



Hume Food Organics and Garden Organics Facility

Biodiversity Assessment Report

Transport Canberra and City Services

15 May 2023

Project name		Materials Recovery Facility Hume ACT					
Document title		Hume Food Organics and Garden Organics Facility Biodiversity Assessment Report					
Project number		12540460					
File name		12540460-REP_FOGO_Biodiversity_Assessment_Report.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	Rhys Cairncross	Andrew Smith	*on file*	A Montgomery	*on file*	15 May 2023

GHD Pty Ltd

15/133, Castlereagh St

Sydney, NSW, 2000, Australia

T (02) 9239 7100 | **F** (02) 9239 7100 | **ghd.com**

© GHD 2023

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Contents

Abbreviations	iii
1. Introduction	1
1.1 Purpose of this report	1
1.2 Background	1
1.2.1 Approval and assessment requirements	2
1.3 Scope and limitations	2
1.4 Assumptions	2
1.5 Project description	2
1.5.1 Location	2
1.5.2 Facility design	2
2. Statutory framework	5
2.1 ACT Government legislative requirements	5
2.1.1 Planning and Development Act 2007	5
2.1.2 Nature Conservation Act 2014	5
2.2 Commonwealth legislative requirements	5
2.2.1 Environment Protection and Biodiversity Conservation Act 1999	5
3. Methodology	7
3.1 Desktop review	7
3.2 Field survey	7
3.2.1 Survey effort	7
3.2.2 Weather conditions	8
3.2.3 Flora	8
3.2.4 Fauna	8
3.2.5 Survey limitations	9
4. Existing environment	10
4.1 General description	10
4.1.1 Bioregion	10
4.1.2 Terrain, geology and hydrology	10
4.1.3 Soils	10
4.1.4 Climate	10
4.1.5 Surrounding land use and vegetation	11
4.2 Desktop review and field survey results	11
4.2.1 Desktop review	11
4.2.2 Field survey	11
5. Impact assessment	16
5.1 Direct impacts	16
5.1.1 Vegetation removal	16
5.1.2 Tree removal	16
5.1.3 Fauna habitat and fragmentation	16
5.1.4 Threatened species impacts	16
5.1.5 Disturbance, injury and mortality of fauna	17
5.2 Indirect impacts	17
5.2.1 Runoff, sedimentation and contamination	17
5.2.2 Invasion and spread of weeds, pathogens and diseases	17

5.2.3	Edge effects	18
5.3	Cumulative impacts	18
5.4	Significance of impacts	18
6.	Safeguards and mitigation measures	19
6.1	Avoidance and mitigation	19
6.2	Mitigating impacts	19
7.	Conclusion	21
8.	References	22

Figures

Figure 1.1	Proposal location	4
Figure 4.2	Vegetation and habitat feature mapping of the site	13
Figure 4.3	Rocky habitat from the site	14
Figure 4.4	Typical grassland habitat occurring in the site	15

Tables

Table 3.1	Survey effort for 2022 biodiversity survey	7
Table 3.2	Weather conditions during biodiversity survey	8
Table 4.3	Properties of the Murrumbateman subregion (NPWS, 2003)	10
Table 4.4	Weeds of significance in the ACT and Australia found during surveys	12
Table 6.5	Mitigation measures to be implemented for the proposal	19

Appendices

Appendix A	Recorded species
Appendix B	Likelihood of occurrence and impact

Abbreviations

Abbreviation	Meaning
ACT	Australian Capital Territory
BAR	Biodiversity Assessment Report
CEMP	Construction Environmental Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EIS	Environmental Impact Statement
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FFMP	Flora and Fauna Management Plan
FOGO	Food organics and garden organic
GHD	GHD Pty Ltd
HRRE	Hume Recovery Facility
MNES	Matters of Environmental Significance
NC Act	ACT Nature Conservation Act 2014
P&D Act	Planning and Development Act 2007
RRP	Rehabilitation and Revegetation Plan
TEC	Threatened Ecological Communities
WoNS	Weeds of National Significance

1. Introduction

1.1 Purpose of this report

GHD Pty Ltd (GHD) has been engaged by the Australian Capital Territory (ACT) Government to provide a Biodiversity Assessment Report (BAR) for the proposed development of a food organics and garden organics (FOGO) waste facility in the Hume Resource Recovery Estate (HRRE) (the proposal). The report aims to inform the Environmental Impact Statement (EIS) for the proposal.

The primary objectives of the BAR are to:

- Identify potential ecological impacts as a result of the proposed construction, including direct and indirect impacts on species, populations and ecological communities and their habitats listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and ACT *Nature Conservation Act 2014* (NC Act).
- Identify the potential for any matters of National Environmental Significance (MNES) listed under the EPBC Act to be impacted.
- Identify the potential impacts of the proposal on threatened biota and their habitats and advise of potential development design and specific mitigation/management actions to avoid or minimise impacts on biodiversity values.
- Determine the potential presence of threatened flora and fauna within the proposal site.
- Assess the significance of impacts on threatened biota and MNES and identify the likely requirement or otherwise for further approvals under the EPBC Act and/or NC Act.
- Recommend safeguards and environmental management measures to avoid, minimise or offset potential impacts on threatened biota and biodiversity values.

1.2 Background

The ACT Government is working to reduce waste to landfill and increase resource recovery. The strategic direction for the management of waste in the Territory is set out in the 'ACT Waste Management Strategy 2011-25' (ACT Government, 2011). The strategy commits the ACT Government to minimise organic waste going to landfill and recovering organic waste resources. It also sets a target of increasing the rate of resource recovery to over 90 percent by 2025, with no recoverable waste sent to landfill.

The Federal Government also has a target of halving the amount of organic waste sent to landfill for disposal by 2030, as set out in the 'National Waste Policy Action Plan' (DEE, 2019).

A waste feasibility study was established in mid-2015 to identify a pathway towards achieving the ACT's waste management targets and examine options to drive better resource recovery. In 2018, the ACT Government released the final recommendations from the study as the 'Waste Feasibility Study: Roadmap and Recommendations Discussion Paper' (ACT NoWaste, 2018). Key recommendations from this were to identify a proposal site and establish an organics processing facility to process food organics and garden organics (FOGO) and the implementation of a kerbside FOGO collection.

The 'ACT Climate Change Strategy 2019 to 2025' (ACT Government, 2019) also identifies FOGO collection for all households and the investigation of organic waste processing as key priorities. An opt-in FOGO collection pilot is currently underway in the ACT (Belconnen), which has so far diverted more than 480 tonnes of material from landfill (ACT Government, 2022).

There is currently no processing facility within the ACT that can accept and process FOGO material. ACT NoWaste is therefore proposing to develop a new FOGO facility (the 'proposal') in Hume to strengthen the Territory's circular economy and help meet Territory and Federal Government landfill diversion and resource recovery targets.

The proposal is defined as the construction and operation of a new FOGO facility with the capacity to receive up to 70,000 tonnes per year of FOGO for in-vessel composting.

1.2.1 Approval and assessment requirements

This report has been prepared by GHD as part of the EIS for the proposal. The EIS supports the application for approval of the proposal and to address the requirements provided by the ACT Department of Environment, Planning and Sustainable Development Directorate dated 7 June 2022.

The proposal is subject to approval by the planning and land authority within the Environment, Planning and Sustainability Development Directorate.

1.3 Scope and limitations

This BAR has been prepared by GHD for Transport Canberra and City Services and may only be used and relied on by Transport Canberra and City Services for the purpose agreed between GHD and Transport Canberra and City Services as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Transport Canberra and City Services arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Assumptions

The services undertaken by GHD in connection with preparing this BAR:

- Were limited to those detailed specifically in Section 1.1 of this report.
- Are based on the footprint presented in this report.
- Are based on the survey method presented in Section 3 of this report..

1.5 Project description

1.5.1 Location

The proposal is situated on Block 5, Section 26 Hume within the HRRE, off John Corey Road on Territory Land in the ACT. The proposal site is surrounded by industrial facilities. ACT Skip Hire is on the adjacent block to the south. Further south, across John Cory Road is Soft Landing Mattress Recycling. South and east across Monaro Highway is the Hume Industrial Estate. Hume Materials Recovery Facility is west of the proposal site across Recycling Road. The Mugga Lane Landfill is located approximately 200 m north-west of the proposal site.

Figure 1.1 shows the site proposed for the FOGO facility, including a preliminary site boundary configuration to accommodate these operations (subject to detailed design and final vendor process selection). In total, this area comprises approximately 4.3 hectares (ha) of land.

1.5.2 Facility design

The facility is based on the concept design current as of May 2022. This design includes the construction of:

- Administration building.
- Waste receival hall.
- Primary composting tunnels.
- Biofilter and ancillary infrastructure.

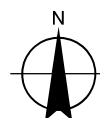
- Machinery shed/workshop.
- Maturation and refining building.
- Product storage (semi enclosed).
- Auxiliary developments and access roads.

The maximum height of all buildings will be up to 12 metres (m). The waste receival and decontamination/pre-sorting area (waste receival hall) will be 12 m high and the maturation building will have a minimum height of 9 m. In total, up to 2.3 ha of land is required to construct the facility.



- Legend**
- Proposal site
 - Cadastre
 - Watercourses

Paper Size ISO A4
 0 25 50
 Metres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



Transport Canberra and City Services
 Hume Food Organics and Garden Organics Facility
 Biodiversity Assessment Report

Project No. 12540460
 Revision No. 0
 Date 16/08/2023

Proposal location

FIGURE 1.1

2. Statutory framework

2.1 ACT Government legislative requirements

2.1.1 Planning and Development Act 2007

The ACT *Planning and Development Act 2007* (P&D Act) is the key legislation informing planning and development on Territory land in the ACT.

