
Fimbristylis dichotoma	Common Fringe-sedge	VBA		en	1	18/11/1991	*Fimbristylis dichotoma* grows well on wet or even flooded soil; it is also found in uplands where the soil has good water retention. Gold, HNF, NIS. All mainland States. Also other tropical and subtropical regions. Rare or sporadic in Victoria, collected from near Benalla, Glenrowan, Warby Ranges and Patho Plains.	Low – suitable habitat highly modified. Not observed. Possible habitat to the north of the proposed project area around channelised wetter depressions. Not observed.	Low – not recorded within the project area
Glycine latrobeana	Clover Glycine	PMST	VU	vu			Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands.	Low – No VBA records within 10km. suitable habitat highly modified. Not observed.	Low – not recorded within the project area
Goodenia macbarronii	Narrow Goodenia	VBA		en	7	4/01/2009	In Victoria, apparently confined to forests and grassy environments between Wedderburn and Moyhu in the states north-east and north to the Murray River, usually in damp sandy or silty soils. Species sometimes occurs in seepage areas below farm dams.	Low – suitable habitat highly modified. Not observed	Low – not recorded within the project area
Goodia medicaginea	Western Golden-tip	VBA		en	7	1/01/2002	In Victoria occurs sporadically in the south-west (e.g. north of Portland, Mt Arapiles), at Long Forest west of Melbourne, in central Victoria near Eaglehawk and at Killawarra Forest, and near Suggan Buggan in the east.	Low – outside typical distribution. suitable habitat highly modified. Not observed	Low – not recorded within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Gratiola pumilo	Dwarf Brooklime	VBA		en	4	15/04/1959	Mainly confined in Victoria to the north and west of the State, on damp and drying mud beside lakes and watercourses and seasonally inundated depressions, but also with a few isolated records to the south and east (e.g. Pomborneit near Camperdown, shores of Lake Eildon, upper Snowy River).	Moderate – VBA record located inside the study area. Not observed, although possibly occurs.	Low – more likely amongst muddy edges of wetter depressions within the study area, north of the project area
Lepidium monoplocoides	Winged Pepper-cress	PMST	EN	en			Uncommon in north-western quarter of State, mostly on heavy soils near lakes and watercourses.	Low – outside typical distribution, No VBA records within 10km. Not observed	Low – not recorded within the project area
Leptospermum multicaule	Silver Tea-tree	VBA		en	2	1/03/1998	Rare in Victoria where known only from woodland communities on dry hillsides in the north-east, Mitta Mitta River area, Everton, Beechworth areas.	Low – No habitat in the study area	Low – not recorded within the project area
Melaleuca armillaris subsp. armillaris	Giant Honey-myrtle	VBA		en #	1	25/01/2006	Mainly confined to near-coastal sandy heaths, scrubs slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalized from cultivated stock. Commonly grown for ornament, as a windbreak or street tree and sometimes giving rise to seedlings, particularly after fire.	Considered a non-indigenous native species local to the study area.	N/A
Najas tenuifolia	Water Nymph	VBA		en	1	13/08/1962	In still or slowly moving fresh or occasionally brackish water of billabongs and tributaries of the Murray River.	Low – No habitat in the study area	Low – not recorded within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Podolepis linearifolia	Basalt Podolepis	VBA		en	1	8/10/2006	Distributed throughout central Victoria, extending from near the NSW border to the southern state coastline. Usually grows on heavy clay soils in grasslands but also recorded in grassy woodlands, open forests and around swamps. Two old collections from the Mornington Peninsula and the Wimmera are of doubtful provenance. It is also important to note that plants from northern localities near Bendigo and Wangaratta differ from those located further south by having slightly broader leaves.	Low – suitable habitat within the study area highly modified. Limited habitat for indigenous herbs due to high litter and/or thatch in areas of indigenous understory. Not observed.	Low – not recorded within the project area
Pultenaea foliolosa	Small-leaf Bush-pea	VBA		en	1	31/10/1995	Uncommon in Victoria, confined to small areas in the north-east, from the Warby Range to Myrtleford and Wodonga areas, and in Gippsland near Briagolong and north of Dargo, usually in dry, open-forest.	Low – unlikely habitat for this species across the study area	Low – not recorded within the project area
Pultenaea platyphylla	Flat-leaf Bush-pea	VBA		en	2	1/11/1993	Confined to dry forest on granite hills, particularly in the Warby Range and near Beechworth, with disjunct occurrence near Maldon.	Low – No likely habitat in the study area	Low – not recorded within the project area
Prasophyllum validum	Sturdy Leek-orchid	PMST	VU	en as *Prasophyllum sp. aff. validum*			The Sturdy Leek-orchid tends to grow in drier woodland habitats, generally with a low sparse understorey. In Victoria, it occurs in box and box-ironbark woodland with overstorey trees including Eucalyptus polyanthemos, Eucalyptus albens, Eucalyptus macrorhyncha, Eucalyptus viminalis and Callitris glaucophylla, and an open grassy to sparsely shrubby understorey including Themeda triandra, Joycea pallida, Arthropodium strictum, Acacia verniciflua, Bursaria spinosa, Grevillea alpina and Grevillea dryophylla. Soils vary from heavy clays to sandy loams.	Low – No VBA records within 10km. Unlikely habitat across the study area.	Low – unlikely present.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC ACT	FFG ACT					
Senecio cunninghamii var. cunninghamii	Branching Groundsel	VBA		en	1	1/04/2008	Occurs in Victoria, New south Wales and Western Australia. Widespread across Victoria, this species grows in heavy, sometimes winter-wet soils, as well as dry rocky soils, commonly on embankments or escarpments.	Low – not observed	Low – not recorded within the project area
Senecio macrocarpus	Large-fruit Fireweed	PMST	VU	cr			In Victoria largely confined to remnant Themeda grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area. Also known from auriferous ground near Stawell.	Low – unlikely habitat within the study area due to understory being highly modified	Low – not recorded within the project area
Swainsona recta	Mountain Swainson-pea	VBA and PMST	EN	cr	1	17/12/1995	An endangered species, previously recorded in Victoria from low hill country in north and north-east but known only from 1 recent (1995) collection near Glenrowan.	Low – unlikely habitat within the study area	Low – not recorded within the project area

Conservation Status used in the table above:

Conservation Status in Australia

Listing under the federal *Environment Protection and Biodiversity Conservation Act 1999*

CR = Critically Endangered, EN = Endangered, VU = Vulnerable.

Conservation Status in Victoria

Status under the *Flora and Fauna Guarantee Act 1988*

cr = Critically Endangered, en = Endangered, vu = Vulnerable, # = native but some stands may be alien

B2 LIKELIHOOD OF OCCURRENCE AND IMPACT ASSESSMENT – FAUNA

A search of the DELWP's Victorian Biodiversity Atlas (VBA) and the EPBC Act Protected Matters Search Tool (PMST) was undertaken within a 10-kilometre radius of the study area to identify threatened species with potential to occur. Table B.2 below identifies the results of these searches and the assessment of each species' likelihood of occurring within the study area (or adjacent habitat) based on the availability of habitat observed during the field assessment.

The brief habitat descriptions for fauna have been sourced from several sources including Birdlife Australia species profiles, Commonwealth DAWE species profiles (SPRAT) and other publicly-available Commonwealth and State government resources.

Table B.2 Threatened fauna species with potential to occur within the study area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Maccullochella peelii	Murray Cod	VBA and PMST	VU	en	37	1/12/1993	Occurs in lower reaches of the Murray-Darling Basin, where the water temperature is warm. The diverse range of habitats frequented by the Murray Cod includes slow moving rivers, murky billabongs and clear, rocky rivers.	Low – large count of sightings likely associated with Winton Wetland (nearby the study area)	Low - No watercourses within project area
Macquaria australasica	Macquarie Perch	PMST	EN	en			Small discreet populations remain in the Murray Darling Catchment in Northern Victoria with a larger translocated population occurring in the Yarra River near Warrandyte.	Low - No VBA records within 10km	Low - No watercourses within project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Nannoperca australis Murray-Darling Basin lineage	Southern Pygmy Perch (Murray-Darling Basin lineage)	PMST	VU	vu			The Southern pygmy perch prefers slow flowing or still waters, usually with dense aquatic vegetation and plenty of cover. It has been recorded from small streams, well-vegetated lakes (or wetlands within), billabongs and irrigation channels. It is still common in southern (coastal) Vic, but is patchily distributed along Vic tributaries of the Murray, where it is still known from the Broken, Ovens, Campaspe, Goulburn, Kiewa, Mitta Mitta, Loddon and Wimmera basins.	Low - No VBA records within 10km	Low – not recorded within the project area
Emydura macquarii	Murray River Turtle	VBA		cr	1	5/08/2009	Primarily found in the Murray River Basin and its major tributaries.	Low	Low
Actitis hypoleucos	Common Sandpiper	PMST	M	vu			The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	Low – more likely to be found around the Winton Wetlands to the north of the study area	Low – unlikely habitat within the project area
Anthochaera phrygia	Regent Honeyeater	VBA and PMST	CR	cr	36	26/09/2018	Occurs mostly in box-ironbark forests and woodland and prefers wet, fertile sites such as along creek flats, broad river valleys and foothills. Riparian forests with Casuarina cunninghamiana and Amyema cambagei are important for feeding and breeding.	Low – unlikely habitat across study area	Low – unlikely habitat within the project area
Antigone rubicunda	Brolga	VBA		en	3	17/06/2008	The Brolga inhabits large open wetlands, grassy plains, coastal mudflats and irrigated croplands and, less frequently, mangrove-studded creeks and estuaries. It is less common in arid and semi-arid regions, but will occur close to water.	Low – records associated with nearby Winton Wetlands	Low – unlikely habitat within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Aprasia parapulchella	Pink-tailed Worm-lizard	PMST	VU	en			In general, lizards occur in open grassland habitats that have a substantial cover of small rocks. Lizards also show a preference for sunny aspects, avoiding S facing slopes. A burrowing species, it is usually found under rocks on well-drained soil and in ant nests, occasionally with several individuals found under the same rock.	Low – study area formerly Woodland. No VBA records within 10km	Low – unlikely habitat
Apus pacificus	Fork-tailed Swift	PMST	M				It is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. It mostly occurs over inland plains but sometimes above foothills or in coastal areas over cliffs, beaches, islands and well out to sea. It also occurs over towns and cities. It mostly occurs over dry and/or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh, grassland, spinifex sandplains, farmland and sand-dunes. It sometimes occurs above forests.	Moderate	Low - It is almost exclusively aerial
Ardea alba	Great Egret	VBA		vu	64	1/05/2019	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands.	Low – Possible although unlikely to utilise wetter areas along the north of the study area.	Moderate – possible although unlikely. If present, likely to disperse during impacts, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Ardea alba modesta	Eastern Great Egret	VBA		vu	75	24/06/2019	Prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands.	Low – large count of sightings likely associated with Winton Wetland (nearby the study area)	Low – low quality habitat for this species within proposed project area
Ardea intermedia plumifera	Plumed Egret	VBA		cr	11	5/01/2019	Habitat preferences for this species include freshwater swamps, billabongs, floodplains and wet grasslands with dense aquatic vegetation. The species is only occasionally seen in estuarine or intertidal habitats.	Low – large count of sightings likely associated with Winton Wetland (nearby the study area)	Low – low quality habitat for this species within proposed project area
Aythya australis	Hardhead	VBA		vu	61	10/09/2018	On terrestrial wetlands and occasionally sheltered estuarine and inshore waters. Almost entirely aquatic, preferring large deep fresh waters with abundant aquatic vegetation; particularly deep swamps, lakes, creeks, billabongs and alluvial plains.	Low – large count of sightings likely associated with Winton Wetland (nearby the study area)	Low – low quality habitat for this species within proposed project area
Biziura lobata	Musk Duck	VBA		vu	46	1/02/2017	Widespread in Southeast and Southwest parts of continent, on terrestrial wetlands, estuarine habitats and sheltered inshore waters. Almost entirely aquatic; preferring deep water of large permanent swamps, lakes and estuaries, where conditions stable and aquatic flora abundant.	Low – large count of sightings likely associated with Winton Wetland (nearby the study area)	Low – low quality habitat for this species within proposed project area
Botaurus poiciloptilus	Australasian Bittern	VBA and PMST	EN	cr	2	25/01/2006	Occurs in shallow, vegetated freshwater or brackish swamps. Requires permanent wetlands with tall dense vegetation, particularly bulrushes and spike rushes. Whilst it can be found feeding in more open areas, the species relies on dense vegetation cover to breed and roost.	Low – associated with Winton Wetland (nearby the study area)	Low – low quality habitat for this species within proposed project area
Burhinus grallarius	Bush Stone-curlew	VBA		cr	16	11/05/2003	Confined to grassy woodlands and farmlands, nests in Buloke, gum or box with a low, sparse grassy or herb understorey.	Low – lack of habitat features, such as lower understory cover, brush, logs etcetera for this species	Low – low quality habitat for this species within proposed project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Calidris acuminata	Sharp-tailed Sandpiper	PMST	M				Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland.	Low – as No VBA records within 10km	Low – low quality habitat for this species within proposed project area
Calidris ferruginea	Curlew Sandpiper	VBA and PMST	CR, M	cr	1	1/03/1997	Occurs in inter-tidal mudflats of estuaries, lagoons, mangrove channels and also around lakes, dams, floodwaters and flooded saltbush surrounding inland lakes.	Low – no habitat	Low – low quality habitat for this species within proposed project area
Calidris melanotos	Pectoral Sandpiper	PMST	M				Prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands.	Low – as No VBA records within 10km	Low – low quality habitat for this species within proposed project area
Coracina maxima	Ground Cuckoo-shrike	VBA		en	1	1/06/1978	uncommon bird species endemic to Australia, occurring mainly in open woodland and arid grasslands throughout inland Australia, but also occasionally in areas on the east coast.	Low – one record in the VBA. Grassy understory highly modified and heavily grazed.	Low – limited habitat resources for this species.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Crinia sloanei	Sloane's Froglet	VBA and PMST	EN	en	1	27/01/1993	Adults are most common in woodlands, floodplains, grasslands, and open and disturbed areas. Within these habitats they shelter under logs and other debris, usually in moist depressions or near water. Eggs and tadpoles are aquatic and can be found in ponds, dams, swamps, flooded grassland, ditches and hollows. Sloane's Froglet lives and breeds in temporary and permanent waterbodies including oxbows off creeks and rivers, farm dams, large and small natural wetlands, constructed frog ponds and temporary puddles. It prefers wetlands that contain riparian and aquatic vegetation.	Low – there is a lack of recent records for this species, however, there is suitable habitat for his species across the study area. the study area is within proximity to the known - contracted range of this species. Not observed during targeted survey.	Low – unlikely although possible limited impacts to this species if locally extant.
Dasyurus maculatus (SE mainland population)	Spot-tailed Quoll (SE mainland population)	PMST	EN	en			Occurs in wide range of forest types, although appears to prefer moist sclerophyll and rainforest forest types, and riparian habitat. Most common in large unfragmented patches of forest. It has also been recorded from dry sclerophyll forest, open woodland and coastal heathland, and despite its occurrence in riparian areas, it also ranges over dry ridges.	Low – No VBA records within 10km. limited habitat resources for this species.	Low
Delma impar	Striped Legless Lizard	PMST	VU	en			Within their historical range across south-eastern Australia, potential habitat for the Striped Legless Lizard includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands), provided that area retains suitable tussock structure, the soil is of appropriate type and structure, and the site has not had major disturbance such as ploughing.	Low – study area would have been woodland prior to clearance for agriculture. *Delmar impar* is strictly a remnant grassland species.	Low
Egretta garzetta	Little Egret	VBA		en	6	2/08/2017	Little Egrets inhabit mudflats, saltworks and shallow margins of tidal estuaries and inland rivers and lakes.	Low – limited habitat across the study area for this species.	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Falco hypoleucos	Grey Falcon	PMST	VU	vu			Uncommon in Victoria, with an occasional vagrant from NSW found east of the Great Dividing Range. Usually restricted to arid and semi arid regions, particularly along grassland, shrubland and woodland watercourses. Can occur near wetlands and in open woodlands near the coast.	Low – No VBA records within 10km	Low
Falco subniger	Black Falcon	VBA		cr	5	24/02/2018	Found in the arid and semi arid zones. It is usually found near watercourses or utilizing patches of isolated trees. It hunts over open wooded grasslands, saltbush plains, bluebush plains and other low vegetation.	Moderate – possible habitat in the study area	Low – not recorded within the project area
Galaxias rostratus	Flathead Galaxias	PMST	CR	vu			Only known in the Southern half of the Murray-Darling Basin system. Inhabits a variety of habitats including billabongs, lakes, swamps, and rivers with a preference for still or slow flowing waters.	Low – No VBA records within 10km, no watercourses connect with study area	Low – not recorded within the project area
Gallinago hardwickii	Latham's Snipe	VBA and PMST	M		18	10/09/2018	Occurs in freshwater or brackish wetlands generally near protective vegetation cover.	Moderate – large count of sightings likely associated with Winton Wetland. This species may occupy areas around the shallow drainage channels along the north of the study area. Not observed during targeted survey.	Moderate – likely to disperse during impacts, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.
Geopelia cuneata	Diamond Dove	VBA		vu	3	3/05/2018	The species is widely distributed in arid and semi-arid grassland savannah. They gather in small parties or flocks in dry open savanna in mulga areas often among spinifex or grasses. They are also often in open riparian woodland (beside waterways). They breed throughout their range, at any time after heavy rainfall.	Low – no habitat on site	Low – not recorded within the project area

