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Battery Energy Storage System, Shepparton

Flora and fauna assessment

Final Report

Prepared for Avenis Energy

19 March 2026

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Biosis staff involved in this project were:

- Elise Keane (field assistance)
- Sam Panter, Olivia Williams (mapping)
- Matt Gibson (quality assurance)

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Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.

We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

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Summary

Biosis Pty Ltd was commissioned by Avenis Energy to undertake a flora and fauna assessment of an area of land proposed for the development of a Battery Energy Storage System (BESS). The study area is located an agricultural landscape approximately 5 kilometres north of Shepparton.

Ecological values

The majority of the study area has been modified and disturbed by historical and ongoing land uses. As a result of this modification, the study area is significantly modified and supports predominantly introduced vegetation of limited ecological value.

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Government legislation and policy

An assessment of the project in relation to key biodiversity legislation and policy is summarised below.

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
Environment Protection and Biodiversity Conservation Act 1999	No native vegetation or fauna recorded within the study area. Native vegetation within the study area does not qualify as an EPBC Act listed threatened community. One threatened fauna species may utilise air space above the study area: White-throated Needletail <i>Hirundapus caudacutus</i>	Referable Recommended.	White-throated Needletail <i>Hirundapus caudacutus</i> may occur in the airspace above the study area but is unlikely to utilise the terrestrial habitat.
Flora and Fauna Guarantee Act 1988	No FFG Act protected or threatened flora, fauna or communities were recorded or are likely to occur within the study area.	Protected Flora Permit not required.	The site is private land, with the exception of some small sections of road reserves.
Planning & Environment Act 1987	No native vegetation is present within the proposed development area.	Planning permit required to lop or remove native vegetation.	No planning permit for the removal of native vegetation under Clause 52.17 will be required. Assessment under the Guidelines is not required and native vegetation offsets will not be required.
Environment Effects Act 1978	No areas of native vegetation were identified within the study area.	The project is not considered to trigger any criteria relating	The scale of impacts to biodiversity values were assessed in accordance with the Ministerial Guidelines for

Legislation / policy	Relevant ecological feature on site	Permit / approval required	Notes
	No threatened flora, fauna or communities were recorded or are likely to occur within the study area.	to biodiversity (individual and combined).	Assessment of <i>Environmental Effects under the Environment Effects Act 1978</i> . The Ministerial guidelines are not binding, and the decision as to whether an EES is required is ultimately at the discretion of the Minister for Planning.
<i>Catchment and Land Protection Act 1994</i>	Two noxious weeds recorded within the study area: - Paterson's Curse <i>Echium plantagineum</i> - Blackberry <i>Rubus anglocandicans</i>	Under section 71 of the CaLP Act, all land owners and managers are required to prevent the growth and spread of regionally controlled weeds.	Avenis Energy will need to comply with the requirements to control the growth and spread of noxious weeds.

Guidelines for the removal, destruction or lopping of native vegetation (the Guidelines)

Given native vegetation was not recorded on site, development of the BESS will not require the removal of any patches of native vegetation, scattered or large trees. As a result, a guidelines assessment is not required, and Avenis Energy will not need to seek native vegetation offsets for this development.

Recommendations

Recommended mitigation measures include:

- Prepare a site-specific Construction Environmental Management Plan (CEMP).
- Where possible, protect retained planted vegetation during construction works. Removal of planted trees will not trigger any legislative or permit requirements (under the EPBC, FFG or PE Acts), however they are an important source of habitat and resources for local native fauna.
- Implement appropriate weed and pathogen controls during construction, as outlined in CEMP.

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1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Avenis Energy to undertake a flora and fauna assessment for a proposed Battery Energy Storage System (BESS) proposed to be developed near Shepparton.

Final version 3 (FIN03) of this report was updated to illustrate updated mapping which encompasses additional ancillary areas which may require disturbance during construction of the project, including vehicle/machinery movements and cable routes.

1.2 Scope of assessment

The objectives of this investigation are to:

- Describe the vascular flora (ferns, conifers, flowering plants), vertebrate fauna (mammals, birds, reptiles, frogs, fishes) and decapod crustacea (e.g. crayfish) observed within the study area.
- Map native vegetation and other habitat features within the study area.
- Conduct a vegetation quality assessment (if required).
- Review the implications of relevant biodiversity legislation and policy, including Victoria's Guidelines for the removal, destruction or lopping of native vegetation ('the Guidelines').
- Identify potential implications of the proposed development and provide recommendations to assist with development design.
- Recommend any further assessments of the site that may be required e.g. a vegetation impact assessment or targeted searches for threatened species.

1.3 Location of study area

The study area is located approximately 5 kilometres north of Shepparton (Figure 1). It encompasses approximately 27 hectares of private land and the adjacent road reserves. It is currently zoned Farming Zone 1 (FZ1), General Residential Zone (GRZ), Public Use Zone – Service and Utility (PUZ1) and Transport Zone – Significant Municipal Road (TRZ3) under the Greater Shepparton City Council Planning Scheme.

The study area is within the:

- Victorian Riverina Bioregion
- Broken River basin
- Goulburn Broken Catchment Management Authority
- City of Greater Shepparton local government area
- Traditional lands of the Yorta Yorta Peoples.

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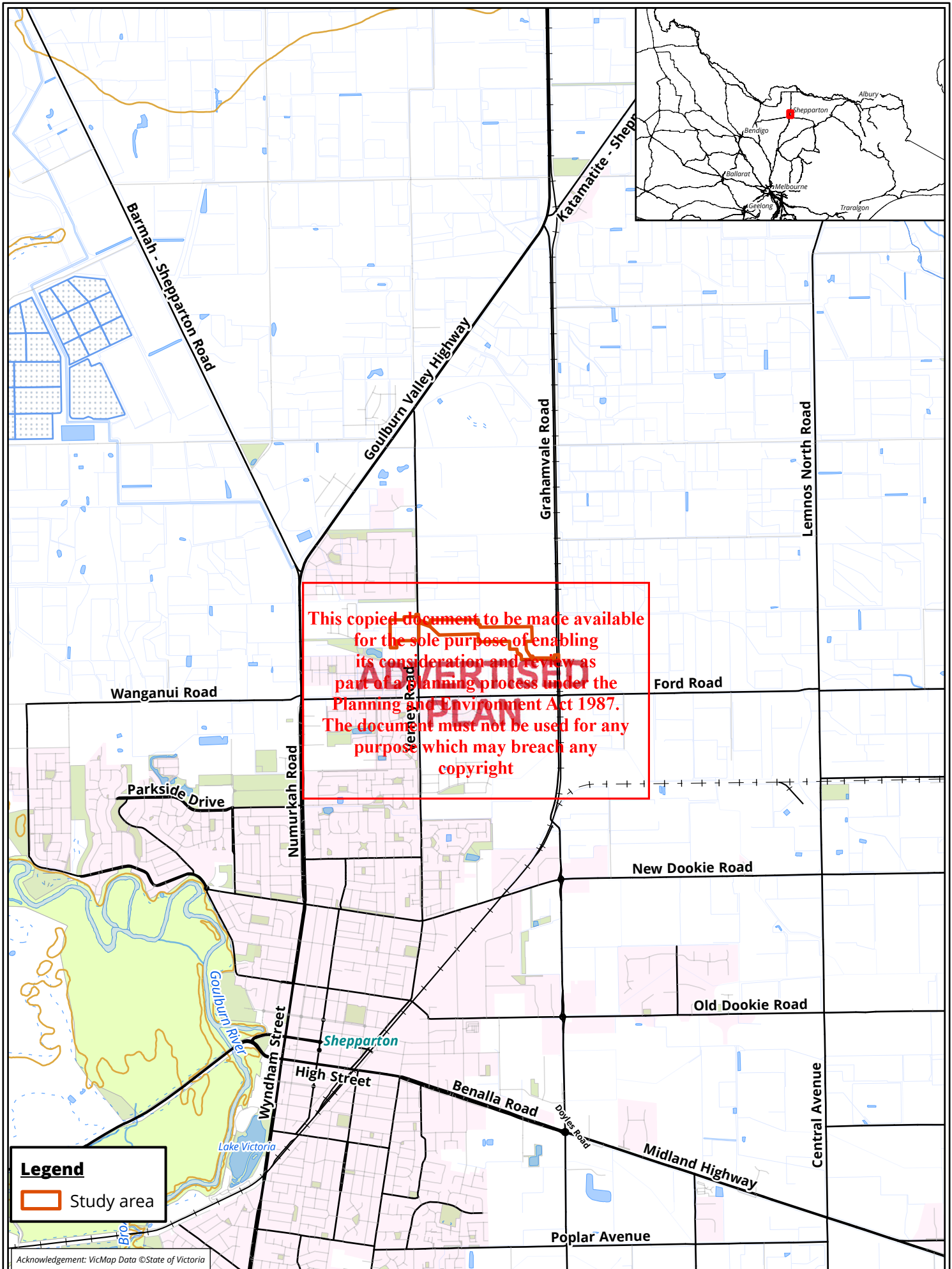