The P&D Act sets out requirements that include the provision of offsets and an offsets policy to compensate for impacts that have significant adverse impacts on protected matters. It also provides the formal process for development approvals, the management of public land, complaints and enforcement.

The proposal site is zoned as General Industry according to the Territory Plan, and the proposal is considered appropriate in this zoning subject to approval. Due to the nature of the proposal as a waste management facility, in accordance with Section 123 and Schedule 4 of the P&D Act, the impact track applies, and an EIS is required to accompany the development application.

2.1.2 Nature Conservation Act 2014

This report has been prepared to identify the potential habitats and NC Act listed species and ecological communities that could potentially occur in the proposal site and to inform the environmental assessment and approvals processes.

For addressing the ecological significance of proposed developments in the ACT, proponents must assess the likely impact of the proposed development on threatened species and ecological communities listed under the NC Act.

The NC Act establishes a formal process for the identification and protection of threatened species and ecological communities in the ACT region. The Act requires the Conservator of Flora and Fauna to prepare an action plan in response to each declaration of a threatened species, ecological community or threatening process.

An action plan outlines conservation and protection proposals for the species or ecological community concerned, and proposals to minimise the effect of a threatening process. The primary objective is to maintain long term, viable wild populations of each species and viable ecological communities, as components of the indigenous biological resources of the ACT.

Any planning proposal that has implications for any identified threatened species or ecological community must consider the objectives of the action plan. Any supporting environmental statements or planning studies should consider the action plan and ensure the project does not compromise the long-term viability of any such species or ecological community.

If it is assessed that a project may have a significant impact on a threatened species or ecological community, the project must be referred to the Conservator of Flora and Fauna.

2.2 Commonwealth legislative requirements

2.2.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's central environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (MNES).

The EPBC Act requires approval from the Commonwealth Minister for the Environment for actions likely to have a significant impact on listed MNES. There are nine MNES protected by the EPBC Act and, in addition, the EPBC Act also regulates actions on or impacting on Commonwealth land, or actions by Commonwealth agencies.

Parts 7, 8 and 9 of the EPBC Act considers and assesses the potential impacts of individual actions on MNES. Part 10 of the EPBC Act provides for assessment of the impacts of actions over a larger area, such as a landscape scale, or longer timeframe.

Consideration of potential impacts upon listed threatened species and communities MNES has been undertaken as part of the BAR.

3. Methodology

3.1 Desktop review

A search of relevant databases was undertaken on 12 May 2023 to determine potential biodiversity constraints within a 10-kilometre (km) radius (defined as 'the locality') of the proposal. The following databases and resources were consulted:

- Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) for MNES listed under the EPBC Act located within the locality (DCCEEW, 2023).
- ACTMapi to identify significant plants, animals and registered trees (ACT Government, 2023a)
- Vegetation mapping to identify native vegetation types and the potential presence of threatened ecological communities listed under the NC Act and/or the EPBC Act (ACT Government, 2018).
- ACT Environment and Planning Directorate 'Threatened Species List' (ACT Government, 2023b)
- ACT Environment and Planning Directorate (ACT Government, 2023a) mapping of:
 - Threatened ecological communities,
 - Wildlife records,
 - Threatened flora records,
 - Rare plant records,
 - Tree survey data,
 - Vegetation mapping.
- NSW BioNet Atlas – threatened species records that overlap into the ACT (DPE, 2023).

Database searches assist in overcoming some of the limitations associated with a short survey period, survey timing and the types of survey methods employed.

3.2 Field survey

Terrestrial flora and fauna surveys were undertaken by two ecologists on 5 May 2022. A threatened ecological community (Yellow Box/Blakely's Red Gum Grassy Woodland) was identified in the desktop review as potentially occurring in the proposal site. As a result, the primary objectives of the field surveys were to:

- Ground-truth previously recorded vegetation mapping.
- Ground-truth threatened vegetation community mapping previously recorded in the proposal site.
- Assess vegetation quality.
- Carry out opportunistic surveying for threatened flora and fauna.
- Describe the potential impacts on threatened flora and fauna species, populations and ecological communities in the proposal site, and their habitats that could arise from the proposal during construction and operation.

3.2.1 Survey effort

The survey effort included the following methods described in Table 3.1. No targeted species surveys were conducted due to the lack of records in the proposal site for threatened species.

Table 3.1 Survey effort for 2022 biodiversity survey

Biota group	Preferable survey timing of technique	Survey effort during the 5 May 2022
Vegetation condition assessment – random meander transect (Cropper, 1993) All flora	All Year	A random meander transect survey was conducted throughout the proposal site to identify vegetation types and condition. An incidental flora species list was recorded.

Biota group	Preferable survey timing of technique	Survey effort during the 5 May 2022
Fauna habitat assessment All fauna	All year	Potential fauna habitat identified within proposal site.
Opportunistic fauna observations All fauna	All year	Opportunistic fauna observations for all fauna species encountered during flora surveys and habitat assessment.
Yellow Box/Blakely's Red Gum Grassy Woodland Vegetation community	All year	As a part of the random meander transect, the proposal site was assessed for any areas that may contain this community. The extent of the community observed in the proposal site and the surrounding area was mapped.

3.2.2 Weather conditions

Weather observations during field surveys were taken from the Tuggeranong weather station (Station no. 70339) approximately 10 km to the southwest (BoM, 2022). The conditions are described in Table 3.2.

Table 3.2 Weather conditions during biodiversity survey

Survey date	Rainfall past 24 hours (mm)	Temperature (°C)	Weather observations	Wind gusts
5 May 2022	0.0	8.2–17.2 (°C)	Overcast and cool with light breezes. Temperatures warmed slowly during the day. 13.4 mm of rain was recorded during the day, mostly falling in the afternoon.	Maximum wind gusts reached 26 km/hr from a north-westerly direction.

3.2.3 Flora

Vegetation and floristic attributes were assessed using the random meander technique (Cropper, 1993). As rare plants often exist in discrete populations in specific areas, a random search can increase the probability of finding rare plant populations. A random search effort also encompasses a greater portion of the landscape, as the search is not limited to specific areas and is useful in surveying difficult terrain and irregular shaped search areas. Transect surveys were conducted randomly throughout the proposal site, and general floristic data such as opportunistically observed species, vegetation composition and community condition were recorded for the area.

Surveys of vegetation communities in the proposal site were carried out to characterise vegetation formation, class, structure and condition during the random meander surveys. Understanding plant community composition is especially important for those areas that have the potential to be a threatened ecological community (TEC).

3.2.4 Fauna

Fauna surveys included opportunistic fauna observations during the site visit and assessments for fauna habitat. Incidental records for potential mammal, amphibian and reptile habitat were undertaken and recorded during flora surveys. All fauna and flora recorded are listed in Appendix A. Any habitat resources or indirect evidence of fauna (i.e., scats, feathers, fur, tracks, dens, nests, scratches, chew marks and owl wash) were recorded.

3.2.4.1 Habitat assessment

Habitat assessments were conducted for all fauna groups and observations of fauna signs were recorded. Fauna habitat resources were assessed to identify areas of potential habitat within the proposal site. Specific resources such as shelter, roosting, basking and foraging sites for birds, arboreal mammals, amphibians, ground-dwelling mammals and reptiles are recorded. Given the absence of woodland or treed habitat in the proposal site, habitat of this nature was excluded.

Habitat details recorded included presence or absence of:

- Native grasslands and Natural Temperate Grasslands (NTG)
- Burrows or underground warrens and tunnels

- Rocky ground and outcrops
- Areas of partially embedded rocks
- Waterbodies (amphibians)
- Other features likely to provide potential habitat for threatened fauna.

3.2.5 Survey limitations

The timing of the survey was outside the optimal survey period for some species. As the survey was undertaken in autumn, temporal conditions may not be suitable for some species. For instance, the cooler climate may impact the activity of reptiles and invertebrates such as the Golden Sun Moth (*Synemon plana*) while some migratory species may not be present in this time of year. However, as no threatened flora and fauna were considered likely to be present in the proposal site due to lacking habitat and no previous records, this was not considered to be a significant limitation.

Additionally, some fauna species are highly mobile and transient. Consequently, it is likely that not all species either resident or transitory to the proposal site would have been recorded during field surveys. The disadvantage of this limitation was reduced by undertaking database searches and by assessing the habitat value of the proposal site for threatened and migratory species known to occur in the wider area to determine their likelihood of occurrence (Appendix B).

This survey was not designed to enable all species, either resident or transitory to the proposal site, to be detected. Instead, it was aimed at providing an overall assessment of the ecological values of the area with particular emphasis on threatened ecological communities to allow an assessment of the potential impacts of the proposal.

4. Existing environment

4.1 General description

4.1.1 Bioregion

The proposal site occurs within the South-eastern Highlands bioregion and Murrumbateman subregion (Table 4.3).

Table 4.3 Properties of the Murrumbateman subregion (NPWS, 2003)

Property	Within subregion Murrumbateman
Geology	Fine-grained Palaeozoic sedimentary and metasedimentary rocks, with minor areas of coarse acid volcanics. Tertiary alluvial terraces along main streams.
Characteristic landforms	Undulating plateau with rounded hills and peaks, entrenched meandering streams with chain of ponds tributaries.
Typical soils	Mottled yellow and brown texture contrast soils with strongly bleached topsoils. Dark organic loams and clay loams on valley floors. Saline patches present.
Vegetation	Blakely's red gum, yellow box, on lower slopes, red stringybark, bundy and white gum on ridges. Areas of apple box, and mottled gum. Limited swampy flats and valley floor grasslands.