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Grantiella picta	Painted Honeyeater	VBA and PMST	VU	vu	11	7/10/2017	Lives in dry forests and woodlands. Primary food is the mistletoes in the genus Amyema, though it will take some nectar and insects. Its breeding distribution is dictated by presence of mistletoes which are largely restricted to older trees.	High – VBA records in the area and *Amyema spp.* was recorded on site. Not observed during targeted survey.	Low – minimal removal of possible low quality habitat.
Haliaeetus leucogaster	White-bellied Sea-Eagle	VBA		en	52	1/02/2019	Occurs in coastal areas including islands, estuaries, inlets, large rivers, inland lakes and reservoirs.	Low – limited habitat across the study area for this species, large count associated with nearby wetland	Low
Hieraaetus morphnoides	Little Eagle	VBA		vu	25	25/09/2012	The Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest. Little Eagles nest in mature living trees in open woodland or tree-lined watercourses. They rarely nest in isolated trees.	Moderate – may utilise larger trees for nesting, however no stick-nests observed.	Low – no stick nests observed. No anticipated removal of Large trees.
Hirundapus caudacutus	White-throated Needletail	VBA and PMST	VU, M	vu	5	5/03/2019	Occurs in airspace over forests, woodlands, farmlands, plains, lakes, coasts and towns.	Low	Low
Hydroprogne caspia	Caspian Tern	VBA		vu	3	24/09/2017	Occur in most coastal regions, with scattered records throughout the western half of the state, including the Murray Valley. They usually forage in open wetlands, including lakes and rivers and prefer sheltered shallow water near the margins, but can also be found in open coastal waters.	Low	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Ixobrychus dubius	Australian Little Bittern	VBA		en	2	25/01/2006	Species is found in a range of freshwater swamp habitats that are inundated by at least 30cm of water and support tall rushes, reeds, Typha, shrub thickets or other dense cover. Being cryptic in nature, the species prefers smaller patches of dense vegetation along drains or small urban lakes where it remains within or on the edge of wetland vegetation.	Moderate – may utilise areas of tall marsh within the study area along the channel to the north of the project area. Not observed during targeted survey.	Low – likely to disperse during impacts. No direct impacts anticipated, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.
Lathamus discolor	Swift Parrot	VBA and PMST	CR	cr	13	23/04/2021	In mainland Australia is semi-nomadic, foraging in flowering eucalypts in eucalypt associations, particularly box-ironbark forests and woodlands. Preference for sites with highly fertile soils where large trees have high nectar production, including along drainage lines and isolated rural or urban remnants, and for sites with flowering Acacia pycnantha.	Low – limited habitat resources across the study are for this species. Study area supports non-preferred eucalypt species.	Low
Lewinia pectoralis	Lewin's Rail	VBA		vu	1	1/09/1979	Three subspecies occur in Australia, with Rallus pectoralis being the subspecies that occurs on Australia's mainland east coast. Lewin's Rail mostly inhabits wetland areas such as swamps, river flats and dams where there is dense vegetation cover. They can also occur in coastal saltwater areas.	Moderate – may utilise areas of tall marsh within the study area along the channel to the north of the project area. Not observed during targeted survey.	Low – likely to disperse during impacts. No direct impacts anticipated, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Litoria raniformis	Growling Grass Frog	VBA and PMST	VU	vu	3	16/08/1970	Usually found amongst emergent vegetation such as Typha, Phragmites and Eleocharis within or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds, and farm dams. It also in occurs in irrigation channels and crops, lignum shrublands, black box and river red gum woodlands and at the periphery of rivers.	Low – there is a lack of recent records for this species, however it is nomadic, and may utilise Tall Marsh areas along the north of the study area for breeding in wetter years if inundated during summer. Not observed during targeted survey.	Low – possible limited impacts to this species if locally extant. No direct impacts anticipated. Impacts would be to suboptimal dispersal habitat – pasture, within the project area.
Melanodryas cucullata	Hooded Robin	VBA		vu	32	22/10/2018	Found in south-eastern Australia, generally east of the Great Dividing Range. Found in eucalypt woodland and Mallee and acacia shrubland.	Low – limited habitat across the study area for this species.	Low
Morelia spilota metcalfei	Carpet Python	VBA		en	7	2/04/2005	Inland Carpet Pythons are found in the Murray–Darling Basin of Queensland, New South Wales, Victoria and South Australia. They inhabit rocky country or riverine forests, principally in drier areas of Victoria and the Murray–Darling Basin.	Low – limited habitat across the study area for this species.	Low
Morelia spilota	Diamond Python	VBA		cr	1	22/11/2019	Far East of Victoria in East Gippsland. Rocky areas, woodlands, forest, scrub, and heathlands.	Low – limited habitat across the study area for this species.	Low
Motacilla flava	Yellow Wagtail	PMST	M				This species occurs in a range of habitats including estuarine habitats such as sand dunes, mangrove forests and coastal saltmarshes. This species also occurs in open grassy areas including disturbed sites such as sports grounds and has been recorded on the edges of wetlands, swamps, lakes and farm dams.	Low – No VBA records within 10km. species may utilise habitat across the study area whilst dispersing throughout the landscape.	Low
Myiagra cyanoleuca	Satin Flycatcher	PMST	M				Occurs in heavily vegetated gullies, in forests and taller woodlands. During migration it is found in coastal forests, woodlands, mangroves, trees in open country and gardens.	Low – No VBA records within 10km. non-preferred habitat across study area	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Neophema pulchella	Turquoise Parrot	VBA		vu	18	5/01/2019	Prefers open, grassy woodland with dead trees near permanent water sources but can also be found inhabiting highly modified environments including pastures and roadsides. The Turquoise Parrot nests in vertical or near-vertical hollows in living or dead trees. The eggs are laid on decayed wood-dust or fine wood-chips.	Moderate – may utilise large old hollow-bearing trees across study area.	Low – no anticipated removal of large old hollow-bearing trees.
Ninox connivens	Barking Owl	VBA		cr	1	1/03/1981	Found in open woodlands and the edges of forests, often adjacent to farmland. They are less likely to use the interior of forested habitat. They are usually found in habitats that are dominated by Eucalyptus species, particularly red gum, and, in the tropics, paperbark species. They prefer woodlands and forests with a high density of large trees and particularly sites with hollows that are used by the owls as well as their prey.	Low – this species has been on decline and is only known from a few locations.	Low – unlikely
Numenius madagascariensis	Eastern Curlew	PMST	CR, M	cr			Primarily coastal in distribution, commonly associated with sheltered coasts, estuaries, harbours and lagoons. Breeds in the northern hemisphere, returning to Australia for the non-breeding season.	Low – No VBA records within 10km, however this species may utilise areas of tall marsh within the study area along the channel to the north of the project area, when dispersing throughout the landscape.	Low – likely to disperse during impacts.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Oxyura australis	Blue-billed Duck	VBA		vu	6	18/08/2016	Found on temperate, fresh to saline, terrestrial wetlands, and occupies artificial wetlands. Prefers deep permanent open water, within or near dense vegetation. Nest in rushes, sedge, Lignum, (Muehlenbeckia cunninghami) and paperbark Melaleuca.	Moderate – may utilise areas of tall marsh within the study area along the channel to the north of the project area. Not observed during targeted survey.	Low – likely to disperse during impacts. No direct impacts anticipated, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.
Pandion haliaetus	Osprey	PMST	M				Tolerates a wide variety of habitats, nesting in any location near a body of water providing an adequate food supply.	Low – No VBA records within 10km	Low
Pedionomus torquatus	Plains-wanderer	PMST	CR	cr			Sparse grasslands that have 50% bare ground, widely spaced plants up to 10 cm high and remaining standing vegetation less than 5 centimetres in height. Occasionally uses cereal stubble but cannot persist in agricultural landscape. Suitable habitat tends to be restricted to small (50-300 ha) patches that do not support dense pasture growth under any seasonal conditions.	Low – No VBA records within 10km. Study area likely to be too modified for this species. Grassy understory heavily grazed.	Low
Petauroides volans	Greater Glider	PMST	VU	vu			The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Low – No VBA records within 10km. Study area likely to be too modified for this species.	Low
Petaurus norfolcensis	Squirrel Glider	VBA		vu	5	23/12/2014	Their preferred habitat is open woodland with mature eucalyptus containing hollows.	High – Mature *Eucalyptus* spp. are considered highly likely to be inhabited by this species via connectivity along Seven Mile Creek	Low. No removal of large-old hollow bearing trees anticipated.
Pogona barbata	Bearded Dragon	VBA		vu	5	15/08/2021	Inhabits woodlands and dry sclerophyll forest from Cairns, Queensland, to southern Eyre Peninsula, South Australia.	Low – Study area too highly modified for this species	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Polytelis swainsonii	Superb Parrot	PMST	VU	en			The Superb Parrot mainly inhabits forests and woodlands dominated by eucalypts, especially River Red Gums (Eucalyptus camaldulensis) and box eucalypts such as Yellow Box (Eucalyptus melliodora) or Grey Box (E. microcarpa). The species also seasonally occurs in box-pine (Callitris) and Boree (Acacia pendula) woodlands.	Low – No VBA records within 10km	Low - unlikely
Pomatostomus temporalis	Grey-crowned Babbler	VBA		vu	394	12/05/2019	Occupy open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.	Low – study area considered too modified for this species. A lack of intact grassy understory and litter. A lack of regenerating large shrubs utilised for nesting. No nests observed. Species not observed during surveys	Low
Pseudophryne bibronii	Brown Toadlet	VBA		en	2	16/08/1970	Usually found singly under rocks and logs on slopes in grasslands or beside ditches. Found both in wet and dry sclerophyll forest. Breeding congregations usually occur in inundated grassy areas beside gutters, small creeks etc.	Moderate – there is a lack of recent records for this species, however that may be due to a lack of survey. This species may occur throughout the fenced off revegetation area and throughout remnant understory, however is more likely around the channelised drain along the north of the study area.	Low - moderate – possible impacts to this species if present however this is considered unlikely, habitat present is considered suboptimal for this species. Targeted survey not undertaken.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Pteropus poliocephalus	Grey-headed Flying-fox	PMST	VU	vu			Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps. Urban gardens and cultivated fruit crops also provide habitat for this species.	Low – No VBA records within 10km	Low
Pyrrholaemus sagittatus	Speckled Warbler	VBA		en	57	22/10/2018	In Victoria, the speckled warbler is found within a broad strip, including the Chiltern Box-Ironbark and Warby-Ovens National Parks, the Bendigo region, the Brisbane Ranges and You Yangs, across to Balmoral on the western side of the Grampians.[9] It is scarce to moderately common within its range. Its preferred habitat is open eucalypt woodland with rocky gullies, tussocky grass, scattered logs, and sparse shrubbery.	Low – non preferred habitat across the study area	Low
Rhipidura rufifrons	Rufous Fantail	PMST	M				Occurs in a range of habitats including the undergrowth of rainforests/wetter eucalypt forests/gullies, monsoon forests paperbarks, sub-inland and coastal scrubs, mangroves, watercourses, parks and gardens.	Low – No VBA records within 10km Unlikely habitat across the study area.	Low
Rostratula australis	Australian Painted Snipe	PMST	EN	cr			Inhabits shallow, vegetated, temporary or infrequently filled wetlands, including where there are trees such as River Red Gum and Poplar Box or shrubs such as Lignum or Samphire.	Moderate – No VBA records within 10km. Possible although unlikely to utilise wetter areas along the north of the study area.	Low – possible although unlikely. If present, likely to disperse during impacts, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.
Spatula rhynchotis	Australasian Shoveler	VBA		vu	64	11/12/2018	Uses a wide variety of wetlands; prefers large permanent lakes or swamps that have abundant cover.	Low – suboptimal habitat for this species	Low
Stagonopleura guttata	Diamond Firetail	VBA		vu	74	1/05/2019	Occurs in a range of eucalypt dominated communities with a grassy understorey including woodland, forest and Mallee.	Low – lack of intact understory below eucalyptus	Low