Figure 1 Location of the study area - 490 Verney Road, Grahamvale, Victoria

2 Methods

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2.1 Database review

In order to provide a context for the study area, information about flora and fauna from within 5 kilometres of the study area (the 'local area') was obtained from relevant biodiversity databases, many of which are maintained by the Victorian Government Department of Energy, Environment and Climate Action (DEECA) or the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW). Records from the following databases were collated and reviewed:

- DEECA's Victorian Biodiversity Atlas (VBA), including the 'VBA_FLORA25, FLORA100 & FLORA Restricted' and 'VBA_FAUNA25, FAUNA100 & FAUNA Restricted' datasets (DSE 2009a).
- DCCEEW's Protected Matters Search Tool for matters protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Other sources of biodiversity information were examined including:

- DEECA's NatureKit mapping tool.
- DEECA's Habitat Importance maps.
- Planning Scheme zones including any precinct structure plans, overlays and particular provisions relevant to biodiversity based on <http://planningschemes.dpcd.vic.gov.au>.

2.2 Definitions of threatened species and communities

Threatened species and communities are listed under the EPBC Act and/or Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). The conservation status of a species or ecological community is determined by its listing status under Commonwealth or State legislation/policy (Table 1).

Table 1 Conservation status of threatened species and ecological communities

Government level	Conservation status
National	Listed as nationally critically endangered, endangered or vulnerable under the EPBC Act.
State	Listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent in Victoria under the FFG Act.

Lists of threatened species generated from the databases are provided in Appendix 1 (flora) and Appendix 2 (fauna). Each species has been assessed to determine its likelihood of occurrence based on the following process.

2.3 Determining likelihood of occurrence of threatened species

Likelihood of occurrence indicates the potential for a species or ecological community to occur regularly within the study area. It is based on expert opinion, information in relevant biodiversity databases and reports, and an assessment of habitats on the site. Likelihood of occurrence is ranked as negligible, low, medium, high or recorded. The rationale for the rank assigned is provided for each species in Appendix 1 (flora) and Appendix 2 (fauna). Those species for which there is little or no suitable habitat within the study area are assigned a likelihood of low or negligible and are not considered further.

Only those species listed under the EPBC Act or the FFG Act (hereafter referred to as 'threatened species') are assessed to determine their likelihood of occurrence. The habitat value for threatened species is calculated by the Habitat Importance Modelling produced by DEECA (DELWP 2017a). Where threatened species are recorded in the study area this is noted in Appendix 1 (flora) and Appendix 2 (fauna).

Threatened species which have at least medium likelihood of occurrence are given further consideration in this report. The need for targeted survey for these species is also considered.

2.4 Site investigation

2.4.1 Flora assessment

The flora assessment was undertaken on 15 August 2024 by Elise Keane (Senior Botanist). A list of flora species was compiled (Appendix 1.1) and will be submitted to DEECA for incorporation into the VBA. Planted species were not recorded unless they were naturalised.

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses' (Clause 73.01).

The Guidelines classify native vegetation into two categories (DELWP 2017b):

- A **patch** of native vegetation (measured in hectares) is one of the following:
 - An area of native vegetation, with or without trees, where at least 25% of the total perennial understorey cover is native plants.
 - An area with three or more native canopy trees where the drip line (i.e. the outermost boundary of a tree canopy) of each tree touches the drip line of at least one other tree, forming a continuous canopy.
 - Any mapped wetland included in the Current wetlands map, available in DEECA systems and tools.
- A **scattered tree** is defined as a native canopy tree that does not form part of a patch of native vegetation.

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Patch vegetation is classified into ecological vegetation classes (EVCs), which are the standard unit for classifying vegetation types in Victoria. They are described through a combination of floristics, lifeforms and ecological characteristics, and through an inferred fidelity to particular environmental attributes. Each EVC contains one or more floristic (plant) communities. The EVC benchmarks are standard descriptions that allow the vegetation quality on a given site to be determined under the Guidelines (DELWP 2017b).

A canopy tree is a mature tree that is greater than three metres in height and is normally found in the upper layer of a vegetation type. Ecological vegetation class descriptions provide a list of the typical canopy species. A scattered tree is defined as either small or large, and is determined using the large tree benchmark for the relevant EVC. The extent of a small scattered tree is the area of a circle with a 10-metre radius (i.e. 0.031 hectares), while the extent of a large scattered tree is a circle with a 15-metre radius (i.e. 0.070 hectares). A condition score is applied to each scattered tree based on information provided by DEECA's NVR Map.

A Vegetation Quality Assessment (VQA) based on DEECA's habitat hectare method (DSE 2004) and the Guidelines (DELWP 2017b) was not required for this assessment, as no patches of vegetation were recorded.

Species nomenclature for flora follows the Victorian Biodiversity Atlas (VBA).

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2.4.2 Fauna assessment

A desktop fauna assessment was undertaken to assess the fauna habitat values of the study area, and to determine the likelihood of threatened fauna species occurring. The desktop fauna assessment incorporated a review of database records of significant fauna, along with photographs and vegetation descriptions obtained during the flora assessment.