4.1.2 Terrain, geology and hydrology

The proposal site falls within the Williamsdale landscape. Elevation normally ranges between 550–650 m above sea level and historically consisted of open woodlands and grassland habitat (Jenkins, 2000). These have been extensively cleared and disturbed since European settlement for cattle and sheep production. The site slopes downwards gently towards a depression in the north. A stormwater drainage line drains out of the proposal site towards a dam north of the site, outside the proposed boundary. There are multiple small fens and boggy patches in the proposal site but no larger surface waterbodies. However, there is a small artificial dam located adjacent to the northern corner.

The underlying geology of the soil landscape consists of highly weathered bedrock. The soil parent material was mostly siltstone, shale, sandstone and limestone. However, alluvial material was also common.

4.1.3 Soils

The Williamsdale landscape includes moderately deep Yellow Chromosols (Yellow Podzolic Soils) on Red and Brown Kandosols (Red and Yellow Earths) on upper rises. Moderately to very deep, poorly to imperfectly drained Sodosols (Sodic Soils) occur on lower rises. This has contributed to a soil landscape which is erodible with localised dispersibility (Jenkins, 2000).

According to the ACT Soil Landscape classification the proposal site is also a disturbed soil landscape (ACT Government, 2018; 2023a). This is because of historic anthropogenic disturbance from agricultural and industrial activities.

4.1.4 Climate

The proposal site has an average annual rainfall of 594.3 millimetres (mm). Summers are typically moderately warm with cold winters. The highest average temperatures are in January at 29.6°C whilst the coolest average temperatures are in July at 0.0°C. The wettest month is typically October, averaging 59.0 mm. There is no major fluctuation in temperature between seasons.

4.1.5 Surrounding land use and vegetation

The site itself and the land use surrounding the proposal site is characterised by a history of disturbance. Existing industrial developments occur to the east and southwest. A waste processing facility is currently in operation directly adjacent the proposal site and a landfill operates approximately 500 m west. Formerly, the proposal site and surrounding land would have been used for agricultural purposes. Approximately one km north is a woodland area and one km northwest is the Isaacs Ridge Nature Reserve.

The vegetation is mostly grassland within the proposal site and surrounding area. This has been highly modified and as a result is in poor condition. Patches of native vegetation remain but there is no consistent cover. Vegetation in the proposal site is discussed in more detail in Section 4.2.

4.2 Desktop review and field survey results

4.2.1 Desktop review

The desktop review of the ACTMapi database indicated there were no NC Act listed threatened flora or fauna species previously known to occur in the proposal site. Commonly encountered threatened species in the ACT including the Pink-tailed Worm-lizard (*Aprasia parapulchella*) and Striped Legless Lizard (*Delma impar*) were not mapped as possibly occurring in the proposal site, with the nearest locations they are known to occur in over 1.7 km to the east. However, the following species were mapped in proximity (<1 km away) to the site:

- Small Purple Pea (*Swainsonii recta*) – Endangered under the EPBC Act and NC Act.

The desktop review for this database did suggest the Yellow Box/Blakely's Red Gum Grassy Woodland community, endangered under the NC Act and critically endangered under the EPBC Act (listed under White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland), may occur in the proposal site.

A search of the PMST for EPBC Act listed MNES and Bionet for species listed under NSW legislation that are also listed under the NC Act found 52 fauna (including 16 migratory species), 16 flora species and three TECs that are known to or may occur within 10 km of the proposal site.

The threatened species identified via desktop reviews that may occur in the proposal site, and their likelihood of occurrence, are described in Appendix B.

4.2.2 Field survey

4.2.2.1 Vegetation communities and flora

Forty flora species were identified during surveys, including 17 native and 23 exotic species. These are listed in Appendix A. Of these, the most common were groundcover species, as most of the proposal site was treeless, open, grassland. The assemblage of species in the grassland of the proposal site was dominated by exotic species.

Trees on the proposal site consisted of Yellow Box (*Eucalyptus melliodora*) and Blakely's Red Gum (*Eucalyptus blakelyi*). Only four mature trees were in the proposal site, with nine small saplings also present. The cover provided by these trees is sparse while the dominant groundcover are not native species (Figure 4.2). The criteria that define the Yellow Box/Blakely's Red Gum Grassy Woodland community under the NC Act are described by ACT Government (2019) and under the EPBC Act by DAWE (2011). The floristic composition and structure of the habitat in the proposal site does not meet the descriptions provided by either of these action plans. As a result, the vegetation in the site does not meet requirements to be classified under either the NC Act or EPBC Act as part of the Yellow Box/Blakely's Red Gum Grassy Woodland community.

No threatened flora was identified during the field survey. It is considered unlikely that any threatened flora, such as the Small Purple Pea, would occur within the proposal site due to the domination of exotic flora and previous disturbance by humans contributing to a lack of potential habitat.

Of the exotic flora that was found during surveys, four species are listed as weeds either in the ACT, Australia or both. These are provided in Table 4.4. Under the ACT *Pest Plants and Animals Act 2005* (PPA Act), weeds are listed under four categories in the ACT:

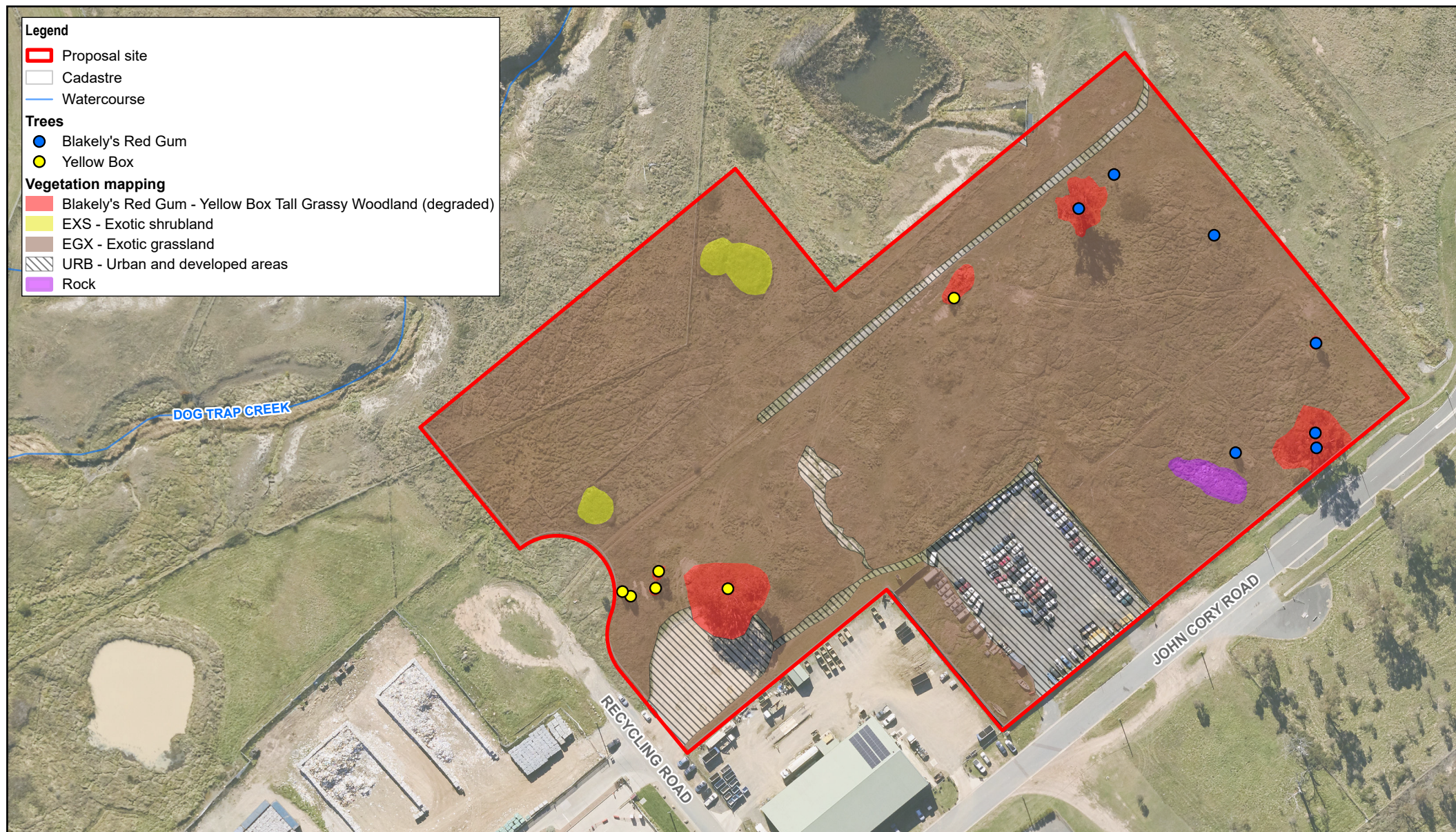
1. Notifiable weeds.
2. Weeds which must be suppressed.
3. Weeds which must be contained.
4. Prohibited weeds.

Certain weeds are also declared to be Weeds of National Significance (WoNS), with more importance placed on control and eradication of these plants.