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Stictonetta naevosa	Freckled Duck	VBA		en	30	6/10/2018	In most years this species appear to be nomadic between ephemeral inland wetlands. In dry years they congregate on permanent wetlands while in wet years they breed prolifically and disperse widely, generally towards the coast.	Low – more likely to utilise Winton Wetlands to the north	Low
Synemon plana	Golden Sun Moth	PMST	CR	vu			This species occurs Natural Temperate Grasslands, exotic grassland and some secondary grassland. Larvae feed on the roots of native grasses, particularly wallaby grasses Rytidosperma spp. They also feed on the introduced noxious weed Chilean Needlegrass Nassella neesiana.	Low – No VBA records within 10km. Possible habitat for this species does occur throughout the fenced 4.5 ha revegetation area where Wallaby Grasses are recruiting. GSM may have recolonised these areas however this is considered unlikely due to the lack of records and this area only recently being excluded from grazing.	Low - unlikely
Tringa glareola	Wood Sandpiper	VBA		en	1	30/03/2018	Found in well-vegetated, shallow, freshwater wetlands such as swamps, billabongs, lakes, pools and waterholes with emergent aquatic plants and taller fringing vegetation.	Moderate – may utilise areas of tall marsh within the study area along the channel to the north of the project area.	Low – likely to disperse during impacts. No direct impacts anticipated, however, impacts may reduce utilisation of habitat contiguous to the project area by this species.

SCIENTIFIC NAME	COMMON NAME	SOURCE	CONSERVATION STATUS		COUNT OF SIGHTINGS	LAST RECORD	HABITAT DESCRIPTIONS	LIKELIHOOD OF OCCURRENCE	LIKELIHOOD OF IMPACT
			EPBC Act	FFG ACT					
Tringa nebularia	Common Greenshank	VBA		en	2	7/01/2015	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	Low – more likely to utilise Winton Wetlands to the north	Low
Turnix pyrrhothorax	Red-chested Button-quail	VBA		en	1	19/11/1977	Dense grasslands, and open, grassy, woodland of Acacia (Fabaceae), River Red Gum (Eucalyptus camaldulensis) and Black box (E. largiflorens) or Melaleuca (Myrtaceae), but also in crops and weedy fields with dense ground cover, and from coastal plains.	Low – Grassy understory highly modified and heavily grazed.	Low – low quality habitat for this species within proposed project area.
Varanus varius	Lace Monitor	VBA		en	25	3/05/2018	Occurs in well-timbered areas, from dry woodlands to cool temperate southern forests. Arboreal, ascending large trees when disturbed.	Low – more likely to be found throughout larger more intact stands of woodland. There is limited connectivity for this species to possible habitat around the west of the study area.	**Low** – not observed during targeted survey. Minimal impacts to possible habitat.

Conservation Status used in the table above:

Conservation Status in Australia

Listing under the federal Environment Protection and Biodiversity Conservation Act 1999:

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, M = Migratory

Conservation Status in Victoria

Status under the *Flora and Fauna Guarantee Act 1988*

cr = Critically Endangered, en = Endangered, vu = Vulnerable,

APPENDIX C

MAPPING

APPENDIX C-1
HISTORIC RECORDS AND MODELLING

WINTON CREEK

MOKOAN INLET CHANNEL

SEVEN MILE CREEK

Winton Wetlands Natural Features Reserve

Winton Bushland Reserve

River Swamp Wallaby-grass (26/01/2006)

Lace Monitor (8/02/2015)

Hardhead (1/02/2017)

Hardhead (1/02/2017)

Grey-crowned Babbler (1/01/1999)

Grey-crowned Babbler (1/01/2001)

Grey-crowned Babbler (4/09/1995)

Grey-crowned Babbler (1/01/2007)

Grey-crowned Babbler (1/01/2001)

Grey-crowned Babbler (1/01/2003)

Grey-crowned Babbler (1/01/2006)

Grey-crowned Babbler (24/08/2002)

Grey-crowned Babbler (1/01/2001)

Grey-crowned Babbler (1/01/1993)

Grey-crowned Babbler (1/01/2001)

Grey-crowned Babbler (17/04/1996)

Grey-crowned Babbler (1/01/2003)

Grey-crowned Babbler (1/01/2005)

Grey-crowned Babbler (1/01/2001)

Grey-crowned Babbler (1/01/2008)

Grey-crowned Babbler (1/01/1998)

C:\Users\AUJB505996\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS125526_Lochard_Winton_En\Mxd\06_Ecology\PS125526_Winton_Ecology_Maps_F002_r1v6.mxd

wsp

Lochard Energy
Reserve 1 Facility: Winton

Figure 2
Desktop Assessment – Historic Records and Vegetation Modelling

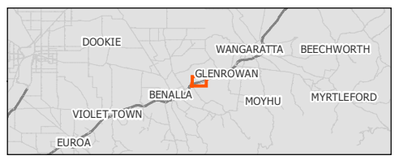
- VBA Fauna
- Watercourse
- Study area
- Project area
- New Transmission Footprint
- Parks and Reserves
- Current Wetlands
- Vegetation Protection Overlay

NV 2005 Vegetation Modelling

- Box Ironbark Forest
- Creekline Grassy Woodland
- Heathy Dry Forest
- Plains Grassy Woodland
- Plains Grassy Woodland/Gilgai Wetland Mosaic
- Plains Woodland
- Plains Woodland/Herb-rich Gilgai Wetland Mosaic
- Water Body - man-made

NVR 2017 Location

- 1
- 2
- 3



0 100 200 300 400 500 Meters

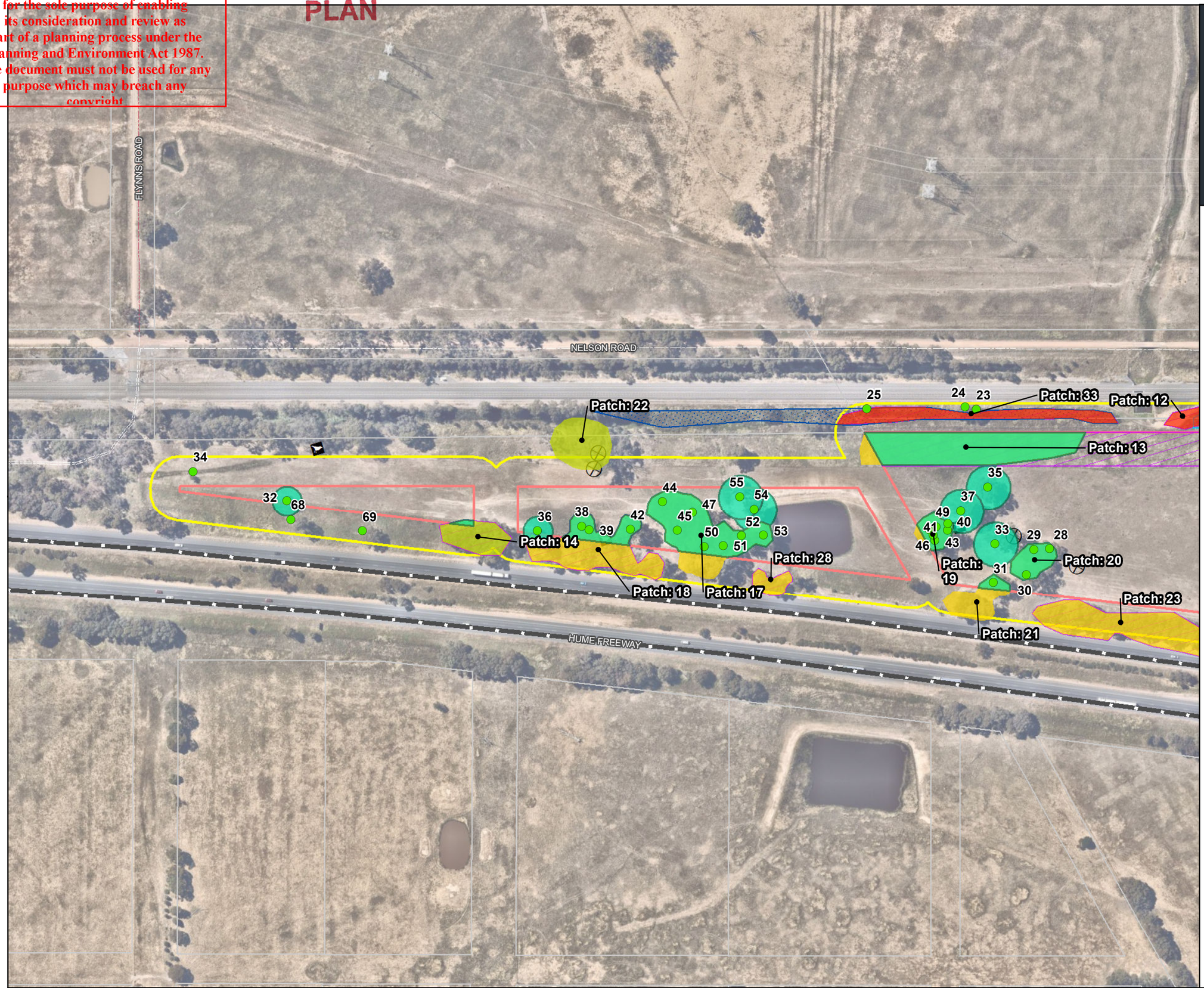
Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:17,000 Date: 12/01/2023

Data sources: - DELWP, Geoscience Australia

APPENDIX C-2
ECOLOGICAL VALUES



wsp

Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

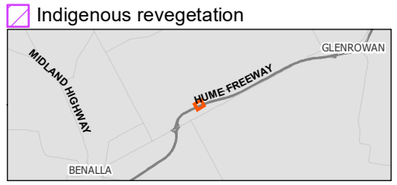
- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation