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2.4.3 Permits

Biosis undertakes flora and fauna assessments under the following permits and approvals:

- Wildlife Authorisation issued by DEECA under the Victorian *Wildlife Act 1975* (Permit Number 10010193).
- Permit to Take/Keep Protected Flora issued by DEECA under the FFG Act (Permit Number 10010194).
- Permit to Take Protected Fish issued by DEECA under the FFG Act (Permit Number 10010195).
- Permit to Conduct Research in areas managed by the Parks Victoria issued by DEECA under the Victorian *National Parks Act 1975*, *Crown Land (Reserves) Act 1978* and *Parks Victoria Act 2018* (Permit Number 10010071).
- Permit to catch and release fish issued by the Victorian Fisheries Authority under the Victorian *Fisheries Act 1995* (Permit Number RP 1220, Personal File Number 13041).
- Approvals 18.21 and 20.2 This supplied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
- Scientific Procedures Fieldwork Licence issued by the Victorian Government Wildlife and Small Institutions Animal Ethics Committee (Licence Number 20020).

2.5 Qualifications

Ecological surveys provide a sampling of flora and fauna at a given time and season. There are a number of reasons why not all species may be detected at a site during survey, such as low abundance, patchy distribution, species dormancy, seasonal conditions, and migration and breeding behaviours. In many cases these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The current flora and fauna assessment was conducted in winter, which is not an optimal time for surveying grasslands. However the high levels of disturbance make it very unlikely that anything of significance would be observed, even during optimal survey seasons.

2.6 Legislation and policy

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- Matters listed under the EPBC Act, associated policy statements, significant impacts guidelines, listing advice and key threatening processes.
- Threatened taxa, communities and threatening processes listed under Section 10 of the FFG Act and associated action statements and listing advice.
- Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017b).
- *Planning and Environment Act 1987*, specifically Clauses 12.01-2, 52.17 and 66.02 and Overlays in the Greater Shepparton Planning Scheme.

- Noxious weed and pest animal lists under the *Catchment and Land Protection Act 1994* (CaLP Act).

2.7 Mapping

Avenis Energy supplied site plans (Document no. VIC.AE03.BS.D2.001.3.0) and updated assessment area boundary (Proposed Investigation Area copy v2).

Mapping was conducted using hand-held GPS-enabled tablets and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the tablets (generally ± 7 metres) and dependent on the limitations of aerial photo rectification and registration.

Mapping has been produced using a Geographic Information System (GIS). Electronic GIS files which contain our flora and fauna spatial data are available to incorporate into design concept plans. However this mapping may not be sufficiently precise for detailed design purposes.

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3 Results

The ecological features of the study area are described below and mapped in Figure 2.

Species recorded during the flora and fauna assessment are listed in Appendix 1 (flora) and Appendix 2 (fauna). Unless of particular note, these species are not discussed further.

Threatened species recorded or predicted to occur in the local area are also listed in these appendices, along with an assessment of the likelihood of the species occurring within the study area.

3.1 Vegetation and fauna habitat

The majority of the study area has been highly modified due to historical clearing and agricultural land use. Most of the study area has been significantly degraded and supports predominantly introduced vegetation that is of limited ecological value. The study areas was dominated by introduced species such as Perennial Rye-grass *Lolium perenne*, Cape Weed *Arctotheca calendula* and Oat *Avena sativa*.

No native patch vegetation or scattered trees were observed on site and native vegetation recorded was limited to scattered individuals of Common Wallaby-grass *Rytidosperma caespitosum* and Windmill Grass *Chloris truncata*. These species were not observed to have significant cover anywhere across the site and did not provide any significant habitat for other native species.

Due to the high level of disturbance fauna habitat was also extremely limited and the study area did not support any significant habitat for any threatened species.

These features are described further in Table 2 and mapped in Figure 2. Photos are provided in Appendix 3.

Table 2 Summary of vegetation and habitat types within the study area

Vegetation or habitat type	Description	Location	Significant values
Predominantly introduced vegetation	The majority of the study area supports paddocks that have been highly disturbed. The entire site is heavily infested with weed species such as Perennial Rye-grass, Cape Weed and Oat. Scattered individual native grasses occur Common Wallaby-grass and Windmill Grass.	Entire study area.	The high level of disturbance means that these areas do not support any significant habitat values for threatened species.
Planted vegetation	Exotic planted vegetation most commonly occurs around the edges of the study area. This generally contains few habitat values, as most indigenous fauna species in the area are adapted to open grassland environments.	Around the buildings in the western and southern eastern sections of the study area, as well and scattered around the edges of the study area.	This planted vegetation does not provide any significant ecological values.

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3.2 Landscape context

The study area is within a highly disturbed agricultural landscape, surrounded by heavily cropped land and some residential developments.

3.3 Threatened species and ecological communities

Threatened species recorded or predicted to occur within 5 kilometres of the study area are listed in Appendix 1 (flora) and Appendix 2 (fauna). An assessment of the likelihood of these species occurring in the study area and an indication of where within the site (i.e. which habitats or features of relevance to the species) is included.

No threatened flora, fauna or ecological communities were recorded within the study area. Only one threatened fauna species received a medium likelihood of occurrence (White-throated Needletail *Hirundapus caudacutus*). This species may use the air space above the study area but is very unlikely to utilise the terrestrial habitat within the study area.

3.4 Other ecological values

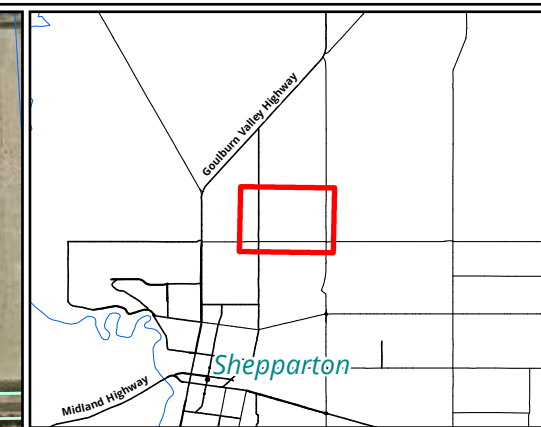
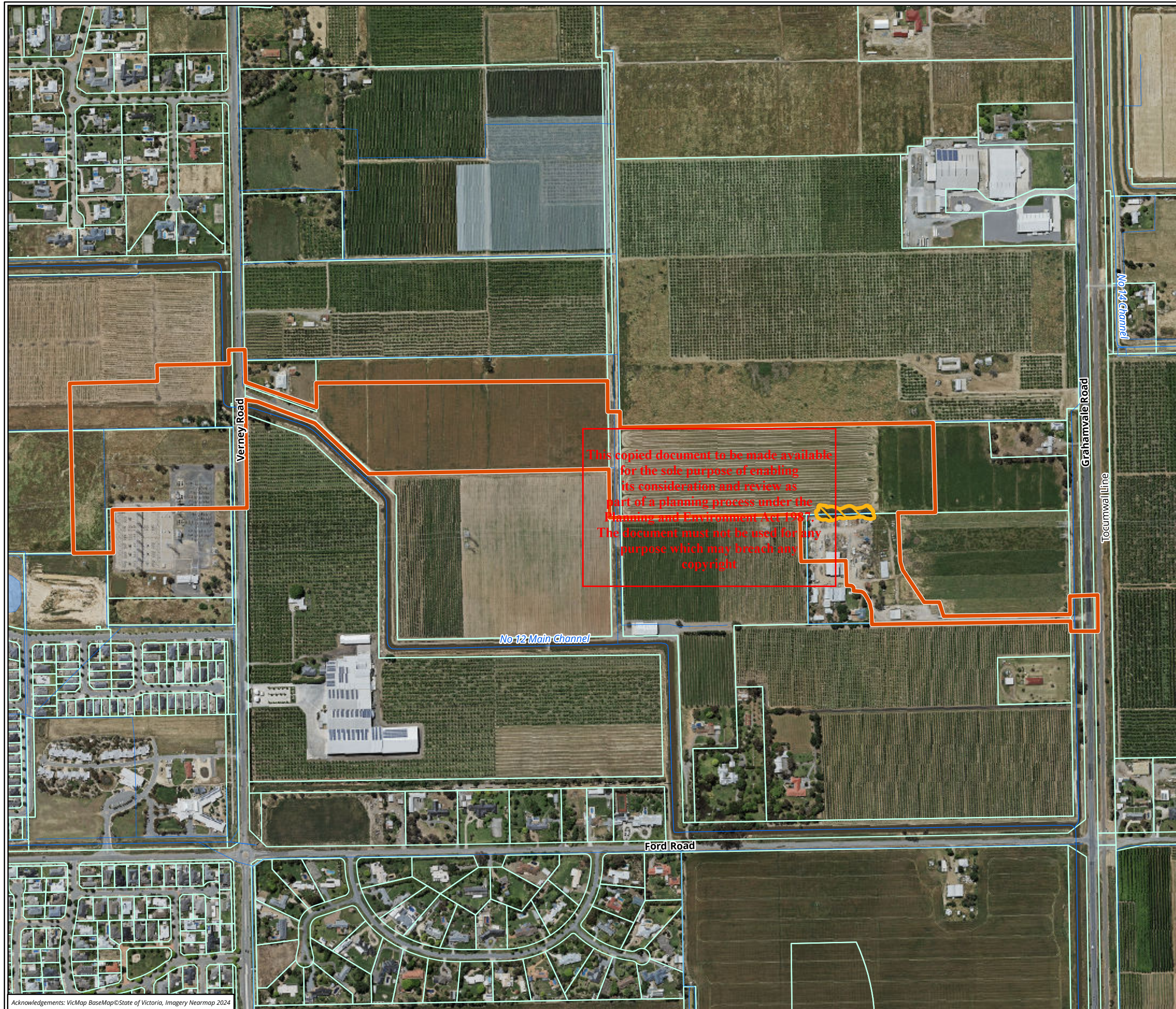
No other ecological values were observed in the study area.