Table 4.4 *Weeds of significance in the ACT and Australia found during surveys*

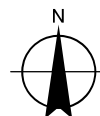
Scientific name	Common name	Classification in ACT (<i>Pest Plants and Animals Act 2005</i>)
<i>Echium plantagineum</i>	Paterson's Curse	3
<i>Eragrostis curvula</i>	African Lovegrass	3
<i>Rosa rubiginosa</i>	Sweet Briar	2, 4
<i>Rubus fruticosus</i> sp. agg.*	Blackberry Complex	3, 4, WoNS

Key: * = WoNS



Paper Size ISO A4
0 25 50
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Transport Canberra and City Services
Hume Food Organics and Garden Organics Facility
Biodiversity Assessment

Project No. 12540464
Revision No. 0
Date 16/08/2023

Vegetation

FIGURE 4.2

4.2.2.2 Fauna

No threatened fauna was identified during field surveys whilst two invasive species of fauna were identified. Of the species recorded, most of these were common species often found in rural and/or urban areas of the ACT. Birds were the most abundant fauna species that occurred. The following two species are introduced and listed under the PPA Act:

- Common Myna (*Sturnus tristis*)
- Common Starling (*Sturnus vulgaris*).

The only mammal identified was the Eastern Grey Kangaroo (*Macropus giganteus*). No reptiles were found; however, frog calls were heard from *Crinia signifera* and an unidentified *Uperoleia* sp. Neither of these are threatened species.

The proposal site provides a small area of rocky habitat in moderate condition (Figure 4.3) that may be suitable for a variety of species, such as the threatened Pink-tailed Worm-lizard and Striped Legless Lizard. However, due to the lack of records in the site and its immediate vicinity, the history of human disturbance in the surrounding area as well as isolation from habitat in better condition it is unlikely these species will occur. Additionally, it is not considered likely other threatened fauna occurs in the proposal site for the same reasons. Nonetheless, the impacts of removing vegetation and potential habitat need to be considered and safeguards to minimise impacts on species are provided in Section 6.



Figure 4.3 Rocky habitat from the site

The drainage line that drains off the proposal site has been modified previously, having been excavated and concreted to create an underground stormwater drain. This is now overgrown with a mixture of exotic and native plants. The area would not provide sufficient habitat for frogs or other aquatic species.

The typical grassland habitat on the site (Figure 4.4) is thick in some areas, potentially providing refuge for small mammals and reptiles. However, it is not expected a highly diverse assemblage of species would be found in the grassland from the proposal site due to the exposure caused by lacking canopy cover as well as the vegetation being dominated by exotic species in many patches.



Figure 4.4 *Typical grassland habitat occurring in the site*

5. Impact assessment

5.1 Direct impacts

5.1.1 Vegetation removal

The proposal would clear up to 2.3 ha of vegetation, including up to six immature *Eucalyptus* trees (2 *Eucalyptus melliodora* and 4 *E. blakelyi*). The groundcover vegetation to be removed is mostly introduced species, with some native species scattered throughout. The vegetation does not meet the requirements of an NC Act or EPBC Act listed threatened ecological community. It has relatively low biodiversity value given its landscape context as well as low habitat value for a range of threatened species.

5.1.2 Tree removal

There are four mature trees in the proposal site and nine immature saplings. Of these trees, six immature *Eucalyptus* will be removed. Design has attempted to minimise impacts on vegetation and trees as far as possible, with the four mature trees on-site alongside three other saplings to be retained.

Despite their age, no hollows were identified in any of the mature trees on site. Hollow-bearing trees are important habitat features that provide refuge for a variety of species, including threatened fauna. The lack of hollow-bearing trees in the proposal site is consistent with the generally poorer habitat quality present. However, retaining these four trees will continue to provide potential habitat for native fauna, especially birds, that may rely on the larger trees present for foraging. For instance, Weebills (*Smicronis brevirostris*) were observed foraging within the foliage of the mature *Eucalyptus melliodora*.

The nine smaller saplings may also provide foraging habitat, with Buff-rumped Thornbills (*Acanthiza reguloides*) observed feeding on insects among the foliage of these trees. However, the trees that are proposed to be removed represent a small reduction in potential habitat for fauna. Of the six immature saplings to be removed, these are all less than 3 m tall and have a diameter at breast height (DBH) of less than 10–20 cm. Such trees provide lower value habitat for fauna and are unlikely to be used by threatened species. Losing this foraging habitat will be a minor impact as there are many more alternative trees in the surrounding area, including the mature trees in the proposal site.

During construction, consideration will be needed for protecting trees that will be retained. Construction must not occur within the dripline of the trees or impact the critical root zone. Tree protection measures are provided in Section 6.

5.1.3 Fauna habitat and fragmentation

The area of rock outcrop present in the proposal site is to be cleared. This area represents approximately 0.025 ha of the proposal site. This relatively small area is already isolated from surrounding rocky habitat and is not of high quality. The remainder of the habitat to be removed is sparsely treed exotic grassland. As a result, the proposal is unlikely to cause any fragmentation of habitat in the area. The rocky habitat should be relocated where possible as it is only a small area and provides potentially good habitat for fauna (see Section 6.2 for more detail).

5.1.4 Threatened species impacts

No threatened flora or fauna were observed in the proposal site. Due to the disturbed habitat present it is unlikely the construction of the proposal would impact threatened species. Extensive soil disturbance and modification would have impacted the ability for threatened flora to survive whilst there are highly depleted or absent resources required for most threatened fauna.

5.1.5 Disturbance, injury and mortality of fauna

During construction, death or injury may occur to fauna present during clearing of trees and vegetation. If birds are present but not nesting during construction, they will generally move away from the proposal site to escape disturbance.

The proposal has the potential to temporarily affect the use of the proposal site by fauna as a result of increased disturbance during construction. The use of machinery may temporarily deter some fauna species from using potential habitat in the proposal site during construction.

Noise can cause changes in behaviours such as foraging, requiring additional energy expenditure if fauna need to forage further afield. Impacts during construction would be short term, temporary and are unlikely to deter fauna from using habitat features retained in the proposal site, such as remaining mature trees, in the long term.

Operation of the proposal is unlikely to cause long term impacts. Noise, light and other disturbance would be short term and temporary, generally from the arrival and departure of trucks carrying waste. This impact would not be likely to greatly exceed disturbance impacts from the existing infrastructure located adjacent to the proposal site.

With the implementation of safeguards (refer to Section 6), the proposal would be unlikely to substantially affect fauna in the proposal site and surrounding area.

5.2 Indirect impacts

5.2.1 Runoff, sedimentation and contamination

There are no natural watercourses within the proposal site. A human-modified drainage channel will be impacted by construction, however sediment and erosional safeguards will help to mitigate possible impacts from loose soil that may be washed into this waterway to the downstream dam north of the proposal site.

The proposal also has the potential to cause impacts to native flora and fauna through spills of fuels and chemicals during construction. This may occur during refuelling operations or during preparation and use of chemicals for weed management. Spills could potentially enter waterways and affect water quality, contaminating habitat for species dependent on habitat in creeks and drainage lines. Spills could also have localised impacts on terrestrial fauna.

These impacts are unlikely to be substantial given the implementation of appropriate safeguards (refer to Section 6).

5.2.2 Invasion and spread of weeds, pathogens and diseases

The cover of exotic species was very high throughout the proposal site. Four of the exotic species identified are ACT declared pest plants, and one (Blackberry) is also a declared WoNS. The proposal could exacerbate the spread of weeds within the area by increasing conditions conducive to their spread. Construction activities that result in vegetation clearance and ground disturbance have the potential to disturb weed species causing them to drop seeds. Additionally, the movement of machinery, vehicles and people through the proposal site and study area can spread weeds into the surrounding area. As there are listed weeds both under ACT and national legislation present in the proposal site (Table 4.4), specific measures will need to be developed for their control (see Section 6).

Pathogens and diseases, such Chytrid fungus (*Batrachochytrium dendrobatidis*), may also be transported into and from the proposal site by machinery and workers. These have the potential to establish in surrounding areas currently unaffected by them, possibly causing damage to native fauna and flora.

The potential for significant or new impacts associated with weeds, pathogens and disease is relatively low given the existing development presence and extent of human visitation across the proposal site and surrounding area. Safeguards would still be implemented to further minimise these risks (DPIE, 2020).

5.2.3 Edge effects

'Edge effects' can include increased noise and light, weed incursion or erosion and sedimentation at the interface of intact vegetation and cleared areas. Edge effects may result in impacts such as changes to vegetation type and structure, increased growth of exotic plants, increased predation of native fauna or avoidance of habitat by native fauna.

Given most of the remnant vegetation has been cleared and the proposal site and surrounding area has been historically modified, it is unlikely the proposal would cause any new edge effects.

5.3 Cumulative impacts

The proposal may heighten impacts associated with nearby developments currently in operation, such as the existing recycling facility adjacent to the proposal site. However, this is expected to be negligible and is unlikely to have major impacts on flora and fauna.

5.4 Significance of impacts

The likelihood of occurrence of species and ecological communities listed under the NC Act and EPBC Act identified during the desktop review were assessed as a part of this report (refer to Appendix B). Only a small number of threatened species and ecological communities were identified as potentially occurring in the surrounding area. It was assessed these are unlikely to be significantly impacted due to:

- The small area of habitat proposed to be removed from the proposal site and connected habitat outside the study area.
- The disturbed and degraded nature of the habitat proposed to be removed.
- The proposal being unlikely to significantly fragment habitat present any further than it has already been fragmented.
- The proposed removal of up to six immature trees and the availability of other mature trees within the proposal site and the surrounding area.