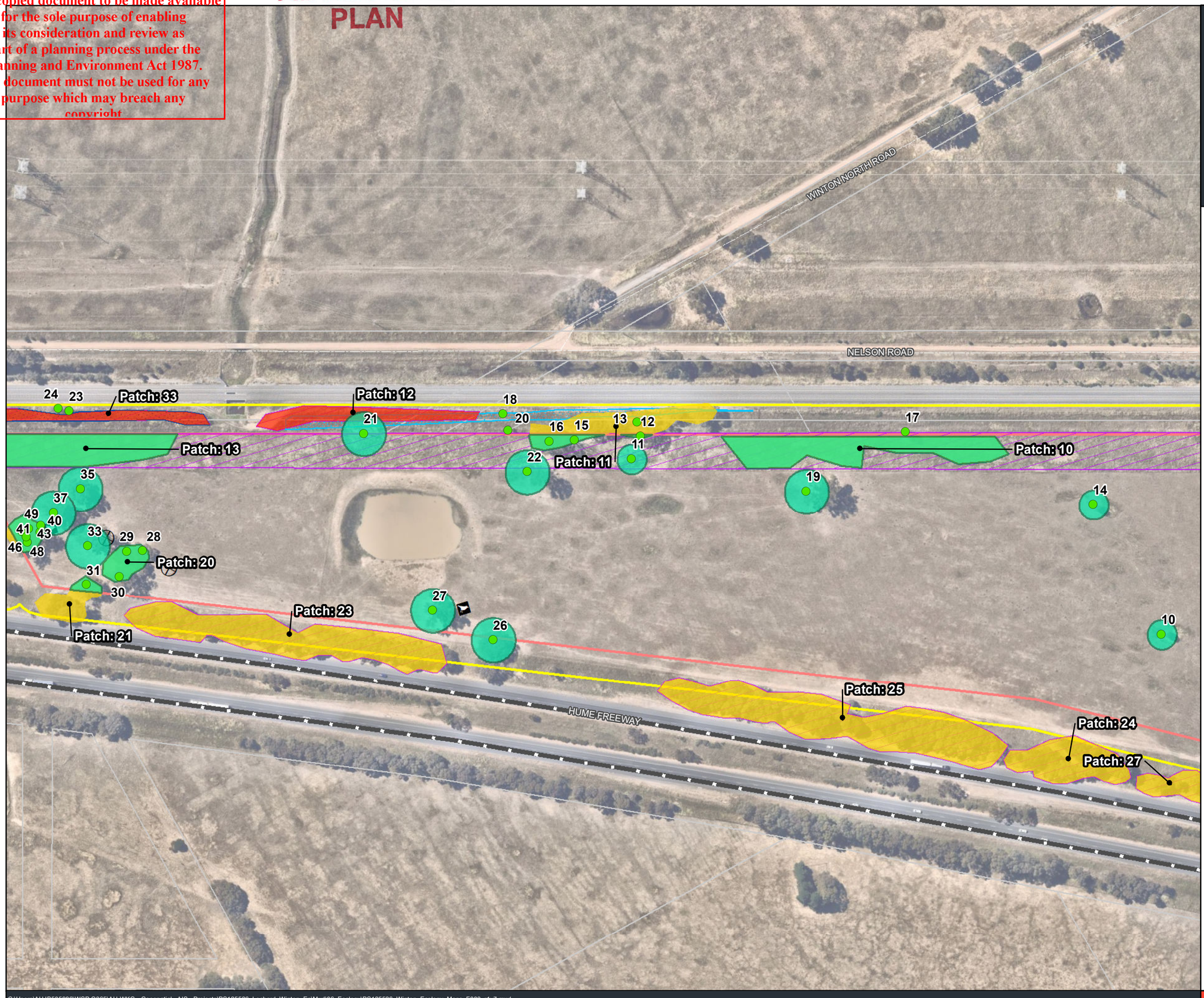
0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation

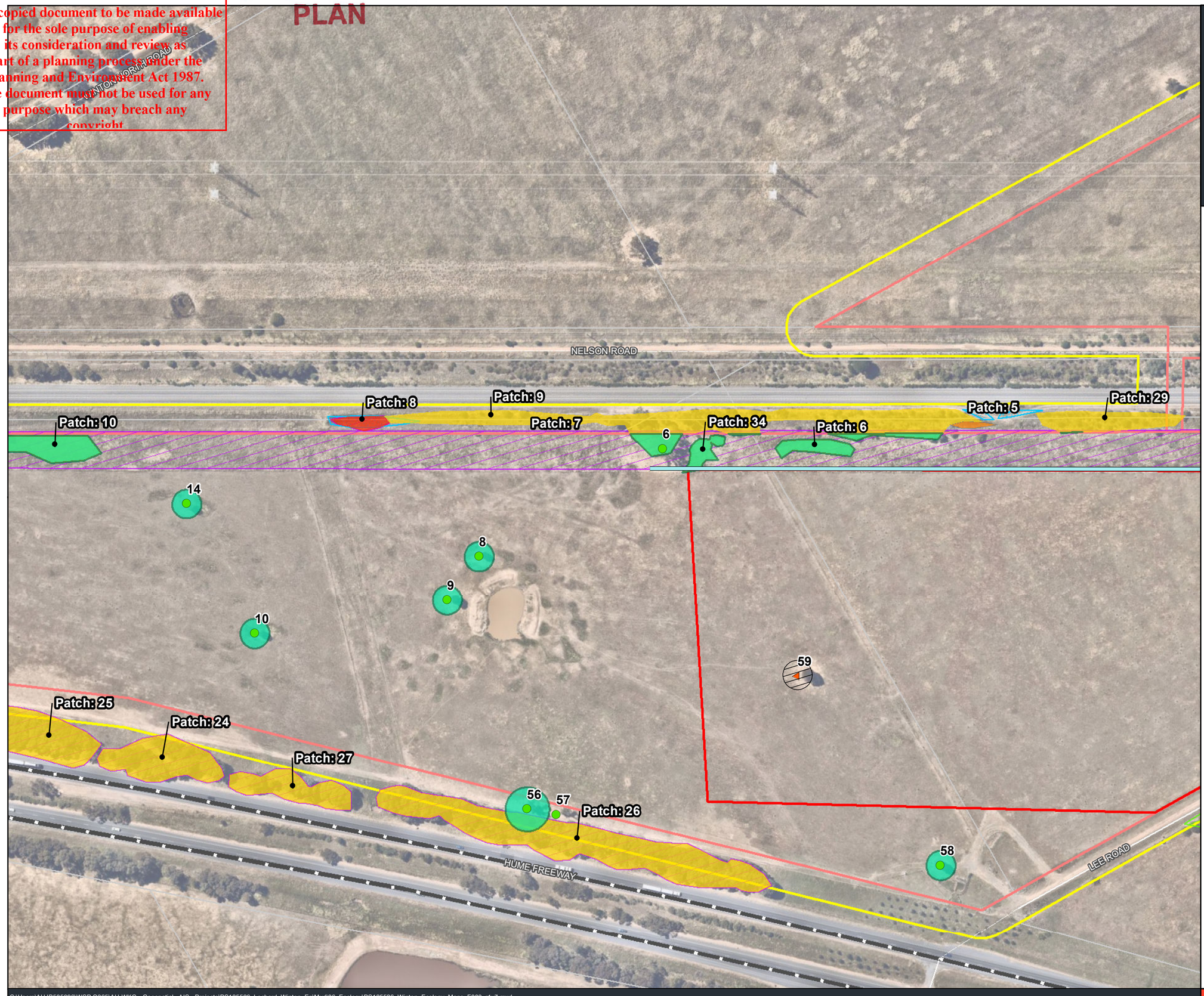
0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation

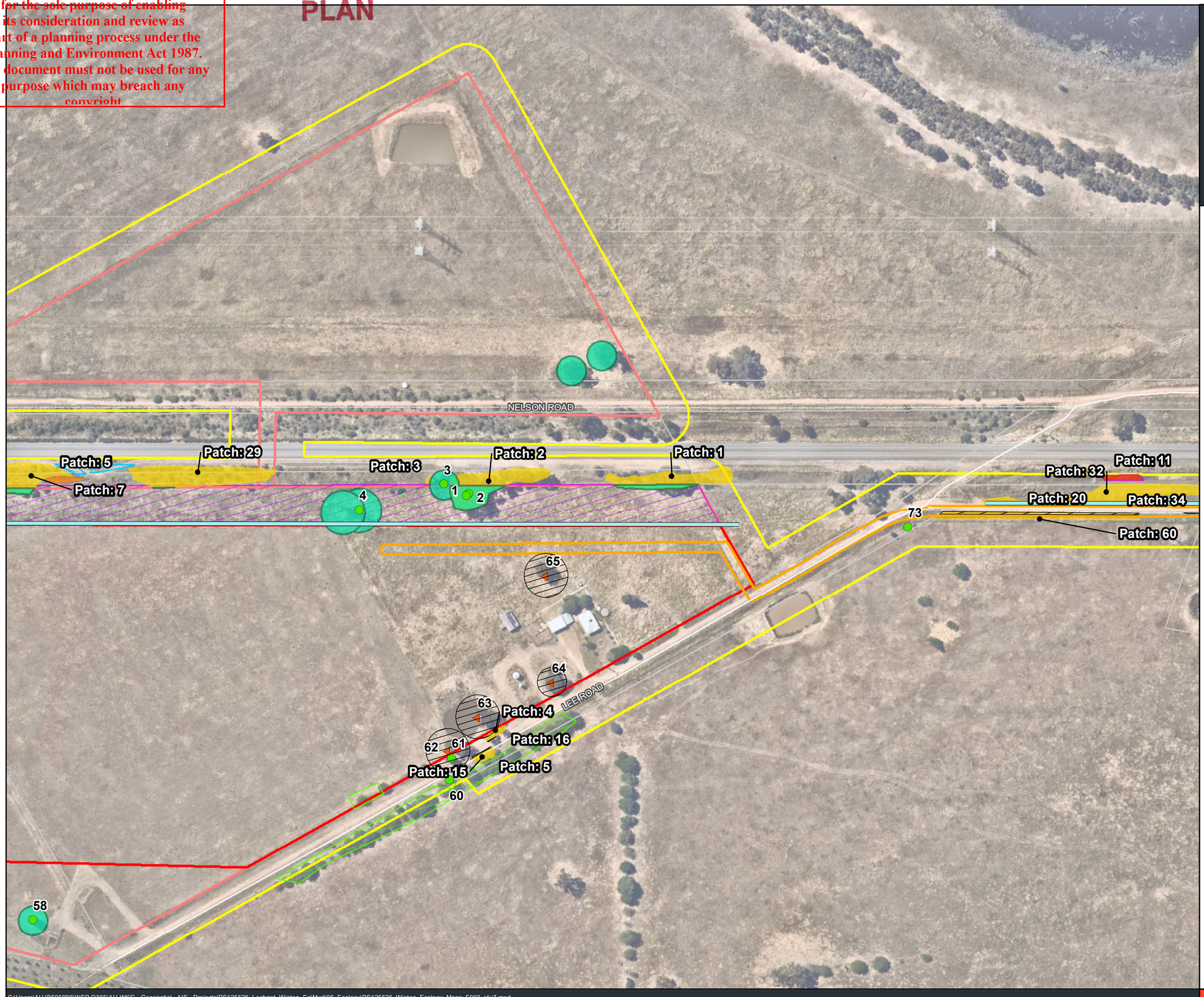
0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation

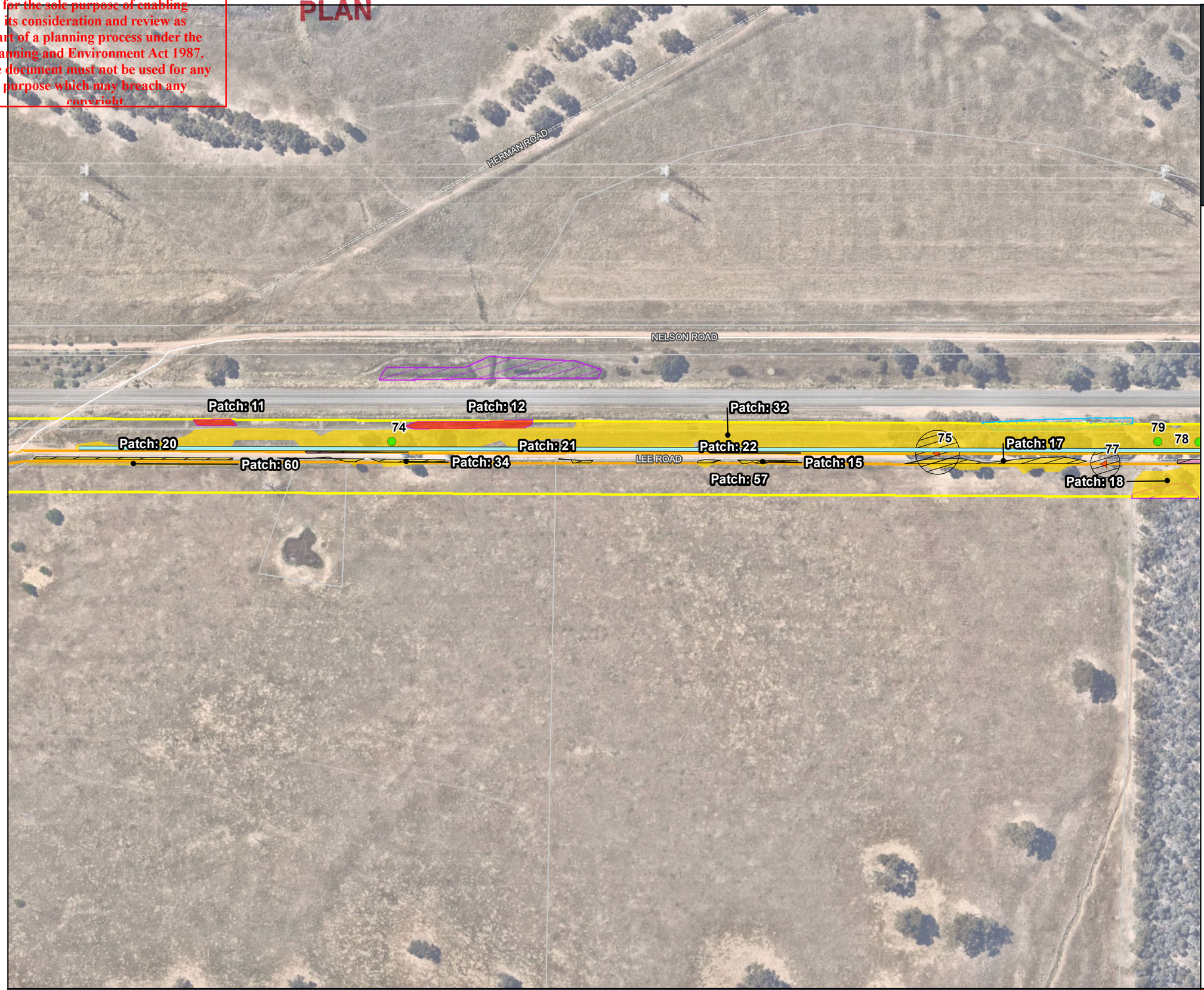
0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