3.5 Further survey recommendations

No further surveys are recommended.

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- Legend**
- Study area
 - Current parcel boundary
 - Planted vegetation

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Figure 2 Ecological features of the study area

0 40 80 120 160 200
Metres
Scale: 1:6,000 @ A3
Coordinate System: GDA2020 MGA Zone 55



Matter: 40597, ,
Date: 10 November 2025, ,
Prepared for: GZ, Prepared by: PG, Last edited by: owilliams
Layout: 40597_F2_Ecofeatures
Project: P:\40500s\40597\Mapping\40597_SheppartonBESS_FFA.aprx

4 Biodiversity legislation and government policy

This section provides an assessment of the project in relation to key biodiversity legislation and government policy. It does not describe the legislation and policy in detail. Where available, links to further information are provided.

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4.1 Commonwealth

4.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act.

Further information including a guide to the referral process is available at <http://www.environment.gov.au/epbc/index.html>

No EPBC Act listed threatened flora or fauna recorded within the study area. Only one threatened fauna species received a medium likelihood of occurrence (White-throated Needletail *Hirundapus caudacutus*). This species may use the air space above the study area but is very unlikely to utilise the terrestrial habitat within the study area. Native vegetation within the study area also does not qualify as an EPBC Act listed threatened community and an EPBC Act referral is therefore unlikely to be required.

4.2 State

4.2.1 *Flora and Fauna Guarantee Act 1988 (FFG Act)*

The FFG Act is a key piece of Victorian legislation on the conservation of threatened species and communities and on the management of potentially threatening processes. Under the Act a permit is required from DEECA to 'take' protected flora species. Permit exemptions under the Act generally apply to the non-commercial removal of protected flora from private land, unless there is 'critical habitat' that has been declared on the land. Authorisation under the Act is required to collect, kill, injure or disturb listed fish on private or public land.

Link for further information: <https://www.environment.vic.gov.au/conserving-threatened-species/victorias-framework-for-conserving-threatened-species>

The FFG Act defines public land as Crown land or land owned by, or vested in, a public authority, while private land is defined as any land other than public land. A public authority is defined in the FFG Act as a body established for a public purpose by or under any Act and includes:

- an administrative office
- a government department
- a municipal council
- a public entity
- a State-owned enterprise.

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Native vegetation on site is not a FFG act listed threatened community, does not contain protected flora species.

The study area is on private land, does not contain any declared 'critical habitat' for the purposes of the FFG Act and the flora species are not being taken for the purpose of commercial sale. A protected flora permit is therefore not required, however the presence of rare or threatened flora and habitat for threatened fauna will be considered by the Responsible Authority in determining its response to an application for native vegetation removal under Clause 52.17 (see below).

4.2.2 Catchment and Land Protection Act 1994 (CaLP Act)

The CaLP Act identifies and classifies certain species as noxious weeds or pest animals, and provides a system of controls on noxious species.

Declared noxious weeds identified in the study area are listed in Appendix 1 (Table 4).

The landowner must take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds, and prevent the spread of and as far as possible eradicate established pest animals. The State is responsible for eradicating State prohibited weeds from all land in Victoria.

Further information is at <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds>

4.2.3 Planning and Environment Act 1987 (incl. Planning Schemes)

The *Planning and Environment Act 1987* controls the planning and development of land in Victoria, and provides for the development of planning schemes for all municipalities.

Of particular relevance to the development proposal are controls relating to the removal, destruction or lopping of native vegetation contained within the City of Greater Shepparton Planning Scheme (the Scheme), including permit requirements. The Scheme (Clause 73.01) defines 'native vegetation' as 'Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'. It is an objective of Clause 12.01-2 of the State Planning Policy Framework (Native Vegetation Management) that removal of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

Clause 52.17 (Native Vegetation) requires a planning permit to remove, destroy or lop native vegetation including some dead native vegetation subject to exemptions. Decision guidelines that must be considered by the referral or responsible authority are contained in Section 7 of the Guidelines, and referred to in Clause 52.17-4. Where native vegetation does not meet the definition of a patch or scattered tree as described in Section 3.1 there is no offset requirement under the Guidelines. However, a permit is still required to remove, destroy or lop native vegetation that is not a patch or scattered tree under Clause 52.17 subject to exemptions. No native vegetation was recorded within the development area and a permit for native vegetation removal under Clause 52.17 will not be required.

The study area is not covered by any overlays relevant to biodiversity under the Scheme.

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Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines are incorporated into the Victoria Planning Provisions and all planning schemes in Victoria (DELWP 2017b).

The purpose of the Guidelines is to guide how impacts to biodiversity should be considered when assessing a permit application to remove, destroy or lop native vegetation. The objective for the guidelines in Victoria is 'No net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation'. Further details relating to the Guidelines is provided in Section 5 of this report.

4.2.4 *Environment Effects Act 1978*

The *Environment Effects Act 1978* establishes a process to assess the environmental impacts of a project. If applicable, the Act requires that an Environment Effects Statement (EES) be prepared by the proponent. The EES is submitted to the Minister for Planning and enables them to assess the potential environmental effects of the proposed development.