In addition, the *Eucalyptus melliodora* and *E. blakleyi* present does not meet the description of the Yellow Box/Blakely's Red Gum Grassy Woodland community under the NC Act or EPBC Act. As such, a referral to the Conservator of Flora and Fauna, an EPBC Act referral and biodiversity offsets are not required.

6. Safeguards and mitigation measures

6.1 Avoidance and mitigation

Efforts have been made through the proposal planning and design process to minimise and mitigate impacts to ecological values. Particularly, retaining mature trees and native vegetation as far as is practicable.

In addition, site-specific safeguards and management measures have been created to further reduce the impact of the proposal. These are detailed in Table 6.5 and will be implemented to minimise the impacts of the proposal on the ecology of the study area. These safeguards and management measures will be incorporated into a Construction Environmental Management Plan (CEMP) to be implemented for construction.

6.2 Mitigating impacts

Table 6.5 Mitigation measures to be implemented for the proposal

Potential impact	Measures to reduce impact
Impacts to native vegetation and habitat	A flora and fauna management plan (FFMP) would be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to avoid and mitigate impacts to flora and fauna within the study area. The FFMP will include the following measures: – Removal of areas of native vegetation and rocky habitat will be minimised wherever possible. – No impact to any areas of habitat not marked for removal would occur. – No vegetation removal or soil disturbance will occur outside the impact areas. – All staff would be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. – If any unexpected threatened flora or threatened ecological communities or rocky habitat not assessed in the ecological assessment are identified in the proposal site, work will cease immediately and the environmental manager will be contacted. – Having an ecologist/wildlife carer on site during clearing activities.
Impacts to native vegetation and habitat	Trees to be retained will need to be managed during construction in accordance with Australian Standards 4970-2009 Protection of Trees on Development Sites. No construction, heavy machinery or other disturbance is to occur within the dripline and critical root zone as defined in AS 4970-2009. Consultation with an arborist should be undertaken if proposed work may impact this.
Impacts to native vegetation and habitat	The rocky habitat present on site should be relocated during clearance. These rocks should be moved to an area outside of the construction impact zone and, preferentially, to a location where they will not undergo further human modification. Consultation with Parks ACT should be undertaken to determine this action, as this authority may help facilitate moving this habitat to a reserve or other area it would benefit conservation of biodiversity.
Invasion and spread of pathogens	A weed and pest management plan (WPMP) will be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to prevent the establishment and/or spread of weeds within and beyond the study area. As there are listed weeds present in the site at both the territory and national level, these will need to be specifically considered when drafting the WPMP. Consultation with Parks ACT is recommended or a suitably qualified weeds expert. The WPMP will include the following measures: – Weed management may include the following measures: • Use of herbicides. • Integrated weed management throughout the site. • Implementing exclusion zones. • Weed removal and disposal prior to construction. – The weed management plan would include: • A description of the weed for identification purposes, including a description of its relevance to the proposal site. • Specific function of the weed, including flowering and seeding periods. • Identified risk of spread.

Potential impact	Measures to reduce impact
	• Identification of specific management measures for individual weed control • Limits of movement during construction to reduce spread to areas of high-quality habitat. – Declared pest plants and WoNS will be identified and controlled prior to any earthworks commencing to assist in minimising spread of pest plants and WoNS. – Vehicle and machinery wash/brush downs will be required to ensure weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. – All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site. – Sediment control, such as silt fences, would assist in reducing the potential for spreading weeds downstream. – Soil disturbance will be avoided as much as possible to minimise the potential for erosion and spread of weeds. – The spread of exotic plant species within and adjacent to the subject site would be monitored. Weed control will be undertaken if it is determined the proposal is causing significant spread of weed species. – No machinery, light vehicle, or construction staff access to adjacent areas would occur, to minimise the risk of spread of weeds to sensitive areas. – When transporting weed waste from the proposal site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept. – Protocols to prevent introduction or spread of chytrid fungus should be implemented following Office of Environment and Heritage Hygiene protocol for the control of disease in frogs (DPIE, 2020). Other protocols will include: – Minimising the removal of vegetation wherever possible. – Having an ecologist/wildlife carer on site during clearing activities.
Soil erosion, sedimentation and water quality	A soil and water management plan would be prepared incorporating an erosion and sediment control plan prior to construction commencement, as part of the CEMP. This would also include the following: – Refuelling or maintenance of plant and machinery will not be undertaken within 50 m of waterways or drainage lines. – A rehabilitation and revegetation plan (RRP) will be prepared for areas disturbed during the works. This will identify appropriate methods for stabilising disturbed soils to resist erosion. – Sediment and erosion controls downstream of the proposal site (such as the nearby dam) will be implemented before any construction commences and inspected regularly, particularly after a rainfall event, and maintenance works undertaken as needed. These controls would remain in place after construction until sufficient regeneration of vegetation to prevent erosion or sedimentation occurs. – Weather forecasts will be checked daily to ensure high risk soil and erosion activities are not undertaken immediately before or during high rainfall or wind events. Disturbed surfaces would be compacted and stabilised in anticipation of rain events to reduce the potential for erosion.

7. Conclusion

The proposal site is located in Hume, within the eastern part of the ACT. The site itself and the surrounding area has been highly disturbed and is in a degraded condition. Surrounding land uses are zoned industrial, with a recycling facility located directly west of the proposal site and vacant land to the east. The surrounding area has limited records for threatened species under either the NC Act or EPBC Act.

To construct the proposal, up to 2.3 ha of land will be cleared, including six immature trees. These are all native species and either *Eucalyptus melliodora* or *E. blakleyi*. The land to be cleared is mostly exotic grassland, with more introduced species recorded during field surveys than native species.

No threatened flora or fauna were identified during field surveys. The desktop review indicated a threatened ecological community (Yellow Box/Blakely's Red Gum Grassy Woodland) may be present in the proposal site. This community is listed under both the NC Act and EPBC Act. Ground truthing during field surveys indicated the vegetation present did not meet the requirements to be classified as this community.

Likelihood of occurrence and impact assessments were undertaken. The assessments conclude the proposal is unlikely to have a significant impact on any biota or communities listed under the NC Act and a referral to the Conservator of Flora and Fauna is not necessary. The proposal is also unlikely to have a significant impact on any biota or communities listed under the EPBC Act and a referral is not required.

8. References

- ACT Government (2011). ACT Pest Animal Management Strategy 2012-2022. Accessed at: https://www.environment.act.gov.au/data/assets/pdf_file/0008/575117/PAMS_WEB.pdf
- ACT Government (2018). Geo Hub. A Geospatial Data Catalogue – Environment (Connectivity, Grasslands, Habitat patches, High Country Bogs and Fens, Protected and rare plants, Soil, Threatened aquatic habitat, Threatened fauna habita, Threatened plants, Threatened Woodlands, Tree register, Vegetaion, Vegetaion structure etc). Accessed May 2023 at: <https://actmap-actgov.opendata.arcgis.com>
- ACT Government (2019). Yellow Box-Blakely's Red Gum Grassy Woodland. Endangered Ecological Community Action Plan. Accessed at: https://www.environment.act.gov.au/data/assets/pdf_file/0008/576548/Woodland-Conservation-Strategy-Yellow-BoxBlakelys-Red-Gum-Grassy-Woodland.pdf
- ACT Government (2023a). ACTmap. Significant species, vegetaion communities and Registered trees. Accessed May 2023 at: <https://app2.actmap.act.gov.au/actmap/index.html?viewer=ssvcrt>
- ACT Government (2023b). Threatened species factsheets. Accessed May 2023 at: <https://www.environment.act.gov.au/nature-conservation/conservation-and-ecological-communities/threatened-species-factsheets>
- BoM (Bureau of Meteorology) (2022). Daily Weather Observations. Tuggeranong, Australian Capital Territory. Accessed May 2022 at: <http://www.bom.gov.au/climate/dwo/IDCJDW2802.latest.shtml>
- Cropper, S.C. (1993). Management of Endangered Plants. Melbourne: CSIRO Australia.
- DAWE (Austrealian Govnment Department of Agriculture, Water and the Environment) (2011). National Recovery Plan. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan. A critically endangered community. May 2010. <https://www.awe.gov.au/sites/default/files/documents/white-and-yellow-box.pdf>
- DCCEEW (2023). Protected Matters Search Tool. Accessed May 2023 at: <https://www.awe.gov.au/environment/epbc/protected-matters-search-tool>
- DEH (Australian Government Department of the Environment and Heritage) (2006). White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands. Nationally threatened species and ecological communities guidelines. EPBC Act policy statement 3.5. Accessed at: <https://www.awe.gov.au/sites/default/files/documents/box-gum.pdf>
- DPE (NSW Department of Panning and Environment) (2023). NSW BioNet Atlas. Accessed May 2023 at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet>
- DPIE (NSW Department of Panning, Industry and Environment) (2020). Hygiene guidelines. Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants. Saving Our Species. Accessed at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Wildlife-management/saving-our-species-hygiene-guidelines-200164.pdf>
- Jenkins, B.R. (2000). Soil Landscapes of the Canberra 1:100 000 Sheet. Sydney: Department of Land and Water Conservation.
- NPWS (NSW National Parks and Wildlife Service) (2003). The Bioregions of New South Wales their biodiversity, conservation and history. January 2003. Accessed at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search/bioregions-of-new-south-wales>

Appendix A

Recorded species

Table A Species recorded during field survey (species marked with an asterisks are invasive)