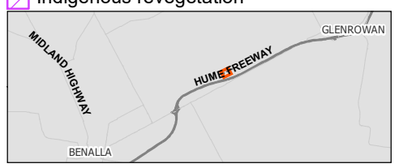
- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation



0 50 100 150 Meters

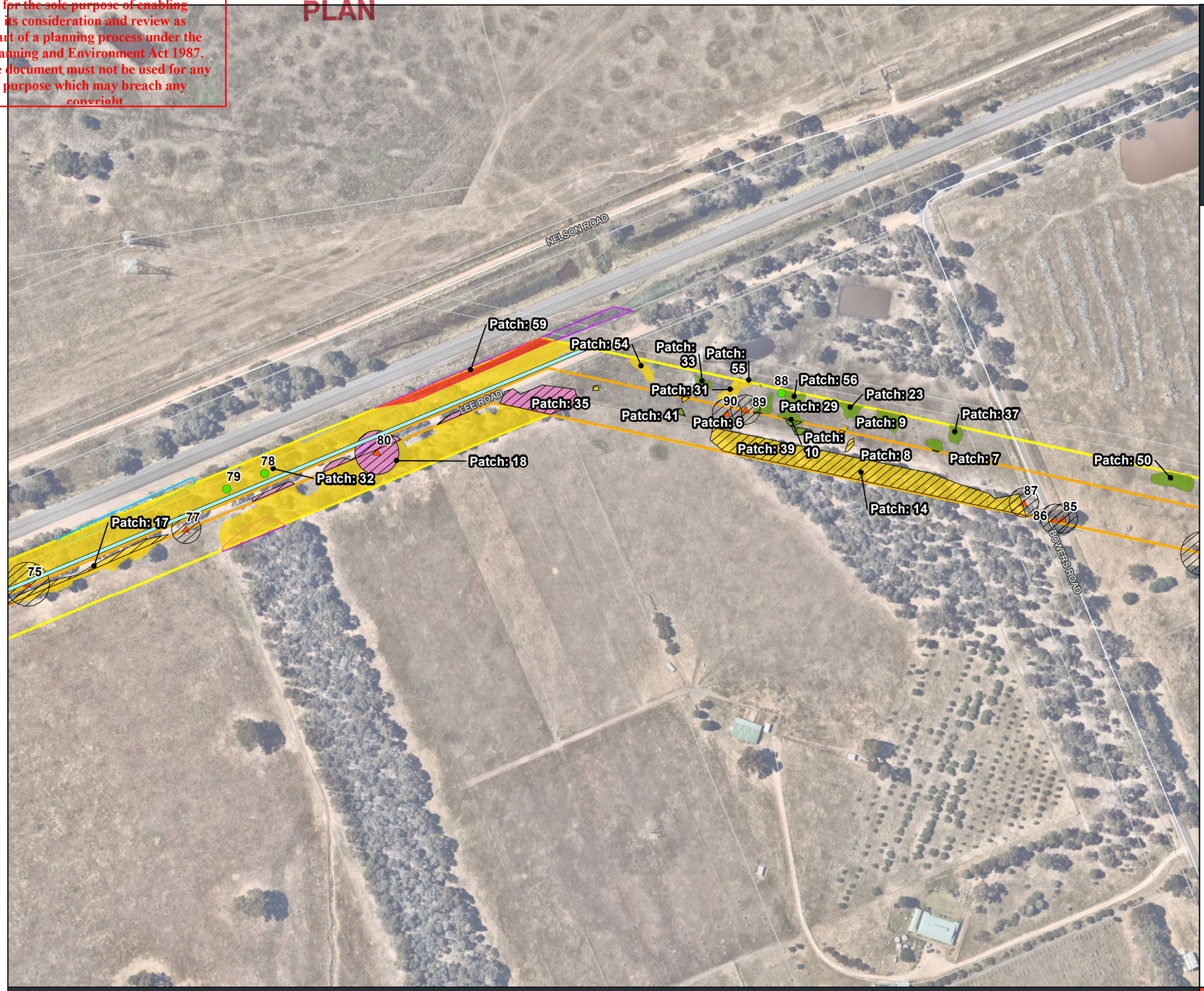
Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia

C:\Users\AUJB505996\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS125526_Lochard_Winton_En\Mxd\06_Ecology\PS125526_Winton_Ecology_Maps_F003_r1v7.mxd



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

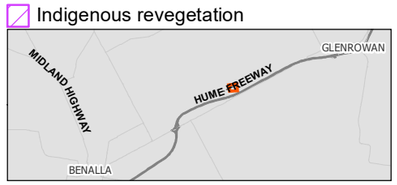
- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation



0 50 100 150 Meters

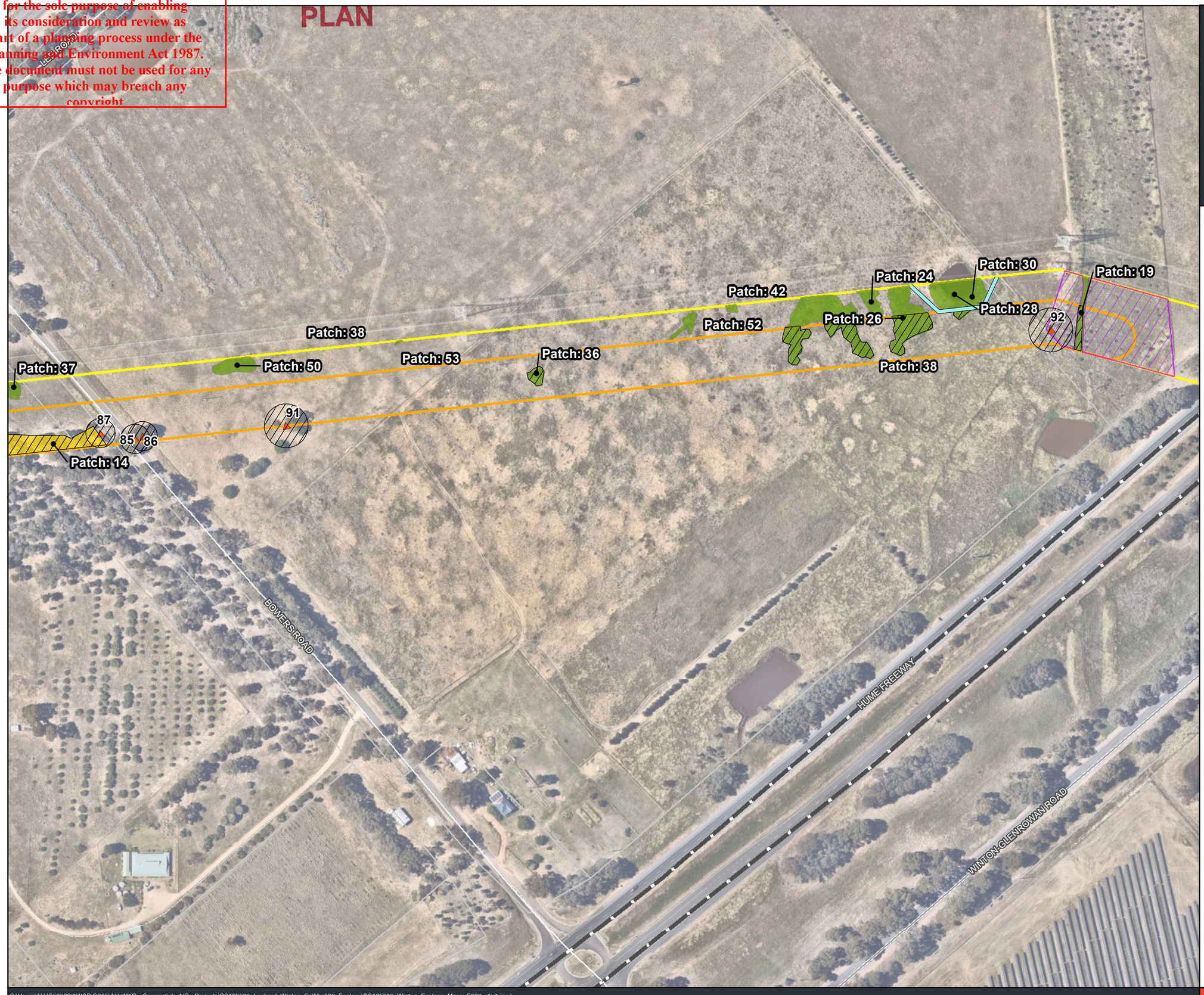
Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia

C:\Users\AUJB505996\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS125526_Lochard_Winton_En\Mxd\06_Ecology\PS125526_Winton_Ecology_Maps_F003_r1v7.mxd



Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

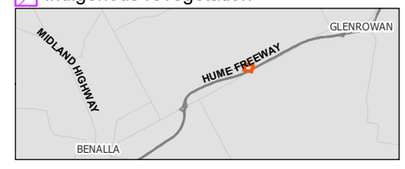
- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation



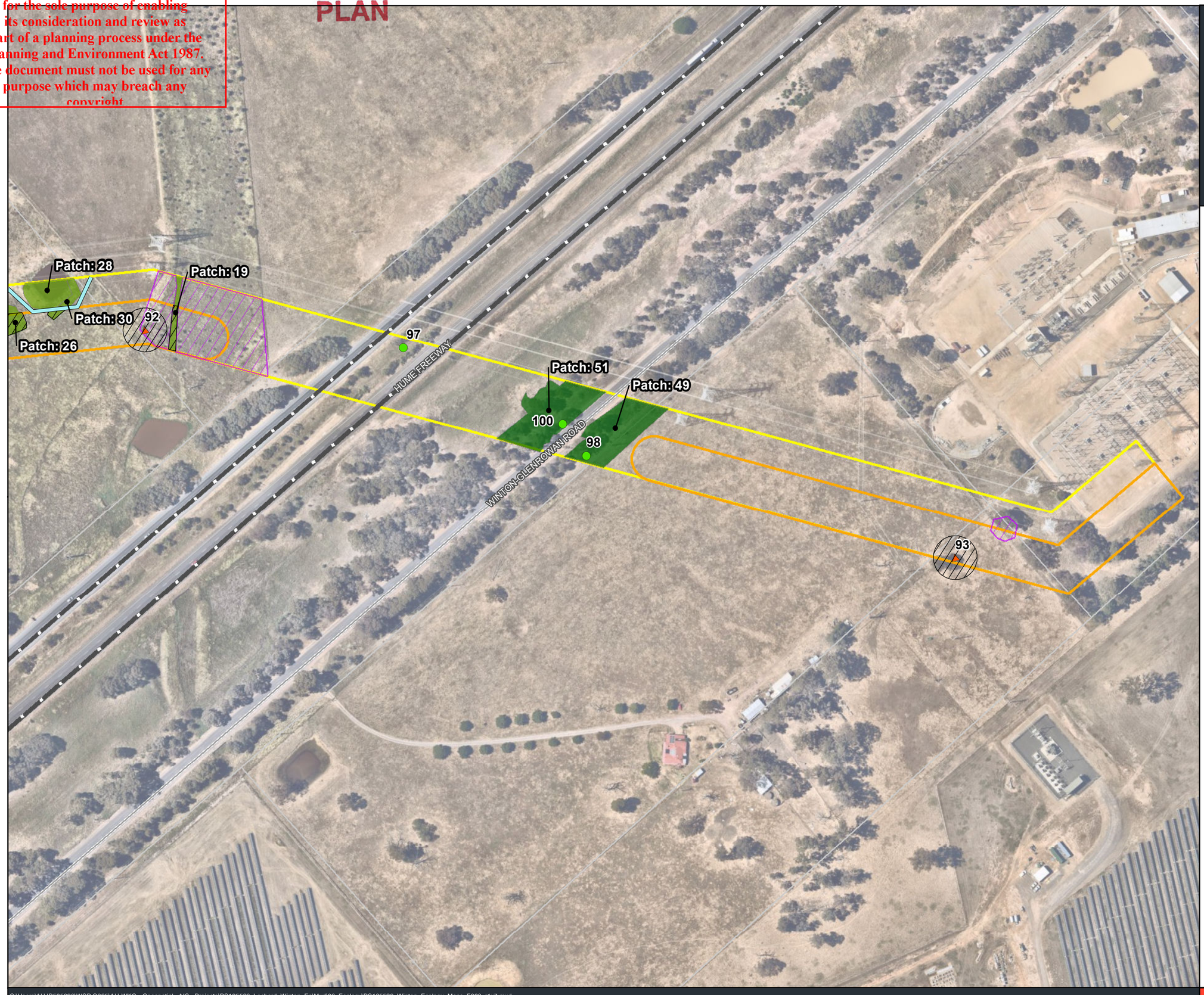
0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia



wsp

Lochard Energy
Reserve 1 Facility: Winton

Figure 3
Detailed Assessment –
Ecological Values and Proposed Impacts

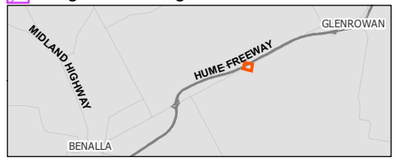
- Frog proof fence recommendation
- Watercourse
- Transmission Footprint
- Project area
- Study area
- Original Project
- Cadastre boundaries
- EnSym - Native vegetation removal
- Stagwatch locations
- Woodland bird point surveys
- EPBC Community impacts

Trees
- Removed
- Retained

Native Vegetation
- Box Ironbark Forest
- Plains Woodland / Herb-rich Gilgai Wetland
- Plains Grassy Woodland
- Plains Woodland
- Spike-sedge Wetland
- Tall Marsh
- Vegetation to be retained