The general objective of the assessment process is to provide for the transparent, integrated and timely assessment of the environmental effects of projects capable of having a significant effect on the environment (DoTP 2023).

The *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (DTP 2023) provide a range of criteria that can be used to determine whether an EES may be required for a project. These criteria relate to individual potential environmental effects and a combination of (two or more) potential environmental effects.

Given the proposed works will not require the removal of native vegetation and that no threatened flora, fauna or ecological communities were recorded or are likely to occur within the study area, the project will not trigger any of the individual potential effects criteria or any combination of potential effects criteria. However, the guidelines are not binding, and the decision as to whether an EES is required is ultimately at the discretion of the Minister for Planning.

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5 Victoria's Guidelines for the removal, destruction or lopping of native vegetation

The Guidelines set out and describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation in order to achieve the objective of 'no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation' (DELWP 2017b).

This objective is to be achieved through Victoria's planning system using an assessment approach that relies on strategic planning and the permit and offset system. The key policy for achieving no net loss to biodiversity is the three-step approach of avoid, minimise and offset:

- **Avoid** the removal, destruction or lopping of native vegetation.
- **Minimise** impacts resulting from the removal, destruction or lopping of native vegetation that cannot be avoided.
- Provide an **offset** to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation.

Steps that have been taken during the design of the development to ensure that impacts on biodiversity from the removal of native vegetation have been minimised include:

- Native vegetation (as defined under the guidelines) will be avoided completely during the development because it is absent from the site.

This report's mapping encompasses the areas to be permanently disturbed for installation of BESS infrastructure and all ancillary areas which may be temporarily disturbed during construction of the project, including vehicle/machinery movement, temporary laydown areas and cable routes.

The Department of Energy, Environment and Climate Action provides biodiversity information tools to assist with determining the assessment pathway associated with the removal of native vegetation and the contribution that native vegetation within the study area makes to Victoria's biodiversity.

All planning permit applications to remove native vegetation are assigned to an assessment pathway determined by the extent and location of proposed native vegetation removal. The assessment pathway determines the information to be provided in a planning permit application and the decision guidelines the responsible authority (e.g. Council) and/or DEECA as a referral authority will use to assess the permit application.

The biodiversity information tools have two components:

Site-based information

The site-based information is observable at a particular site. Biosis has collected the requisite site-based information for the assessment against the Guidelines.

Landscape scale information

Landscape scale information requires consideration of information beyond the site. This information is managed by DEECA and can be accessed via the NVR Map.

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As there is no native vegetation (patches or scattered trees - as defined by the Guidelines) present on site, the development does not propose to remove, destroy or lop native vegetation. As a result, there is no requirement for a Guidelines assessment or for native vegetation offsets to be sought.

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6 Next steps

6.1 Recommendations

The primary measure to reduce impacts on biodiversity is to avoid and minimise the removal of native vegetation and fauna habitat (including both terrestrial and aquatic). Given there is no native vegetation (as defined under the Guidelines) on site the recommended mitigation measures include:

- Prepare a site-specific Construction Environmental Management Plan (CEMP).
- Where possible, protect retained planted vegetation during construction works. Removal of planted trees will not trigger any legislative or permit requirements (under the EPBC, FFG or Planning and Environment Acts), however they may provide some habitat and resources for local native fauna.
- Implement appropriate weed and pathogen controls during construction, as outlined in CEMP.

Construction and post-construction management

Specific detail relating to preventing impacts on the surrounding environment should be addressed in a site-specific Construction Environmental Management Plan. Actions to prevent impacts may include: Contractor environmental inductions, installation of temporary fencing/signage, drainage and sediment control.

Table 3 Suggested mitigation measures to be considered during the construction phase and included in the project CEMP

Actions		Timing	Responsibility
Construction Environmental management	CEMP to be prepared	Prior to construction	Avenis Energy and/or construction contractor
Stockpiles and laydown area	All material stockpiles, vehicle parking and machinery storage will be located within cleared areas.	Prior to and during construction	Avenis Energy and/or construction contractor
Soil erosion/ sedimentation	Dust suppression measures should be implemented during construction. Implementation of temporary stormwater controls during construction is necessary to ensure that discharges and drainage channels are consistent with existing conditions.	During construction	Avenis Energy and/or construction contractor
Weed control on site	Where possible all fill, soil or rocks transported off site should be weed and pathogen free. All vehicles operating onsite should be washed down prior to works commencing and when leaving site.	During construction	Avenis Energy and/or construction contractor

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Appendices

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Appendix 1 Flora

Abbreviations and symbols relevant to this Appendix.

Code	Meaning	Reference
National listings		
CR	Critically endangered	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)
EN	Endangered	
VU	Vulnerable	
PMST	Protected Matters Search Tool	
State listings		
cr	Critically endangered	Victorian <i>Flora and Fauna Guarantee Act 1988</i> (FFG Act)
e	Endangered	
v	Vulnerable	
t	Threatened	
Weed status (CaLP Act, DCCEEW Weeds of National Significance and DEECA Advisory List)		
RC	Regionally controlled species	Victorian <i>Catchment and Land Protection Act 1994</i> (CaLP Act)

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Appendix 1.1 Flora species recorded from the study area

Table 4 Flora species recorded from the study area

Status	Scientific Name	Common Name
Indigenous species		
	<i>Chloris truncata</i>	Windmill Grass
	<i>Rytidosperma caespitosum</i>	Common Wallaby-grass
Introduced species		
	<i>Arctotheca calendula</i>	Cape Weed
	<i>Avena sativa</i>	Oat
	<i>Bromus</i> spp.	Brome
	<i>Daucus carota</i>	Carrot
RC	<i>Echium plantagineum</i>	Paterson's Curse
	<i>Erodium botrys</i>	Big Heron's-bill
	<i>Erodium cicutarium</i>	Common Heron's-bill
	<i>Epilobium</i> spp.	Willow Herb
	<i>Hordeum</i> spp.	Barley Grass
	<i>Lactuca serriola</i>	Prickly Lettuce
	<i>Lepidium bonariense</i>	Argentine Cress
	<i>Lolium perenne</i>	Perennial Rye-grass
	<i>Malva parviflora</i>	Small-flower Mallow
	<i>Plantago lanceolata</i>	Ribwort
RC	<i>Rubus anglocandicans</i>	Blackberry
	<i>Rumex crispus</i>	Curled Dock
	<i>Taraxacum officinale</i> spp. agg.	Garden Dandelion
	<i>Trifolium repens</i> var. <i>repens</i>	White Clover
	<i>Xanthium occidentale</i>	Noogoora Burr

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Appendix 1.2 Listed flora species

The following table includes threatened flora species that have potential to occur within the study area, sourced from the VBA and PMST (accessed on 7 August 2024). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST predicts the species has potential to occur. Some flora habitat descriptions are reproduced from the Royal Botanic Gardens Victoria (Stajsic 2019) with permission.