Scientific Name	Common Name	NC Act	EPBC Act	PPA Act
Frogs				
<i>Crinia signifera</i>	Common Eastern Froglet	-	-	-
<i>Uperoleia</i> sp.	-	-	-	-
Birds				
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill	-	-	-
<i>Anas superciliosa</i>	Pacific Black Duck	-	-	-
<i>Cisticola exilis</i>	Golden-headed Cisticola	-	-	-
<i>Cormobates leucophaea</i>	White-throated Treecreeper	-	-	-
<i>Corvus coronoides</i>	Australian Raven	-	-	-
<i>Corvus mellori</i>	Little Raven	-	-	-
<i>Cracticus tibicen</i>	Australian Magpie	-	-	-
<i>Eolophus roseicapillus</i>	Galah	-	-	-
<i>Falco cenchroides</i>	Nankeen Kestrel	-	-	-
<i>Grallina cyanoleuca</i>	Magpie-lark	-	-	-
<i>Malurus cyaneus</i>	Superb Fairy-wren	-	-	-
<i>Manorina melanocephala</i>	Noisy Miner	-	-	-
<i>Ocyphaps lophotes</i>	Crested Pigeon	-	-	-
<i>Phalacrocorax varius</i>	Pied Cormorant	-	-	-
<i>Psephotus haematonotus</i>	Red-rumped Parrot	-	-	-
<i>Rhipidura leucophrys</i>	Willie Wagtail	-	-	-
<i>Smicrornis brevirostris</i>	Weebill	-	-	-
<i>Sturnus tristis</i> *	Common Myna	-	-	Yes
<i>Sturnus vulgaris</i> *	Common Starling	-	-	Yes
<i>Vanellus miles</i>	Masked Lapwing	-	-	-
Mammals				
<i>Macropus giganteus</i>	Eastern Grey Kangaroo	-	-	Yes
Flora				

Scientific Name	Common Name	NC Act	EPBC Act	PPA Act
<i>Acetosella vulgaris</i> *	Sheep Sorrel	-	-	-
<i>Aristida vagans</i>	Three-awn Speargrass	-	-	-
<i>Avena fatua</i> *	Wild Oats	-	-	-
<i>Bromus brevis</i> *	-	-	-	-
<i>Bromus hordeaceus</i> *	Soft Brome	-	-	-
<i>Chloris truncata</i>	Windmill Grass	-	-	-
<i>Cirsium vulgare</i> *	Spear Thistle	-	-	-
<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	-	-	-	-
<i>Conyza sumatrensis</i> *	Tall Fleabane	-	-	-
<i>Cynodon dactylon</i>	Common Couch	-	-	-
<i>Cyperus polystachyos</i>	-	-	-	-
<i>Echium plantagineum</i> *	Paterson's Curse	-	-	Class 3
<i>Eleusine tristachya</i> *	Goose Grass	-	-	-
<i>Enchylaena tomentosa</i>	Ruby Saltbush	-	-	-
<i>Eragrostis curvula</i> *	African Lovegrass	-	-	Class 3
<i>Eucalyptus blakeleyi</i>	Blakeley's Red Gum	-	-	-
<i>Eucalyptus melliodora</i>	Yellow Box	-	-	-
<i>Hirschfeldia incana</i> *	Hairy Brassica	-	-	-
<i>Hypochaeris radicata</i> *	Flatweed	-	-	-
<i>Juncus subglaucus</i>	Rush	-	-	-
<i>Lepidium africanum</i> *	Common Peppergrass	-	-	-
<i>Paspalidium distans</i>	-	-	-	-
<i>Pennisetum clandestinum</i> *	Kikuyu Grass	-	-	-
<i>Petrorhagia nanteuilii</i>	Proliferous Pink	-	-	-
<i>Phalaris aquatica</i> *	Phalaris	-	-	-
<i>Plantago lanceolata</i> *	Ribwort	-	-	-
<i>Poa tenera</i>	Slender Tussock-grass	-	-	-

Scientific Name	Common Name	NC Act	EPBC Act	PPA Act
<i>Pyracantha crenulata</i> *	Nepal Firethorn	-	-	-
<i>Rosa rubiginosa</i> *	Sweet Briar	-	-	Class 2 and 4
<i>Rubus fruticosus</i> sp. agg.*	Blackberry complex	-	-	Class 3 and 4
<i>Rumex brownii</i>	Swamp Dock	-	-	-
<i>Setaria gracilis</i> *	Slender Pigeon Grass	-	-	-
<i>Sonchus oleraceus</i> *	Common Sow-thistle	-	-	-
<i>Taraxacum officinale</i> *	Dandelion	-	-	-
<i>Themeda triandra</i>	Kangaroo Grass	-	-	-
<i>Trifolium repens</i> *	White Clover	-	-	-
<i>Typha orientalis</i>	Cumbungi	-	-	-
<i>Verbascum virgatum</i> *	Twiggy Mullein	-	-	-
<i>Verbena bonariensis</i> *	Purpletop	-	-	-
<i>Vitadina cuneata</i> var. <i>cuneata</i>	Fuzzweed	-	-	-

Appendix B

Likelihood of occurrence and impact

Likelihood of occurrence

Likelihood	Definition
Nil	No records in locality, no suitable habitat in study area, outside known range.
Low	Species not recently recorded (within last 20 years) in the study area or is beyond the known geographic range. Species dependent on specific habitat types or resources that are not present in the study area. Highly mobile species that may on occasion utilise habitat within study area, though habitat present is of low quality.
Moderate	Species infrequently recorded in the proposal site and surrounds (i.e. vagrant individuals). Species use habitat types or resources that are present in the study area, although generally in a poor or modified condition. Species unlikely to maintain sedentary populations, however may seasonally utilise resources within the study area opportunistically during variable seasons or migration.
High	Species has been previously recorded in or adjacent to the study area. Species dependent on habitat types or resources that are present in the study area that are abundant and/or in good condition within the study area. Species likely to maintain resident populations surrounding the study area. Species likely to visit the study area or surrounds during regular seasonal movements or migration.
Recorded	Species was observed in the study area during the current study.

Level of impact

Likelihood	Definition
None	Species absent. Species would not be directly or indirectly impacted by the Proposal.
Low	Species may be indirectly impacted by the Proposal. May include the removal of broadly suitable/ low quality habitat
Moderate	Species is likely to be directly impacted through the removal/disturbance of habitat resources potentially used by the species, such as HBTs, trees capable of supporting large stick nests or bush rock. Species is highly mobile and/or has a comparably larger home range. Species largely able to avoid construction impacts.
High	Species would be directly impacted through the removal/disturbance of occupied habitat. Species is generally immobile and/or has a small home range. May be more vulnerable to construction impacts than other species (if present) e.g., if breeding habitat occurs.