Fauna Habitat
- Aquatic - deep marsh
- Aquatic - shallow marsh

Revegetation
- Exotic revegetation
- Indigenous revegetation



0 50 100 150 Meters

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 13/01/2023

Data sources: - DELWP, Geoscience Australia

C:\Users\AUJB505996\WSP O365\AU-WKG - Geospatial - AIS - Projects\PS125526_Lochard_Winton_En\Mxd\06_Ecology\PS125526_Winton_Ecology_Maps_F003_r1v7.mxd

APPENDIX D

DATA TABLES – TREES AND PATCHES

D1 INDIGENOUS CANOPY TREES

Table D.1 Indigenous canopy species mapped across the study area

TREE #	SCIENTIFIC NAME	COMMON NAME	DBH	HABITAT	NOTES	SITU	TPZ	SIZE	STATUS
1	*Eucalyptus microcarpa*	Grey Box	95	Small Hollows		P	11.4	LT	Retain
2	*Eucalyptus microcarpa*	Grey Box	118	Small Hollows		P	14.16	LT	Retain
3	*Eucalyptus microcarpa*	Grey Box	34			ST	4.08	ST	Retain
4	*Eucalyptus microcarpa*	Grey Box	101			ST	12.12	LT	Retain
5	*Eucalyptus leucoxylon subsp. leucoxylon*	Yellow Gum	77	Cracks		ST	9.24	LT	Retain
6	*Eucalyptus microcarpa*	Grey Box	110			P	13.2	LT	Retain
7	*Eucalyptus microcarpa*	Grey Box	72			P	8.64	LT	Retain
8	*Eucalyptus microcarpa*	Grey Box	20			ST	2.4	ST	Retain
9	*Eucalyptus microcarpa*	Grey Box	40			ST	4.8	ST	Retain
10	*Eucalyptus camaldulensis*	River Red-gum	20			ST	2.4	ST	Retain
11	*Eucalyptus spp.*	Eucalypt	67		Dead	ST	8.04	ST	Retain
12	*Eucalyptus microcarpa*	Grey Box	88			P	10.56	LT	Retain
13	*Eucalyptus microcarpa*	Grey Box	80			P	9.6	LT	Retain
14	*Eucalyptus camaldulensis*	River Red-gum	31			ST	3.72	ST	Retain
15	*Eucalyptus spp.*	Eucalypt	92	Small Hollows		P	11.04	LT	Retain
16	*Eucalyptus microcarpa*	Grey Box	123			P	14.76	LT	Retain
17	*Eucalyptus microcarpa*	Grey Box	25			ST	3	ST	Retain
18	*Eucalyptus spp.*	Eucalypt	40		Dead	ST	4.8	ST	Retain
19	*Eucalyptus microcarpa*	Grey Box	140			ST	15	LT	Retain
20	*Eucalyptus microcarpa*	Grey Box	5			ST	2	ST	Retain
21	*Eucalyptus spp.*	Eucalypt	95	Medium Hollows		ST	11.4	LT	Retain
22	*Eucalyptus microcarpa*	Grey Box	109			ST	13.08	LT	Retain
23	*Eucalyptus camaldulensis*	River Red-gum	14			ST	2	ST	Retain
24	*Eucalyptus camaldulensis*	River Red-gum	96			ST	11.52	LT	Retain
25	*Eucalyptus camaldulensis*	River Red-gum	20			P	2.4	ST	Retain
26	*Eucalyptus microcarpa*	Grey Box	126			ST	15	LT	Retain
27	*Eucalyptus microcarpa*	Grey Box	133			ST	15	LT	Retain
28	*Eucalyptus microcarpa*	Grey Box	77			P	9.24	LT	Retain
29	*Eucalyptus microcarpa*	Grey Box	136			P	15	LT	Retain
30	*Eucalyptus microcarpa*	Grey Box	161			P	15	LT	Retain
31	*Eucalyptus microcarpa*	Grey Box	92			P	11.04	LT	Retain
32	*Eucalyptus microcarpa*	Grey Box	37			ST	4.44	ST	Retain
33	*Eucalyptus microcarpa*	Grey Box	129			ST	15	LT	Retain
34	*Eucalyptus camaldulensis*	River Red-gum	15			ST	2	ST	Retain

TREE #	SCIENTIFIC NAME	COMMON NAME	DBH	HABITAT	NOTES	SITU	TPZ	SIZE	STATUS
35	*Eucalyptus microcarpa*	Grey Box	130			ST	15	LT	Retain
36	*Eucalyptus camaldulensis*	River Red-gum	11			ST	2	ST	Retain
37	*Eucalyptus microcarpa*	Grey Box	85			ST	10.2	LT	Retain
38	*Eucalyptus microcarpa*	Grey Box	97			P	11.64	LT	Retain
39	*Eucalyptus microcarpa*	Grey Box	92			P	11.04	LT	Retain
40	*Eucalyptus microcarpa*	Grey Box	102			P	12.24	LT	Retain
41	*Eucalyptus microcarpa*	Grey Box	70			P	8.4	LT	Retain
42	*Eucalyptus microcarpa*	Grey Box	108			P	12.96	LT	Retain
43	*Eucalyptus microcarpa*	Grey Box	85			P	10.2	LT	Retain
44	*Eucalyptus microcarpa*	Grey Box	100			P	12	LT	Retain
45	*Eucalyptus microcarpa*	Grey Box	86			P	10.32	LT	Retain
46	*Eucalyptus microcarpa*	Grey Box	58			P	6.96	ST	Retain
47	*Eucalyptus microcarpa*	Grey Box	89			P	10.68	LT	Retain
48	*Eucalyptus microcarpa*	Grey Box	54			P	6.48	ST	Retain
49	*Eucalyptus microcarpa*	Grey Box	42			P	5.04	ST	Retain
50	*Eucalyptus microcarpa*	Grey Box	94			P	11.28	LT	Retain
51	*Eucalyptus microcarpa*	Grey Box	74			P	8.88	LT	Retain
52	*Eucalyptus microcarpa*	Grey Box	75			P	9	LT	Retain
53	*Eucalyptus microcarpa*	Grey Box	80			P	9.6	LT	Retain
54	*Eucalyptus microcarpa*	Grey Box	85			ST	10.2	LT	Retain
55	*Eucalyptus microcarpa*	Grey Box	119			ST	14.28	LT	Retain
56	*Eucalyptus camaldulensis*	River Red-gum	123	Small Hollows		ST	14.76	LT	Retain
57	*Eucalyptus camaldulensis*	River Red-gum	80	Small Hollows		ST	9.6	LT	Retain
58	*Eucalyptus camaldulensis*	River Red-gum	34			ST	4.08	ST	Retain
59	*Eucalyptus camaldulensis*	River Red-gum	49			ST	5.88	ST	Remove
60	*Eucalyptus microcarpa*	Grey Box	31			ST	3.72	ST	Retain
61	*Eucalyptus microcarpa*	Grey Box	22			ST	2.64	ST	Retain
62	*Eucalyptus microcarpa*	Grey Box	113			ST	13.56	LT	Remove
63	*Eucalyptus microcarpa*	Grey Box	123			ST	14.76	LT	Remove
64	*Eucalyptus melliodora*	Yellow Box	53			ST	6.36	ST	Remove
65	*Eucalyptus microcarpa*	Grey Box	120			ST	14.4	LT	Remove
68	*Eucalyptus microcarpa*	Grey Box	50		Estimated	ST	6	ST	Retain
69	*Eucalyptus microcarpa*	Grey Box	40		Estimated	ST	4.8	ST	Retain
73	*Eucalyptus microcarpa*	Grey Box	15			ST	1.8	ST	Retain
74	*Eucalyptus microcarpa*	Grey Box	127	Basal hollows		P	15.24	LT	Retain
75	*Eucalyptus microcarpa*	Grey Box	162	MedHollows, small hollows, loose bark.		P	19.44	LT	Remove
77	*Eucalyptus microcarpa*	Grey Box	10			ST	1.2	ST	Remove
78	*Eucalyptus microcarpa*	Grey Box	84			P	10.08	LT	Retain

TREE #	SCIENTIFIC NAME	COMMON NAME	DBH	HABITAT	NOTES	SITU	TPZ	SIZE	STATUS
79	*Eucalyptus camaldulensis*	River Red-gum	108			P	12.96	LT	Retain
80	*Eucalyptus microcarpa*	Grey Box	130	Small Hollows, loose bark, cracks		P	15.6	LT	Remove
85	*Eucalyptus microcarpa*	Grey Box	50			ST	6	ST	Remove
86	*Eucalyptus microcarpa*	Grey Box	40			ST	4.8	ST	Remove
87	*Eucalyptus microcarpa*	Grey Box	50		Dead	ST	6	ST	Remove
88	*Eucalyptus microcarpa*	Grey Box	15			ST	1.8	ST	Retain
89	*Eucalyptus microcarpa*	Grey Box	10			ST	1.2	ST	Remove
90	*Eucalyptus microcarpa*	Grey Box	10			ST	1.2	ST	Remove
91	*Eucalyptus microcarpa*	Grey Box	110	Cracks		ST	13.2	LT	Remove
92	*Eucalyptus microcarpa*	Grey Box	130	Large Hollows, cracks	Dead	ST	15.6	LT	Remove
93	*Eucalyptus camaldulensis*	River Red-gum	75			ST	9	LT	Remove
97	*Allocasuarina littoralis*	Black Sheoak	25		Estimated	P	3	ST	Retain
98	*Eucalyptus microcarpa*	Grey Box	65			P	7.8	ST	Retain
100	*Eucalyptus albens*	White Box	35		Estimated	P	4.2	ST	Retain

KEY

SITU = Situation i/e in a patch or scattered

ST = Small Tree as per the most appropriate EVC Benchmark

SL = Small Tree as per the most appropriate EVC Benchmark

D2 VEGETATION QUALITY ASSESSMENT

Table D.2 Vegetation Quality Assessments, Habitat Hectare Scores, and EnSym attribution for patches of native vegetation within the study area

EVC	LARGE TREES	TREE CANOPY COVER	WEEDS	U_STORY	RECRUITMENT	ORGANIC LITTER	LOGS	EPBC	HH_EVC	BCS	LT_CNT	HH_SI	HH_ZI	HH_H_S	NEIGHBOURH	SITECOND	MULT	VEGETATION QUALITY SCORE	TOTAL AREA
Plains Woodland 803	5	4	4	15	0	2	3		VRiv0803	E	2	1	P	0.39	6	33	1	39	0.018
Plains Woodland 803	0	0	0	5	0	2	0		VRiv0803	E	0	2	P	0.13	6	7	1	13	0.044
Plains Woodland 803	1	3	0	5	5	2	2		VRiv0803	E	2	3	P	0.24	6	18	1	24	0.003
Plains Woodland 803	0	5	0	5	0	2	0		VRiv0803	E	0	4	P	0.18	6	12	1	18	0.007
Plains Woodland 803	0	5	0	5	0	2	1		VRiv0803	E	0	5	P	0.19	6	13	1	19	0.009
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	6	P	0.33	6	27	1	33	0.002
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	7	P	0.33	6	27	1	33	0.008
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	8	P	0.14	6	8	1	14	0.003
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	9	P	0.14	6	8	1	14	0.002
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	10	P	0.33	6	27	1	33	0.011
Tall Marsh 821	0	0	9	15	6	5	0		VRiv0821	D	0	11	P	0.536	6	35	1.36	53.6	0.01
Tall Marsh 821	0	0	9	15	6	5	0		VRiv0821	D	0	12	P	0.536	6	35	1.36	53.6	0.042
Plains Woodland 803	0	4	4	5	0	5	0		VRiv0803	E	0	14	P	0.24	6	18	1	24	0.291
Plains Woodland 803	0	0	0	5	0	2	0		VRiv0803	E	0	15	P	0.13	6	7	1	13	0.006
Plains Woodland 803	0	4	4	15	0	2	0		VRiv0803	E	0	17	P	0.31	6	25	1	31	0.067
Plains Woodland 803	0	4	7	15	5	3	0	GBGW	VRiv0803	E	0	18	P	0.4	6	34	1	40	0.55
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	19	P	0.13	6	7	1	13	0.02
Plains Woodland 803	0	0	4	5	0	3	0		VRiv0803	E	0	20	P	0.18	6	12	1	18	0.019
Plains Woodland 803	0	0	0	5	0	2	0		VRiv0803	E	0	21	P	0.13	6	7	1	13	0.003
Plains Woodland 803	0	0	0	5	0	2	0		VRiv0803	E	0	22	P	0.13	6	7	1	13	0.005
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	23	P	0.33	6	27	1	33	0.013

EVC	LARGE TREES	TREE CANOPY COVER	WEEDS	U_STORY	RECRUITMENT	ORGANIC LITTER	LOGS	EPBC	HH_EVC	BCS	LT_CNT	HH_SI	HH_ZI	HH_H_S	NEIGHBOURH	SITECOND	MULT	VEGETATION QUALITY SCORE	TOTAL AREA
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	24	P	0.13	6	7	1	13	0.023
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	26	P	0.13	6	7	1	13	0.08
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	5	0	4	0		VRiv0235	E	0	28	P	0.22	6	16	1	22	0.053
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	29	P	0.33	6	27	1	33	0.011
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	30	P	0.13	6	7	1	13	0.02
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	31	P	0.14	6	8	1	14	0.015
Plains Woodland 803	2	2	4	15	6	3	0	GBGW	VRiv0803	E	0	32	P	0.38	6	32	1	38	1.62
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	33	P	0.33	6	27	1	33	0.008
Plains Woodland 803	0	2	4	15	0	2	0		VRiv0803	E	0	34	P	0.29	6	23	1	29	0.018
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	35	P	0.14	6	8	1	14	0.001
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	36	P	0.13	6	7	1	13	0.01
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	37	P	0.33	6	27	1	33	0.01
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	38	P	0.13	6	7	1	13	0.001
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	38	P	0.13	6	7	1	13	0.136
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	39	P	0.33	6	27	1	33	0.005
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	41	P	0.14	6	8	1	14	0.002