Table 5 Threatened flora species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	VU			PMST	Swampy areas, mainly along the Murray River between Wodonga and Echuca with scattered records from southern Victoria.	Negligible	No suitable habitat and no local records.
<i>Brachyscome muelleroides</i>	Mueller Daisy	VU	e		PMST	Floodplains of the Murray River and its tributaries.	Negligible	No suitable habitat and no local records.
<i>Lepidium monoplocoides</i>	Winged Peppergrass	EN	e		PMST	A variety of grassland, wetland and floodplain communities on finely textured soils; sometimes in exposed, sparsely vegetated sites, on dry and eroded clay scolds.	Negligible	No suitable habitat and no local records.
<i>Myriophyllum porcatum</i>	Ridged Water-milfoil	VU	cr		PMST	Ephemeral wetlands, rock pools, farm dams and watercourse shallows.	Negligible	No suitable habitat and no local records.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Pimelea spinescens</i> subsp. <i>spinescens</i>	Spiny Rice-flower	CR	cr		PMST	Primarily grasslands featuring a moderate diversity of other native species and inter-tussock spaces, although also recorded in grassland dominated by introduced perennial grasses.	Low	Highly disturbed nature of this site means habitat is likely not suitable.
<i>Sclerolaena napiformis</i>	Turnip Copperburr	EN	cr		PMST	Native grassland and Box/Buloke woodlands, on clay-loam soil, that are infrequently grazed or cultivated.	Negligible	No suitable habitat and no local records.
<i>Senecio macrocarpus</i>	Large-headed Fireweed	VU	cr		PMST	Grassland, shrubland and woodland habitats on heavy soils subject to waterlogging and/or drought conditions in summer.	Negligible	No suitable habitat and no local records.
<i>Senecio psilocarpus</i>	Swamp Fireweed	VU			PMST	Seasonally inundated herb-rich swamps, growing on peaty soils or volcanic clays.	Negligible	No suitable habitat and no local records.
<i>Swainsona murrayana</i>	Slender Darling-pea	VU	e		PMST	Around lakes and on flats that are subject to seasonal inundation.	Negligible	No suitable habitat and no local records.
<i>Swainsona plagiotropis</i>	Red Swainson-pea	VU	e		PMST	Northern Plains Grassland communities on clay loam and clay soils, typically in areas that are seasonally inundated.	Negligible	No suitable habitat and no local records.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
State significance								
<i>Acacia flexifolia</i>	Bent-leaf Wattle		e	1960		Shallow soils in open-forest or Mallee scrub.	Negligible	No suitable habitat.
<i>Allocasuarina luehmannii</i>	Buloke		cr	2018		Non-calcareous soils in drier areas on slopes and plains; often in woodlands associated with Grey Box.	Negligible	No suitable habitat and was not observed during the site assessment.
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	Jericho Wire-grass		cr	2015		Found on light soils in plains woodland communities.	Negligible	No suitable habitat.
<i>Brachyscome chrysoglossa</i>	Yellow-tongue Daisy		e	2002		Clay soils that are typically subject to inundation.	Negligible	No suitable habitat.
<i>Cardamine moirensis</i>	Riverina Bitter-cress		e	1985		Low-lying, seasonally wet areas near streams and swamps.	Negligible	No suitable habitat.
<i>Corymbia maculata</i>	Spotted Gum		v	2020		In Victoria, naturally confined to a small population near Mt Tara in the east of the state.	Negligible	Outside species expected range and was no observed during the site assessment.
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Giant Honey-myrtle		e	2006		Near coastal heath/scrub, rocky coast and foothill outcrops.	Negligible	Commonly cultivated species. Study area is outside the species natural range so required may attributed to planted specimen.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Rumex crystallinus</i> s.s.	Glistening Dock		e	1979		Rare in Victoria, occurring only in the far north-west of the state on the Murray River floodplain, recorded only from the margins and drying beds of Lakes Wallawalla, Hattah and Lalbert.	Negligible	Outside species known range and no suitable habitat.
<i>Senecio campylocarpus</i>	Floodplain Fireweed		e	2008		Clay loam soils in forests and woodlands, typically in areas that are seasonally inundated.	Negligible	No suitable habitat.
<i>Senecio longicollaris</i>	Riverina Fireweed		e	2008		Central Victoria from Porepunkah west to Barmah Forest. Grows on floodplains and by water in forest, woodland, and shrubland.	Negligible	No suitable habitat.

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Appendix 1.3 Threatened ecological communities

The following table includes threatened ecological communities that have potential to occur within the project area, compiled with reference to characteristics of FFG Act threatened communities (DEECA 2023) and predictive output from the PMST (accessed on 7 August 2024).

Table 6 Threatened ecological communities predicted to occur within 5 km of the project area.

Community Name	Conservation status	Source	Description
National significance			
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	PMST	Not present - key species Buloke was not present.
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	PMST	Not present - key species Grey Box was not present.
Natural Grasslands of the Murray Valley Plains	Critically Endangered	PMST	Not present - no native grassland existed on site.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	PMST	Not present - No wetland communities recorded on site and no modelled wetland.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	PMST	Not present - No grassy woodland or grassland communities recorded on site.
State significance			
Grey Box - Buloke Grassy Woodland Community	Threatened		Not present - No grassy woodland communities recorded on site.
Northern Plains Grassland Community	Threatened		Not present - No grassland communities recorded on site.

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Appendix 2 Fauna

Abbreviations and symbols relevant to this Appendix:

Code	Meaning	Reference
National listings		
CR	Critically endangered	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)
EN	Endangered	
VU	Vulnerable	
CD	Conservation dependent	
PMST	Protected Matters Search Tool	
State listings		
cr	Critically endangered	Victorian <i>Flora and Fauna Guarantee Act 1988</i> (FFG Act)
e	Endangered	
v	Vulnerable	
t	Threatened	

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Appendix 2.1 Listed fauna species

The following table includes a list of threatened fauna species that have potential to occur within the study area, sourced from the VBA and PMST (accessed on 7 August 2024). Where years are specified for the most recent database records, these refer to records from the VBA unless otherwise specified. Where no year is specified, the PMST predicts the species has potential to occur.