Table B Likelihood of occurrence tables

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
Birds							
<i>Anthochaera phrygia</i>	Regent Honeyeater	2 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	CE	CE	Mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Found in drier coastal woodlands and forests in some years. Only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. Very patchy distribution in NSW, mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Flowering of associated species such as Thin-leaved Stringybark <i>Eucalyptus eugenioides</i> and other Stringybark species, and Broad-leaved Ironbark <i>E. fibrosa</i> can also contribute important nectar flows at times. Nectar and fruit from the mistletoes <i>Amyema miquelii</i> , <i>A. pendula</i> and <i>A. cambagei</i> are also utilised.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Aphelocephala leucopsis</i>	Southern Whiteface	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	V	Occur across most of mainland Australia south of the tropics, from the north- eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. There is a broad hybrid zone between the two subspecies extending north from the western edge of the Nullarbor Plain. The northern boundary extends to about Carnarvon in the west, to the southern Northern Territory in central Australia, but is slightly further south in Queensland where the species is largely confined to the south-west of the Mitchell Grass Downs and along the southern state border. They live in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. Southern whiteface forage almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey litter cover. Birds mainly feed on insects, spiders, and seeds, largely gleaned from the bare ground or leaf litter. Habitat loss and fragmentation is likely the cause of the species decline, especially in the parts of the species' range where there has been complete removal of habitat for intensive agriculture. Droughts may have local impacts.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Widespread but uncommon over south-eastern Australia. Found over most of NSW except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. May construct feeding platforms over deeper water from reeds trampled by the bird; platforms are often littered with prey remains.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	18 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. It inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i> , and <i>A. gymnathera</i> . Belah is also utilised and may be a critical food source for some populations. The species is dependent on large hollow-bearing eucalypts for nest sites.	None - no suitable habitat with Casuarina sp. present in study area	None
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	4 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	The western boundary of the species range runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell. Often found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer. Fallen timber is an important habitat component for foraging. Also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Daphoenositta chrysoptera</i>	Varied Sittella	25 records within 10 km (DPE 2023)	V	-	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The species inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Falco hypoleucos</i>	Grey Falcon	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	V	Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Grantiella picta</i>	Painted Honeyeater	Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Nomadic species occurring at low densities throughout its range. Most commonly found on the inland slopes of the Great Dividing Range in NSW, where almost all breeding occurs. More likely to be found in the north of its distribution in winter. Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> .	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Hieraaetus morphnoides</i>	Little Eagle	8 records within 10 km (DPE 2023)	V	-	Found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. Occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Also found in Sheoak or Acacia woodlands and riparian woodlands of inland NSW. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Lathamus discolor</i>	Swift Parrot	90 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	CE	CE	Migrates from Tasmania to south-eastern Australia in the autumn and winter months. Mostly occurs on the coast and south west slopes in NSW. Occurs on the mainland in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> .	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Melanodryas cucullata cucullata</i>	Hooded Robin	1 record within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	E	Found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies <i>picata</i> . Prefers lightly wooded country, usually open eucalypt woodland, Acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Neophema chrysostoma</i>	Blue-winged Parrot	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	V	Breed on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, occasionally in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania. A partial migrant, variable numbers of birds migrate across Bass Strait in winter. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales, with some reaching south-eastern New South Wales and eastern Victoria, particularly on the southern migration. They inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands, often found near wetlands both near the coast and in semi-arid zones. The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs. Habitat critical to the survival include: Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including: grasslands, grassy woodlands and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs. Wetlands both near the coast and in semi-arid zones used for foraging and staging. Eucalypt forests and woodlands within the breeding range in Tasmania, coastal southeastern South Australia and southern Victoria. Live and dead trees and stumps with suitable hollows within the breeding range. Though there is no clear explanation for the population decline, declines have likely been caused by habitat loss and deterioration in habitat quality.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Petroica boodang</i>	Scarlet Robin	57 records within 10 km (DPE 2023)	V	-	Occurs from the coast to the inland slopes in NSW. Disperses to the lower valleys and plains of the tablelands and slopes after breeding. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. Found in dry eucalypt forests and woodlands with usually open and grassy understorey with few scattered shrubs. Lives in both mature and regrowth vegetation and occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Abundant logs and fallen timber are important components of its habitat.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Polytelis swainsonii</i>	Superb Parrot	6 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Pycnoptilus floccosus</i>	Pilotbird	Species or species habitat may occur within 10 km (DCCEEW 2023)	V	V	Endemic to south-east Australia. Upland Pilotbirds occur above 600 m in the Brindabella Ranges in the ACT, and in the Snowy Mountains in NSW and north-east Victoria. Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne. Habitat critical to the survival of the Pilotbird includes: wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth, and dry sclerophyll forests and woodlands occupying dry slopes and ridges.	None - no suitable habitat present in study area	None
<i>Rostratula australis</i>	Australian Painted Snipe	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River, the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Forages nocturnally on mud-flats and in shallow water.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Stagonopleura guttata</i>	Diamond Firetail	30 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	V	Widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. Scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum <i>Eucalyptus pauciflora</i> Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities, and often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
Fish							
<i>Bidyanus bidyanus</i>	Silver Perch, Bidyan	Known within 10km of proposal site	E	CE	In NSW now absent from much of their former range across the Murray-Darling. Most abundant remaining natural population occurs in the central Murray River downstream of Yarrawonga Weir as well as several of its anabranches and tributaries including the Edward River - an anabranch of the Murray River that flows through Deniliquin, and the Murrumbidgee River. Prefer fast-flowing, open waters, especially where there are rapids and races, however they will also inhabit warm, sluggish water with cover provided by large woody debris and reeds. Information on habitat preferences is scarce for this species.	None – no suitable habitat in proposal site	None
<i>Maccullochella macquariensis</i>	Trout Cod	Likely to occur within 10km of proposal site	E	E	Endemic to the Murray-Darling Basin. Once widespread in the southern tributaries, the species has declined dramatically in both abundance and distribution and are now known only from scattered localities. The last remaining natural populations in the wild are in the Murray River between Yarrawonga, Barmah and Seven Creeks. The Occurs in a range of habitats but is strongly associated with the presence of woody debris and snags.	None – no suitable habitat in proposal site	None
<i>Maccullochella peelii</i>	Murray Cod	Known within 10km of proposal site	-	V	Endemic to river systems of the Murray–Darling Basin in south-eastern Australia. Once widespread throughout the Murray-Darling system, it is now uncommon in much of its range and restricted to the lower Murray-Darling. Found in a variety of habitats ranging from clear, rocky streams to slow flowing turbid rivers, lakes and billabongs and are more common in waterways with large rocks, snags and undercut banks with overhanging vegetation.	None – no suitable habitat in proposal site	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Macquaria australasica</i>	Macquarie Perch	Known within 10km of proposal site	E	E	Known only from scattered localities in the cool upper reaches of the Murray-Darling system of NSW, including the Hawkesbury-Nepean and Shoalhaven catchments, Victoria and the Australian Capital Territory. Also found in man-made lakes on the NSW coast and in lakes and reservoirs, where adults aggregate in small shoals during the spawning season. Inhabits cool, clear freshwaters of rivers with deep holes and shallow riffles.	None – no suitable habitat in proposal site	None
Frogs							
<i>Litoria aurea</i>	Green and Golden Bell Frog	May occur within 10km of proposal site	V	V	Approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. Large populations are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast. Only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimal habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available. Also recorded in highly disturbed areas.	None – no suitable habitat in proposal site	None
<i>Litoria booroolongensis</i>	Booroolong Frog	May occur within 10km of proposal site	-	E	Restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. It has disappeared from much of the Northern Tablelands, however several populations have recently been recorded in the Namoi catchment. The species is rare throughout most of the remainder of its range. Lives along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses, and shelter under rocks or amongst vegetation near the ground on the stream edge. Recorded on or near cobble banks and other rock structures within stream margins.	None – no suitable habitat in proposal site	None
<i>Litoria castanea</i>	Yellow-spotted Bell Frog	Likely to occur within 10km of proposal site	CE	CE	Single known population occurs on the Southern Tablelands, near Yass. Requires large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation. Males call at night from the open water and breeding generally occurs during or following rain.	None – no suitable habitat in proposal site	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Litoria raniformis</i>	Southern Bell Frog	May occur within 10km of proposal site	V	V	Currently known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. Also found in irrigated rice crops, particularly where there is no available natural habitat. Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. The species has been known to breed anytime from early spring through to late summer/early autumn	None – no suitable habitat in proposal site	None
Invertebrates							
<i>Keyacris scurra</i>	Key's Matchstick Grasshopper	Species or species habitat may occur within 10 km (DCCEEW 2023)	E	E	Typically found in native grassland in cemeteries, travelling stock routes and along railway easements. Associated with Kangaroo Grass and known food plants such as species of the Asteraceae family, but also recorded at sites where these species are absent. Found in wet sclerophyll forest, montane low forest, dry woodlands, heath land and montane grasslands. Appears to be absent from site that are disturbed during the short non-overlapping lifecycle of the species.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Synemon plana</i>	Golden Sun Moth	60 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Found in the area between Queanbeyan, Gunning, Young and Tumut. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses <i>Austrodanthonia</i> spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses <i>Austrostipa</i> spp. or Kangaroo Grass <i>Themeda australis</i> .	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
Mammals							

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. Generally rare with a very patchy distribution in NSW and scattered records from the New England Tablelands and North West Slopes. Roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies.	None - no suitable habitat present in study area	None
<i>Dasyurus maculatus</i>	Spotted-tail Quoll	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Found in eastern NSW, the species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Uses hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. Known to traverse their home ranges along densely vegetated creeklines.	None - no suitable habitat present in study area	None
<i>Petaurus australis</i>	Yellow-bellied Glider	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	V	V	Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Vegetation preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Den, often in family groups, in hollows of large trees.	None - no suitable habitat present in study area	None
<i>Phascolarctos cinereus</i>	Koala	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests of NSW, with some smaller populations on the plains west of the Great Dividing Range. Inhabits eucalypt woodlands and forests, and feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but will select preferred browse species in any one area.	None - no suitable habitat present in study area	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	12 records within 10 km (DPE 2023). Roosting known to occur within 10 km (DCCEEW 2023)	V	V	Generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. May be found in unusual locations in times of natural resource shortage. Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
Reptiles							
<i>Aprasia parapulchella</i>	Pink-tailed Worm-lizard	76 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. It's found to inhabit sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>). The sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks. They are commonly found beneath small, partially embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.	Moderate – some marginal habitat in the study area for this species. If occurring, would be restricted to rocky outcrop area in the site	Low – unlikely to occur regularly and be affected. Rocky habitat is not in high quality condition and is isolated from surrounding areas with better quality vegetation and rock habitat, restricting dispersal and, by extension, ability of the species to survive in the small area on site