EVC	LARGE TREES	TREE CANOPY COVER	WEEDS	U_STORY	RECRUITMENT	ORGANIC LITTER	LOGS	EPBC	HH_EVC	BCS	LT_CNT	HH_SI	HH_ZI	HH_H_S	NEIGHBOURH	SITECOND	MULT	VEGETATION QUALITY SCORE	TOTAL AREA
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	42	P	0.13	6	7	1	13	0.004
Box Ironbark Forest EVC 61	5	5	11	15	10	5	0		VRiv0061	V	0	49	P	0.57	6	51	1	57	0.154
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	50	P	0.13	6	7	1	13	0.026
Box Ironbark Forest EVC 61	5	5	11	15	10	5	0	WBGBYBGW	VRiv0061		0	51	P	0.57	6	51	1	57	0.169
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	52	P	0.13	6	7	1	13	0.012
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	0	5	0	2	0		VRiv0235	E	0	53	P	0.13	6	7	1	13	0.001
Plains Woodland 803	0	0	0	5	0	3	0		VRiv0803	E	0	54	P	0.14	6	8	1	14	0.012
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	55	P	0.33	6	27	1	33	0.001
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	56	P	0.33	6	27	1	33	0.014
Plains Woodland 803	0	0	0	5	0	2	0		VRiv0803	E	0	57	P	0.13	6	7	1	13	0.005
EVC 235: Plains Woodland / Herb-rich Gilgai Wetland Mosaic	0	0	7	15	0	5	0		VRiv0235	E	0	58	P	0.33	6	27	1	33	0.019
Tall Marsh 821	0	0	9	15	6	5	0		VRiv0821	D	0	59	P	0.41	6	35	1	41	0.059
Plains Woodland 803	0	0	4	5	0	2	0		VRiv0803	E	0	60	P	0.17	6	11	1	17	0.015
Plains Woodland 803	0	0	7	5	0	2	1		VRiv0803	E	0	61	P	0.21	6	15	1	21	0.031

HH_EVC: *Vegetation code – Biopregion and EVC number*
BCS: *Biodiversity Cosnervation status*
LT_CNT: *large tree count per patch*
Site Condition: *condition component of VQA – exclusive of Neighbourhood score*
Multiplier: *standardising multiplier for EVCs that do not include the full suite of VQA scoring components*
N/HOOD: *Neighbourhood score*
VQA: *Vegetation Quality Assessment*
HH_S_S: *final habitat score of the Vegetation Quality Assessment as a fraction of 1*

APPENDIX E

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: **17/01/2023**
Time of issue: **2:19 am**

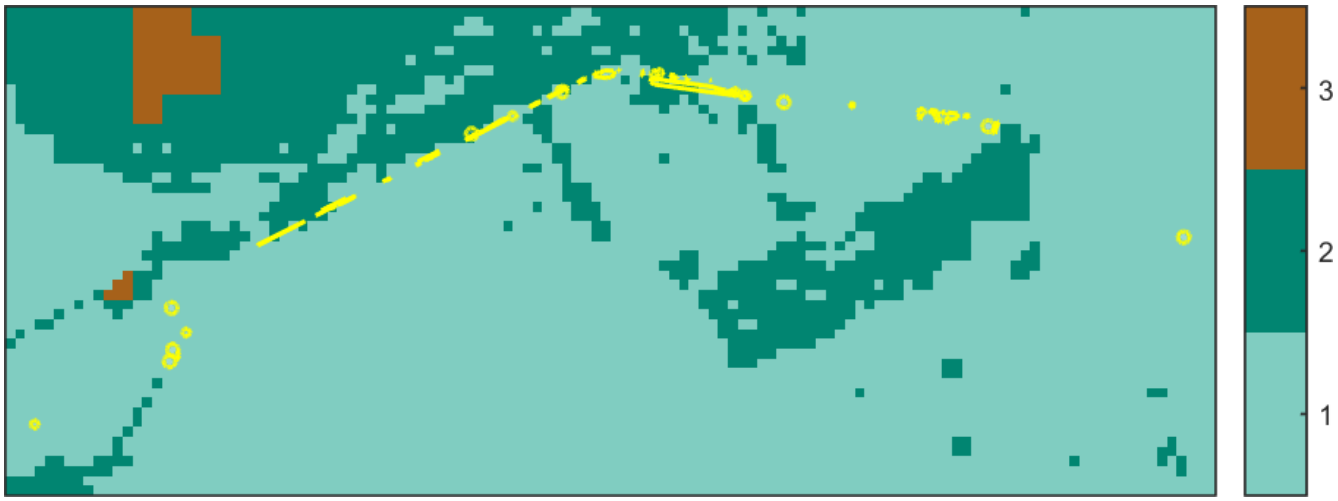
Report ID: WSP_2023_001

Project ID	WSP_Lochard_EnSym_22.12.2022

Assessment pathway

Assessment pathway	**Detailed Assessment Pathway**
Extent including past and proposed	1.393 ha
Extent of past removal	0.000 ha
Extent of proposed removal	1.393 ha
No. Large trees proposed to be removed	8
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Offset requirements if a permit is granted

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

General offset amount[1]	0.328 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Benalla Rural City Council
Minimum strategic biodiversity value score[2]	0.324
Large trees	8 large trees

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

Appendix 1 includes information about the native vegetation to be removed

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

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

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

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

Next steps

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

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

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

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

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

Additional application requirements must be met including:

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

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

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

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

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

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

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

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

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

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

Native vegetation to be removed

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
75-ST	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.071	0.062	0.590		0.015	General
80-ST	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.071	0.058	0.599		0.014	General
85-ST	Scattered Tree	vriv0061	Vulnerable	0	no	0.200	0.031	0.021	0.393		0.004	General
86-ST	Scattered Tree	vriv0061	Vulnerable	0	no	0.200	0.031	0.021	0.430		0.005	General
87-ST	Scattered Tree	vriv0061	Vulnerable	0	no	0.200	0.031	0.021	0.430		0.004	General
89-ST	Scattered Tree	vriv0061	Vulnerable	0	no	0.200	0.031	0.027	0.528		0.006	General
90-ST	Scattered Tree	vriv0061	Vulnerable	0	no	0.200	0.031	0.028	0.650		0.007	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
91-ST	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.071	0.071	0.340		0.014	General
92-ST	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.071	0.071	0.430		0.015	General
59-ST	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.420		0.007	General
62-ST	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.071	0.071	0.104		0.012	General
63-ST	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.071	0.071	0.120		0.012	General
64-ST	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.120		0.005	General
65-ST	Scattered Tree	vriv0803	Endangered	1	no	0.200	0.071	0.071	0.120		0.012	General
77-ST	Scattered Tree	vriv0803	Endangered	0	no	0.200	0.031	0.031	0.410		0.007	General
4-P	Patch	vriv0803	Endangered	0	no	0.180	0.000	0.000	0.120		0.000	General
5-P	Patch	vriv0803	Endangered	0	no	0.190	0.001	0.001	0.111		0.000	General
6-P	Patch	vriv0235	Endangered	0	no	0.330	0.002	0.002	0.650		0.001	General
7-P	Patch	vriv0235	Endangered	0	no	0.330	0.000	0.000	0.430		0.000	General
8-P	Patch	vriv0803	Endangered	0	no	0.140	0.003	0.003	0.430		0.000	General
9-P	Patch	vriv0803	Endangered	0	no	0.140	0.001	0.001	0.430		0.000	General
10-P	Patch	vriv0235	Endangered	0	no	0.330	0.003	0.003	0.430		0.001	General
11-P	Patch	vriv0803	Endangered	0	no	0.400	0.006	0.006	0.650		0.003	General
12-P	Patch	vriv0803	Endangered	0	no	0.400	0.020	0.020	0.597		0.010	General
13-P	Patch	vriv0803	Endangered	0	no	0.400	0.009	0.009	0.410		0.004	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
14-P	Patch	vriv0803	Endangered	0	no	0.240	0.290	0.290	0.452		0.076	General
15-P	Patch	vriv0803	Endangered	0	no	0.130	0.005	0.005	0.590		0.001	General
16-P	Patch	vriv0803	Endangered	0	no	0.130	0.000	0.000	0.590		0.000	General
17-P	Patch	vriv0803	Endangered	0	no	0.310	0.036	0.036	0.480		0.012	General
18-P	Patch	vriv0803	Endangered	0	no	0.400	0.072	0.072	0.650		0.036	General
19-P	Patch	vriv0235	Endangered	0	no	0.130	0.013	0.013	0.430		0.002	General
20-P	Patch	vriv0803	Endangered	0	no	0.180	0.019	0.019	0.410		0.004	General
21-P	Patch	vriv0803	Endangered	0	no	0.130	0.002	0.002	0.680		0.000	General
22-P	Patch	vriv0803	Endangered	0	no	0.130	0.003	0.003	0.590		0.000	General
24-P	Patch	vriv0235	Endangered	0	no	0.130	0.003	0.003	0.430		0.000	General
25-P	Patch	vriv0803	Endangered	0	no	0.290	0.003	0.003	0.190		0.001	General
26-P	Patch	vriv0235	Endangered	0	no	0.130	0.047	0.047	0.430		0.006	General
27-P	Patch	vriv0803	Endangered	0	no	0.290	0.001	0.001	0.190		0.000	General
28-P	Patch	vriv0235	Endangered	0	no	0.220	0.000	0.000	0.430		0.000	General
29-P	Patch	vriv0803	Endangered	0	no	0.290	0.001	0.001	0.190		0.000	General
30-P	Patch	vriv0235	Endangered	0	no	0.130	0.006	0.006	0.430		0.001	General
32-P	Patch	vriv0803	Endangered	0	no	0.380	0.004	0.004	0.190		0.002	General
33-P	Patch	vriv0803	Endangered	0	no	0.380	0.000	0.000	0.590		0.000	General
34-P	Patch	vriv0803	Endangered	0	no	0.290	0.009	0.009	0.190		0.002	General
35-P	Patch	vriv0803	Endangered	0	no	0.140	0.001	0.001	0.650		0.000	General
36-P	Patch	vriv0235	Endangered	0	no	0.130	0.010	0.010	0.400		0.001	General
37-P	Patch	vriv0235	Endangered	0	no	0.130	0.028	0.028	0.405		0.004	General

Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type
38-P	Patch	vriv0235	Endangered	0	no	0.130	0.034	0.034	0.430		0.005	General
39-P	Patch	vriv0235	Endangered	0	no	0.330	0.005	0.005	0.430		0.002	General
40-P	Patch	vriv0235	Endangered	0	no	0.330	0.000	0.000	0.430		0.000	General
41-P	Patch	vriv0803	Endangered	0	no	0.140	0.001	0.001	0.650		0.000	General
93-ST	Scattered Tree	vriv0061	Vulnerable	1	no	0.200	0.071	0.071	0.369		0.015	General

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

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

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
Euroa Guinea-flower	*Hibbertia humifusa subsp. erigens*	505083	Vulnerable	Dispersed	Habitat importance map	0.0002
Mugga	*Eucalyptus sideroxylon subsp. sideroxylon*	504493	Rare	Dispersed	Habitat importance map	0.0001
Yarran Wattle	*Acacia omalophylla*	500069	Endangered	Dispersed	Habitat importance map	0.0001
Western Silver Wattle	*Acacia decora*	500027	Vulnerable	Dispersed	Habitat importance map	0.0001
Plump Windmill Grass	*Chloris ventricosa*	500757	Vulnerable	Dispersed	Habitat importance map	0.0001
Narrow Goodenia	*Goodenia macbarronii*	501513	Vulnerable	Dispersed	Habitat importance map	0.0001
Northern Sandalwood	*Santalum lanceolatum*	503005	Endangered	Dispersed	Habitat importance map	0.0001
Bent-leaf Wattle	*Acacia flexifolia*	500035	Rare	Dispersed	Habitat importance map	0.0000
Cottony Cassinia	*Cassinia ozothamnoides*	501560	Vulnerable	Dispersed	Habitat importance map	0.0000
Dookie Daisy	*Brachyscome gracilis*	505494	Vulnerable	Dispersed	Habitat importance map	0.0000
Pepper Grass	*Panicum laevinode*	504808	Vulnerable	Dispersed	Habitat importance map	0.0000
Ausfeld's Wattle	*Acacia ausfeldii*	500013	Vulnerable	Dispersed	Habitat importance map	0.0000
Umbrella Grass	*Digitaria divaricatissima var. divaricatissima*	501045	Vulnerable	Dispersed	Habitat importance map	0.0000
Small Scurf-pea	*Cullen parvum*	502773	Endangered	Dispersed	Habitat importance map	0.0000
Western Golden-tip	*Goodia medicaginea*	501518	Rare	Dispersed	Habitat importance map	0.0000
Broom Bitter-pea	*Daviesia genistifolia s.s.*	503813	Rare	Dispersed	Habitat importance map	0.0000
Delicate Crane's-bill	*Geranium sp. 6*	505347	Vulnerable	Dispersed	Habitat importance map	0.0000
Golden Cowslips	*Diuris behrii*	501061	Vulnerable	Dispersed	Habitat importance map	0.0000
Dark Wire-grass	*Aristida calycina var. calycina*	503630	Rare	Dispersed	Habitat importance map	0.0000