Table 7 Threatened fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
National significance								
<i>Pedionomus torquatus</i>	Plains-wanderer	CR	cr		PMST	Native grassland with a sparse, open structure.	Negligible	No suitable habitat within the study area. Groundcover is cropped and dominated by exotic species.
<i>Gallinago hardwickii</i>	Latham's Snipe	VU		2021	PMST	A migrant to Australia from July to April occurring in a wide variety of permanent and ephemeral wetlands. Prefers open freshwater wetlands with nearby cover, but also recorded on the edges of creeks and rivers, river-pools and floodplains.	Low	No permanent or ephemeral wetlands within the study area. A series of man made canals intersect and border the study area, however these contain no suitable habitat.
<i>Rostratula australis</i>	Australian Painted-snipe	EN	cr		PMST	Shallows of well-vegetated freshwater wetlands.	Negligible	No suitable habitat within the study area in the form of well-vegetation wetlands.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN	cr	2009	PMST	Shallow freshwater and brackish wetlands with abundant emergent aquatic vegetation.	Negligible	No suitable habitat within the study area in the form of wetlands with abundant aquatic vegetation.
<i>Falco hypoleucos</i>	Grey Falcon	VU	v		PMST	Lightly timbered plains and Acacia scrub.	Low	No suitable habitat within the study area in the form of timbered plains and tree-lined watercourses. No records within the locality.
<i>Collocephalon fimbriatum</i>	Gang-gang Cockatoo	EN	e		PMST	S Vic to E NSW. Forests and woodlands from coast to alpine areas. Autumn-winter dispersal from highlands to lower elevations. Forages in eucalypts, acacias and some exotic garden trees and shrubs.	Negligible	No suitable habitat within the study area, with the study area largely cleared of trees.
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	EN	cr		PMST	Mallee, mulga, treed farmland, cereal crops and Callitris woodland.	Negligible	No suitable habitat within the study area, with the study area largely cleared of trees.
<i>Polytelis swainsonii</i>	Superb Parrot	VU	e		PMST	Red-gum and box-dominated forests and woodlands.	Negligible	No suitable habitat within the study area, with the study area largely cleared of trees.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Neophema chrysostoma</i>	Blue-winged Parrot	VU		2011	PMST	A range of coastal, sub-coastal and semi-arid regions throughout south-eastern Australia. Feeds on seeds of a range of native grasses and herbs.	Low	Suitable habitat is marginal, and contains low quality foraging habitat only. Minimal scattered records within the locality. Species unlikely to make permanent use of the study area.
<i>Lathamus discolor</i>	Swift Parrot	CR	cr	2011	PMST	A range of forests and woodlands, especially those supporting nectar-producing tree species. Also well-treed urban areas.	Negligible	No suitable habitat within the study area, with the study area largely cleared of trees.
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU	v	2017	PMST	An almost exclusively aerial species within Australia, occurring over most types of habitat, particularly wooded areas.	Medium	Potential for species to forage aerially over the study area. No roosting habitat present within the study area.
<i>Tringa nebularia</i>	Common Greenshank	EN	e		PMST	A variety of ephemeral and permanent inland wetlands and sheltered coastal wetlands.	Negligible	No suitable habitat in the form of wetlands within the study area.
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	cr		PMST	Large intertidal sandflats, banks, mudflats, estuaries, inlets, sewage farms, saltworks, harbours, coastal lagoons and bays.	Negligible	No suitable within the study area.

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		EPBC	FFG					
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU		2021	PMST	Prefers muddy edges of shallow fresh or brackish wetlands with inundated or emergent low vegetation. Occasionally use flooded paddocks and other ephemeral wetlands.	Negligible	No suitable habitat in the form of wetlands within the study area.
<i>Melanodryas cucullata</i>	Hooded Robin	EN	v	2018	PMST	Woodlands of eucalypt, Mallee, semi-cleared farmland.	Negligible	No suitable woodland habitat within the study area.
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU			PMST	Occurs in a wide range of open woodlands and shrublands, favouring sparsely treed areas with an herbaceous understorey containing grasses and/or shrubs.	Low	No suitable woodland or shrubland habitat within the study area, with groundcover dominated by exotic pasture species.
<i>Grantiella picta</i>	Painted Honeyeater	VU	y	2018	PMST	Dry open woodlands and forests. Typically forages for fruit and nectar in mistletoes and in tree canopies.	Negligible	No suitable woodland habitat and no mistletoe recorded within the study area.
<i>Anthochaera phrygia</i>	Regent Honeyeater	CR	cr		PMST	A range of dry woodlands and forests dominated by nectar-producing tree species.	Negligible	No suitable woodland habitat within the study area.
<i>Stagonopleura guttata</i>	Diamond Firetail	VU	v	2018	PMST	Open forests and woodlands with a grassy ground layer.	Negligible	No suitable woodland habitat within the study area.
<i>Climacteris picumnus</i>	Brown Treecreeper	VU		2019	PMST	Open eucalypt forests, woodlands and Mallee, often where there are stands of dead trees.	Negligible	No suitable woodland habitat within the study area.

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		EPBC	FFG					
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	v	2010	PMST	Rainforest, wet and dry sclerophyll forest, woodland and urban areas.	Negligible	No known flying-fox camps within 50km of the study area. No suitable foraging trees within the study area.
<i>Aprasia parapulchella</i>	Pink-tailed Worm-Lizard	VU	e		PMST	Woodland and grassland with partially buried rocks.	Negligible	No suitable habitat in the form of partially buried rocks within the study area. No records of this species within the locality.
<i>Delma impar</i>	Striped Legless Lizard	VU	e		PMST	Natural temperate grassland, grassy woodland and exotic grassland.	Negligible	No suitable habitat in the form of tussock forming native or exotic grasses. Groundcover is cropped and dominated by exotic, pasture species.

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Scientific name	Common name	Conservation status		Most recent database record	Other records	Habitat description	Likely occurrence in study area	Rationale for likelihood ranking
		EPBC	FFG					
<i>Crinia sloanei</i>	Sloane's Froglet	EN	e	1996	PMST	Adults are most common in woodlands, floodplains, grasslands, and open and disturbed areas.	Low	Low quality floodplain habitat within the study area. Drainage line intersecting the study area was dry during the field survey, and whilst the study area may flood on occasion, the groundcover is highly degraded and unlikely to support a permanent population of this species. No recent records within the locality.
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<i>Litoria raniformis</i>	Growling Grass Frog	VU	v	1982	PMST	Still or slow-flowing waterbodies and surrounding terrestrial vegetation.	Low	No suitable waterbodies within the study area.
<i>Galaxias rostratus</i>	Flat-headed Galaxias	CR	v	1979	PMST	Still or slow-moving waters of rivers, billabongs, lakes and swamps.	Negligible	No rivers within the study area.
<i>Maccullochella macquariensis</i>	Trout Cod	EN	e		PMST	Streams characterised by a high abundance of large woody debris.	Negligible	No streams within the study area.
<i>Maccullochella peelii</i>	Murray Cod	VU	e	2008	PMST	A diverse range of stream habitats in the Murray-Darling basin; principally the main channels of rivers and their major tributaries.	Negligible	No major rivers within the study area.
<i>Macquaria australasica</i>	Macquarie Perch	EN	e	1970	PMST	Streams with clear water and deep, rocky holes with abundant cover.	Negligible	No streams within the study area.

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		EPBC	FFG					
<i>Bidyanus bidyanus</i>	Silver Perch	CR	e	2005	PMST	Lowland streams within the Murray-Darling Basin.	Negligible	No streams within the study area.
<i>Synemon plana</i>	Golden Sun Moth	VU	v		PMST	Natural temperate grassland, grassy woodland and pasture supporting spear grasses and wallaby grasses and exotic grassland dominated by Chilean needle grass.	Low	No suitable habitat in the form of natural temperate grassland or pasture with spear grasses and wallaby grasses. No records within the locality.
State significance								
<i>Lewinia pectoralis</i>	Lewin's Rail		y	2009		Swamps, dense riparian vegetation and saltmarsh.	Negligible	No suitable riparian vegetation within the study area.
<i>Burhinus grallarius</i>	Bush Stone-curlew		cr	2018		Open woodland, treed farmland	Low	No suitable habitat in the form of woodland, or fallen timber for shelter within the study area.
<i>Egretta garzetta</i>	Little Egret		e	2017		Swamps, billabongs, floodplain pools, mudflats, mangroves and channels; breeds in trees standing in water.	Low	No suitable habitat within the study area. Channels intersecting the study area are highly degraded and are unlikely to support a permanent population of this species.
<i>Ardea intermedia plumifera</i>	Plumed Egret		cr	2021		Densely-vegetated freshwater wetlands including lakes, swamps and billabongs. Breeds in trees standing in water.	Negligible	No suitable wetland habitat within the study area.