Purple Diuris	*Diuris punctata*	501084	Vulnerable	Dispersed	Habitat importance map	0.0000
Mueller Daisy	*Brachyscome muelleroides*	500465	Endangered	Dispersed	Habitat importance map	0.0000
Pale Swamp Everlasting	*Coronidium gunnianum*	504655	Vulnerable	Dispersed	Habitat importance map	0.0000
Rosemary Grevillea	*Grevillea rosmarinifolia subsp. rosmarinifolia*	504066	Rare	Dispersed	Habitat importance map	0.0000
Late-flower Flax-lily	*Dianella tarda*	505085	Vulnerable	Dispersed	Habitat importance map	0.0000
Slender Club-sedge	*Isolepis congrua*	501773	Vulnerable	Dispersed	Habitat importance map	0.0000
Fuzzy New Holland Daisy	*Vittadinia cuneata var. morrisii*	505060	Rare	Dispersed	Habitat importance map	0.0000
Branching Groundsel	*Senecio cunninghamii var. cunninghamii*	503104	Rare	Dispersed	Habitat importance map	0.0000
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	10443	Endangered	Dispersed	Habitat importance map	0.0000
Long Eryngium	*Eryngium paludosum*	501238	Vulnerable	Dispersed	Habitat importance map	0.0000
Yellow-tongue Daisy	*Brachyscome chrysoglossa*	503654	Vulnerable	Dispersed	Habitat importance map	0.0000
Smooth Minuria	*Minuria integerrima*	502201	Rare	Dispersed	Habitat importance map	0.0000
Dwarf Brooklime	*Gratiola pumilo*	503753	Rare	Dispersed	Habitat importance map	0.0000
Waterbush	*Myoporum montanum*	502240	Rare	Dispersed	Habitat importance map	0.0000
Brolga	*Grus rubicunda*	10177	Vulnerable	Dispersed	Habitat importance map	0.0000
Clover Glycine	*Glycine latrobeana*	501456	Vulnerable	Dispersed	Habitat importance map	0.0000
Lanky Buttons	*Leptorhynchos elongatus*	501941	Endangered	Dispersed	Habitat importance map	0.0000
Bush Stone-curlew	*Burhinus grallarius*	10174	Endangered	Dispersed	Habitat importance map	0.0000
Hairy Tails	*Ptilotus erubescens*	502825	Vulnerable	Dispersed	Habitat importance map	0.0000
Bearded Dragon	*Pogona barbata*	12177	Vulnerable	Dispersed	Habitat importance map	0.0000
Painted Honeyeater	*Grantiella picta*	10598	Vulnerable	Dispersed	Habitat importance map	0.0000
Jericho Wire-grass	*Aristida jerichoensis var. subspinulifera*	504631	Endangered	Dispersed	Habitat importance map	0.0000
Buloke	*Allocasuarina luehmannii*	500678	Endangered	Dispersed	Habitat importance map	0.0000

Small-leaf Bush-pea	*Pultenaea foliolosa*	502848	Rare	Dispersed	Habitat importance map	0.0000
Rye Beetle-grass	*Tripogon loliiformis*	503455	Rare	Dispersed	Habitat importance map	0.0000
Velvet Daisy-bush	*Olearia pannosa subsp. cardiophylla*	502317	Vulnerable	Dispersed	Habitat importance map	0.0000
Veiled Fringe-sedge	*Fimbristylis velata*	501369	Rare	Dispersed	Habitat importance map	0.0000
Grey Grass-tree	*Xanthorrhoea glauca subsp. angustifolia*	507229	Endangered	Dispersed	Habitat importance map	0.0000
Squirrel Glider	*Petaurus norfolcensis*	11137	Endangered	Dispersed	Habitat importance map	0.0000
Black Falcon	*Falco subniger*	10238	Vulnerable	Dispersed	Habitat importance map	0.0000
Silky Umbrella-grass	*Digitaria ammophila*	501041	Vulnerable	Dispersed	Habitat importance map	0.0000
Lace Monitor	*Varanus varius*	12283	Endangered	Dispersed	Habitat importance map	0.0000
Dwarf Cassinia	*Cassinia diminuta*	507664	Rare	Dispersed	Habitat importance map	0.0000
Floodplain Fireweed	*Senecio campylocarpus*	507136	Rare	Dispersed	Habitat importance map	0.0000
Woolly Wattle	*Acacia lanigera var. lanigera*	505093	Rare	Dispersed	Habitat importance map	0.0000
Kamarooka Mallee	*Eucalyptus froggattii*	501279	Rare	Dispersed	Habitat importance map	0.0000
Small Burr-grass	*Tragus australianus*	503418	Rare	Dispersed	Habitat importance map	0.0000

Habitat group

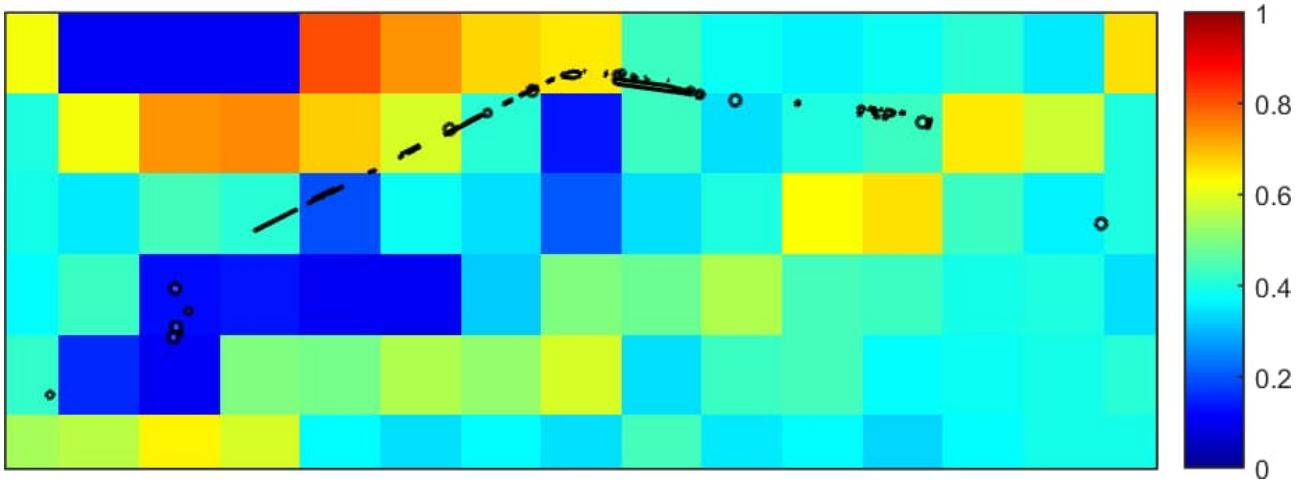
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

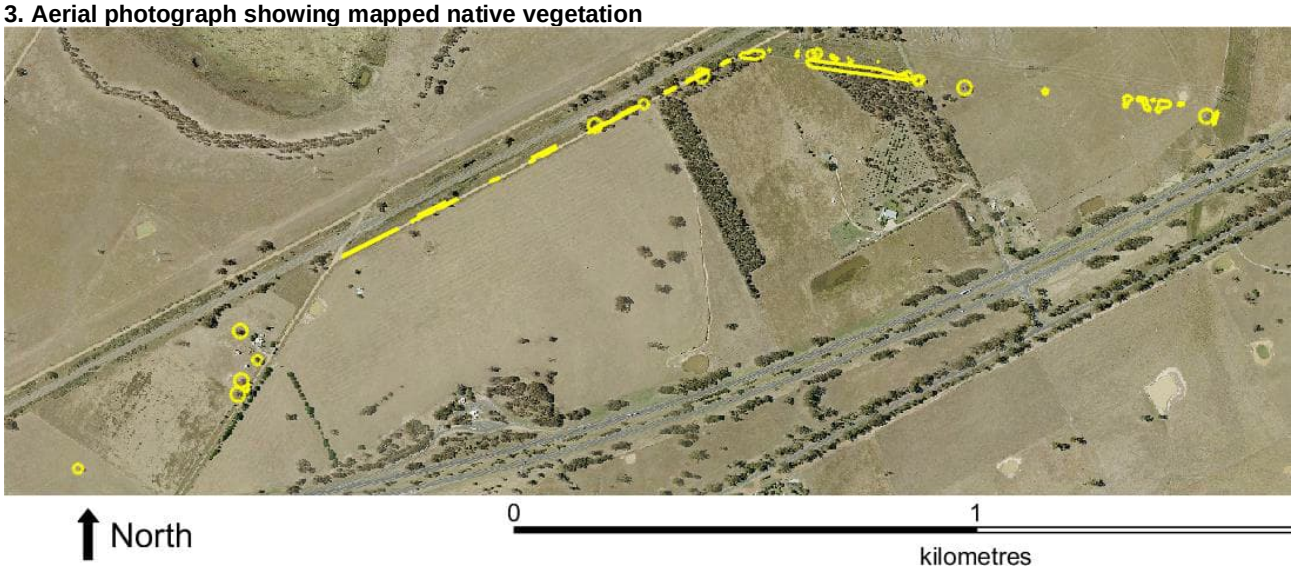
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance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

Appendix 3 – Images of mapped native vegetation

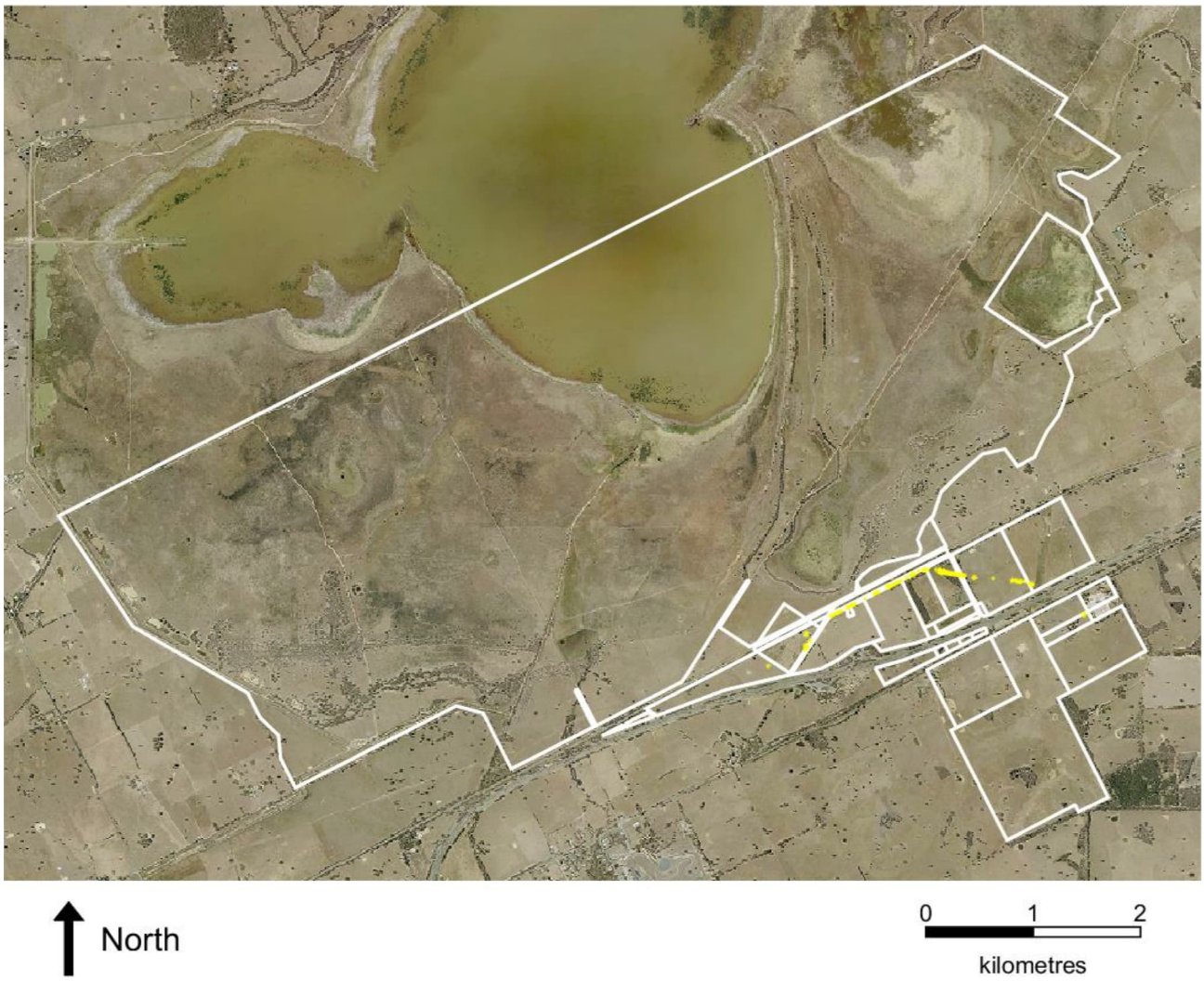
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

APPENDIX F

OFFSET AVAILABILITY - 18/08/2022

Report of available native vegetation credits

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

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

Date and time: 22/12/2022 04:53

Report ID: 17205

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.328	0.423	8	CMA	Goulburn Broken
			or LGA	Benalla Rural City

Details of available native vegetation credits on 22 December 2022 04:53

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-1145	1.138	54	Goulburn Broken	Mitchell Shire	No	Yes	No	Ethos
VC_CFL-2355_03	12.437	100	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
VC_CFL-3075_01	9.571	89	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink

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

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

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

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

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3701_01	10.574	18	Goulburn Broken, North Central	Greater Bendigo City	Yes	Yes	No	Bio Offsets
VC_CFL-3747_01	11.546	332	Goulburn Broken	Mansfield Shire	Yes	Yes	No	VegLink

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

Next steps

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

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

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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