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		EPBC	FFG					
<i>Ardea alba modesta</i>	Eastern Great Egret		v	2019		Flooded crops, pasture, swamps, lagoons, saltmarsh, sewage ponds, estuaries, dams, roadside ditches. Breeds in trees standing in water.	Low	Low quality habitat within the study area. Whilst the study area may flood on occasion, higher quality habitat is present within the locality to support this species.
<i>Anseranas semipalmata</i>	Magpie Goose		v	1990		Swamps, lakes, sewage ponds, flooded pasture, dams.	Low	Low quality habitat within the study area. Whilst the study area may flood on occasion, higher quality habitat is present within the locality to support this species.
<i>Spatula rhynchotis</i>	Australasian Shoveler		y	2019		Variety of wetlands, with a preference for large, permanent, freshwater lakes/swamps with dense fringing vegetation.	Negligible	No suitable habitat in the form of large permanent lakes or swamps within the study area.
<i>Stictonetta naevosa</i>	Freckled Duck		e	2009		Large freshwater wetlands, generally with dense vegetation.	Negligible	No suitable habitat in the form of wetlands with dense vegetation in the study area.
<i>Aythya australis</i>	Hardhead		v	2018		Deep freshwater swamps and wetlands, with abundant aquatic and terrestrial vegetation for roosting. Can occur in sheltered estuaries.	Negligible	No suitable habitat in the form of swamps or wetlands in the study area.
<i>Oxyura australis</i>	Blue-billed Duck		v	2009		Open or densely vegetated wetlands.	Negligible	No suitable habitat in the form of wetlands within the study area.

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		EPBC	FFG					
<i>Biziura lobata</i>	Musk Duck		v	2011		Deep, permanent freshwater wetlands with areas of open water and patches of dense aquatic vegetation.	Negligible	No suitable habitat in the form of wetlands and patches of dense aquatic vegetation within the study area.
<i>Hieraetus morphnoides</i>	Little Eagle		v	2011		Woodland and open areas. Rabbits are a key component of their diet. Nesting occurs in mature trees in open woodland or riparian vegetation.	Low	Marginal foraging habitat. There are no trees for breeding or perching within the study area, and species is unlikely to consistently utilise the study area.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		e	2019		Coastal areas such as beaches and estuaries, inland wetlands and major inland streams.	Low	Marginal foraging habitat. There are no trees for breeding or perching within the study area, and species is unlikely to consistently utilise the study area.
<i>Lophoictinia isura</i>	Square-tailed Kite		v	2018		Eucalypt woodlands, open forest and partially cleared farmland.	Low	Habitat within the study area is degraded and trees are largely absent. Marginal foraging habitat.
<i>Falco subniger</i>	Black Falcon		cr	2011		Woodlands, open country and around terrestrial wetlands areas, including rivers and creeks. Primarily occurs in arid and semi-arid zones in the north, north-west and west of Victoria.	Low	Marginal foraging habitat. There are no trees for breeding or perching within the study area, and species is unlikely to consistently utilise the study area.

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		EPBC	FFG					
<i>Ninox strenua</i>	Powerful Owl		v	1992		Eucalypt forests and woodlands, well-treed urban areas.	Low	No suitable breeding habitat, and foraging habitat is highly degraded and disturbed. There have been no recent records within the locality.
<i>Neophema pulchella</i>	Turquoise Parrot		v	2018		Woodlands and associated grasslands.	Low	No suitable habitat in the form of grassy woodland near permanent water. Groundcover is highly disturbed and dominated by exotic species, and is unlikely to be utilised by this species.
<i>Tringa glareola</i>	Wood Sandpiper		e	2009		Well-vegetated shallow freshwater wetlands with emergent aquatic plants and dense fringing vegetation.	Negligible	No suitable habitat in the form of wetlands within the study area.
<i>Actitis hypoleucos</i>	Common Sandpiper		v		PMST	Migrates to Australia from Eurasia in August where it inhabits a wide variety of coastal and inland wetlands with muddy margins before departing north in March.	Negligible	No suitable habitat in the form of wetlands within the study area.
<i>Tringa stagnatilis</i>	Marsh Sandpiper		e	1995		Permanent or ephemeral wetlands, mudflats and saltmarshes in coastal and inland environments.	Negligible	No suitable habitat in the form of wetlands within the study area.
<i>Pomatostomus temporalis</i>	Grey-crowned Babbler		v	2018		Open forests and woodlands.	Low	No suitable woodland habitat within the study area.

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		EPBC	FFG					
<i>Petaurus norfolcensis</i>	Squirrel Glider		v	2018		Drier woodlands, riverine woodland and coastal forest.	Negligible	No suitable woodland habitat within the study area.
<i>Ornithorhynchus anatinus</i>	Platypus		v	1994		A variety of freshwater waterbodies, particularly those with stable banks suitable for burrows, and shallow waters for foraging.	Negligible	No suitable waterbodies within the study area.
<i>Varanus varius</i>	Lace Monitor		e	2016		A variety of wooded habitats, including woodlands; shelters in hollow trunks, limbs and logs.	Low	No suitable woodland habitat or trees within the study area.
<i>Chelodina expansa</i>	Broad-shelled Turtle		e	2008		Typically found in turbid water at the bottom of rivers and permanent streams and waterholes, lying concealed among debris or among root-mats.	Negligible	No suitable waterbodies within the study area.
<i>Emydura macquarii</i>	Murray River Turtle		cr	2009		A medium sized freshwater turtle that inhabits inland river systems including the Murray-Darling catchment.	Negligible	No suitable waterbodies within the study area.
<i>Pseudophryne bibronii</i>	Brown Toadlet		e	2009		A wide variety of woodland, forest and grassland habitats, where it shelters under leaf litter and other debris in moist soaks and depressions. Breeds in swamps and inundated habitats, and along creek lines.	Negligible	No suitable woodland or watercourse habitat within the study area. Groundcover is highly disturbed, with cropping evident, and as such study area is unlikely to support this species.
<i>Melanotaenia fluviatilis</i>	Murray-Darling Rainbowfish		e	2011		Rivers and streams of the Murray-Darling basin.	Negligible	No suitable waterbodies within the study area.

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Appendix 2.2 Migratory species (EPBC Act listed)

Table 8 Migratory fauna species recorded or predicted to occur within 5 km of the study area

Scientific name	Common name	Most recent record
Migratory species		
<i>Hirundapus caudacutus</i>	White-throated Needletail	20017
<i>Gallinago hardwickii</i>	Latham's Snipe	2021
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	2021
<i>Tringa nebularia</i>	Common Greenshank	PMST
<i>Calidris ferruginea</i>	Curlew Sandpiper	PMST
<i>Actitis hypoleucos</i>	Common Sandpiper	PMST
<i>Motacilla flava</i>	Yellow Wagtail	PMST
<i>Apus pacificus</i>	Fork-tailed Swift	PMST
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	PMST
<i>Calidris melanotos</i>	Pectoral Sandpiper	PMST

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Appendix 3 Photos of the study area



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Photo 1 Example of predominantly introduced vegetation, 15 August 2024.



Photo 2 Example of predominantly introduced vegetation and man-made drains, 15 August 2024.

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Photo 3 **Introcuded planted vegetation within the study area, 15 August 2024.**



Photo 4 **Man-made drainage structure within the study area, 15 August 202**

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