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Delma impar</i>	Striped Legless Lizard	Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Found mainly in Natural Temperate Grassland but also in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland.	Moderate – some marginal habitat in the study area for this species	Low – unlikely to occur regularly and be affected. Rocky habitat is not in high quality condition and is isolated from surrounding areas with better quality vegetation and rock habitat, restricting dispersal and, by extension, ability of the species to survive in the small area on site
<i>Tympanocryptis pinguicolla</i>	Grassland Earless Dragon	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Only known populations are in the ACT and adjacent NSW at Queanbeyan, and on the Monaro Basalt Plains between Cooma and south-west of Nimmitabel. Restricted to a small number of Natural Temperate Grassland sites dominated by wallaby grasses (<i>Nothodanthonia</i> spp.), spear grasses (<i>Austrostipa</i> spp.), Poa Tussock (<i>Poa sieberiana</i>), Red Grass (<i>Bothriochloa macra</i>), and occasionally Kangaroo Grass (<i>Themeda australis</i>). Introduced pasture grasses occur at many of the sites supporting this species, which has also been captured in secondary grassland. In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter.	Low - minimal suitable habitat in study area	Low – unlikely to occur regularly and be affected. Grassland habitat is not in high quality condition and is isolated from surrounding areas with better quality vegetation and rock habitat, restricting dispersal and, by extension, ability of the species to survive in the small area on site
Flora							
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	Historic records in the City of Greater Albury. It has been recorded recently in lagoons beside the Murray River near Cooks Lagoon (Shire of Greater Hume), Mungabarina Reserve, East Albury, at Ettamogah, Thurgoona (Charles Sturt University Campus), near Narranderra, and also further west along the Murray River (near Mathoura) and in Victoria. <i>Amphibromus fluitans</i> grows mostly in permanent swamps.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Calotis glandulosa</i>	Mauve Burr-daisy	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	The distribution of the Mauve Burr-daisy is centred on the Monaro and Kosciuszko regions. There are three known sites in the upper Shoalhaven catchment. There are old and possibly dubious records from near Oberon, the Dubbo area and Mt Imlay. Found in montane and subalpine grasslands in the Australian Alps. Found in subalpine grassland (dominated by <i>Poa</i> spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (<i>Themeda australis</i>) and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands on the Monaro and Shoalhaven area.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Dodonaea procumbens</i>	Trailing Hop-bush	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	V	Creeping Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety. Here it occurs mostly in Natural Temperate Grassland or Snow Gum Eucalyptus pauciflora Woodland. Grows in open bare patches where there is little competition from other species. Found on sandy-clay soils, usually on or near vertically-tilted shale outcrops.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Eucalyptus aggregata</i>	Black Gum	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	V	Occurs in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion. Grows in the lowest parts of the landscape, on grassy woodlands on alluvial soils in moist sites along creeks on broad, cold and poorly-drained flats and hollows. Commonly occurs with Candlebark, Ribbon Gum, and White Sally with a grassy understorey of Tussock. Also occurs as isolated paddock trees in modified native, exotic pastures or travelling stock reserves.	None – very minimal habitat in the proposal site for this species, not identified during field survey	None
<i>Lepidium aschersonii</i>	Spiny Peppergrass	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	Occurring in the marginal central-western slopes and north-western plains regions of NSW. Found on ridges of gilgai clays dominated by <i>Acacia harpophyll</i> , <i>Casuarina cristata</i> , <i>Allocasuarina luehmannii</i> and <i>Eucalyptus microcarpa</i> , with the understorey often dominated by introduced plants. Grows as a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey with introduced plants and occasional heavy litter.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Lepidium ginninderrense</i>	Ginninderra Peppercress	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	V	The Ginninderra Peppercress (<i>Lepidium ginninderrense</i>) has just three known populations, both in Canberra. The first population of Ginninderra Peppercress was discovered in 2000 in the Lawson Grasslands, a Natural Temperate Grassland. A second, smaller population was discovered in 2012 in disturbed grassland and remnant Box-Gum Woodland in Franklin. The third population was discovered more recently in Jerrabomberra East.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Lepidium hyssopifolium</i>	Basalt Peppercress	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	E	Currently known near Bathurst, Bungendore and Crookwell, with historic records near Armidale. Known to have occurred in both woodland with a grassy understorey and in grassland. The species may be a disturbance opportunist, as it was discovered at the most recently discovered site (near Bungendore) following soil disturbance.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Leucochrysum albicans</i> subsp. <i>tricolor</i>	Hoary Sunray	228 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	E	Endemic to south-eastern Australia, where it is currently known from three geographically separate areas in Tasmania, Victoria and south-eastern NSW and ACT. Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Muehlenbeckia tuggeranong</i>	Tuggeranong Lignum	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Only 11 individuals known. The species is found on flood terraces, at an altitude of about 550 metres, in areas of rocky outcrops with pockets of silty sandy soil. It grows on nearly bare rock, or tangled amongst other vegetation. Since being discovered, this hardy species has tolerated being covered with silt and woody debris during floods and burnt in fires, including severe bushfires in 2003. It survived the Millenium Drought.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Pomaderris pallida</i>	Pale Pomaderris	Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Currently only recorded from near Kydra Trig, Tinderry Nature Reserve, the Queanbeyan River, the Shoalhaven River (between Bungonia and Warri), the Murrumbidgee River west of the ACT and the Byadbo area in Kosciuszko NP. Usually grows in shrub communities surrounded by Brittle Gum and Red Stringybark or <i>Callitris</i> spp. woodland, or in open forest.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Prasophyllum petilum</i>	Tarengo Leek Orchid	Species or species habitat may occur within 10 km (DCCEEW 2023)	E	E	Known from five sites near Boorowa, Queanbeyan area, Ilford, Delegate and west of Muswellbrook. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Grows in grassy woodland in association with River Tussock, Black Gum and tea-trees near Queanbeyan and within grassy groundlayer dominated by Kanagaroo Grass under Box-Gum Woodland at Ilford. Flowers in October at Boorowa and Ilford, and December at sites near Queanbeyan and Delegate.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Rutidosia leptorhynchoides</i>	Button Wrinklewort	20 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	In the ACT region, the Button Wrinklewort occurs at 11 sites in the suburbs just south of Lake Burley Griffin, the Majura Valley, the Jerrabomberra Valley and at Crace Nature Reserve. The largest population, at Stirling Park, is about 49,000 plants, but most sites are less than 5000 and some less than 100. It is found on the margins of stands of Yellow Box/Red Gum Grassy Woodland with a ground layer of various native grasses and other forbs, in secondary grasslands derived from that community, and in Natural Temperate Grassland. It prefers an open habitat and shallow stony red-brown clay loams.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Senecio macrocarpus</i>	Large-fruit Fireweed	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	Occurs in Tablelands east and north of the ACT. Found in woodland, grassland, and sedgeland. Use flowers and fruit to identify.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Swainsona recta</i>	Small Purple-pea	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Current populations exist in the Queanbeyan and Wellington-Mudgee areas, previous populations thought extinct include Carcoar, Culcairn and Wagga Wagga. Inhabits grassy woodlands and open-forests dominated by Blakely's Red Gum, Yellow Bloodwood, Candlebark and Long-leaved Box and in association with understorey dominants that include <i>Themeda australis</i> , <i>Poa</i> spp. and <i>Austrostipa</i> spp. Flowers throughout spring, with a peak in October.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Swainsona sericea</i>	Silky Swainson-pea	114 records within 10 km (DPE 2023)	V	-	Occurs from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. One isolated record from far NW NSW. Found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro, in Box-Gum Woodland in the Southern Tablelands and Southwest Slopes and sometimes found in association with cypress pines <i>Callitris</i> spp.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Thesium australe</i>	Austral Toadflax	Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland or grassy woodland and is often found in association with Kangaroo Grass.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
Migratory Species							
<i>Actitis hypoleucos</i>	Common Sandpiper	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	C,J,K,Bonn	Does not breed in Australia. When in Australia it is found on all coastlines and in inland areas but is concentrated in the north and west with important areas in WA, the NT and Qld. Utilises a wide range of coastal and inland wetlands with varying salinity levels.	None - no suitable habitat present in study area	None
<i>Apus pacificus</i>	Fork-tailed Swift	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	C,J,K	Almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. Many records occur east of the Great Divide, however, a few populations have been found west of the Great Divide. Mostly occur over inland plains but sometimes above foothills or in coastal areas. Mostly found over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. Also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. Sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines. Also found over settled areas, including towns, urban areas and cities.	Low - minimal suitable habitat in study area. May fly over site	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	C,J,K,Bonn	Spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. In Australasia, prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. Breeds in northern Siberia.	None - no suitable habitat present in study area	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Calidris ferruginea</i>	Curlew Sandpiper	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	CE,C,J,K,Bonn	Distributed around most of the Australian coastline. Occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. Breeds in Siberia and migrates to Australia for the non-breeding period, arriving in Australia between August and November, and departing between March and mid-April. Generally occupies littoral and estuarine habitats, and is mainly found in intertidal mudflats of sheltered coasts in NSW. Also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. Forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	None - no suitable habitat present in study area	None
<i>Calidris melanotos</i>	Pectoral Sandpiper	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	J,K,Bonn	Widespread but scattered records across NSW, east of the divide and in the Riverina and Lower Western regions. Breeds in the northern hemisphere. In Australasia, prefers shallow fresh to saline wetlands and is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Usually in coastal or near-coastal habitats, and prefers wetlands with open mudflats and low emergent or fringing vegetation such as grass or samphire.	None - no suitable habitat present in study area	None
<i>Chlidonias leucopterus</i>	White-winged Black Tern	1 record within 10 km (DPE 2023)	-	C,J,K	Found in the coastal and sub-coastal north, east, and south-east of the Australian mainland, and the north and east of Tasmania. Found in small to large flocks on mostly coastal or sub-coastal wetlands including tidal estuaries, lagoons, grassy swamps, and sewage ponds.	None - no suitable habitat present in study area	None
<i>Gallinago hardwickii</i>	Latham's Snipe	2 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	J,K,Bonn	Non-breeding migrant to the south east of Australia. Breeds in Japan and on the east Asian mainland. Seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. Found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration. Also uses crops and pasture.	None - no suitable habitat present in study area	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Hirundapus caudacutus</i>	White-throated Needletail	2 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V,C,J,K	Migrates to eastern Australia from October to April. Almost exclusively aerial and most often seen before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. Occurs over most types of habitat, but mostly recorded above wooded areas, including open forest and rainforest. May also fly between trees or in clearings, below the canopy. Recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows.	Low - minimal suitable habitat in study area. May fly over site	Low - unlikely to rely on any areas that would be affected by the proposal
<i>Limosa lapponica</i>	Bar-tailed Godwit	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	C,J,K,Bonn	Recorded in the coastal areas of all Australian states. Widespread along the east and south-east coasts of NSW, including the offshore islands. Few inland records from NSW. Inhabit estuarine mudflats, beaches and mangroves. Common in coastal areas around Australia. Social birds, often seen in large flocks and in the company of other waders.	None - no suitable habitat present in study area	None
<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	V	Recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria. The bar-tailed godwit is a regular migrant to Christmas Island, Norfolk Island, Lord Howe Island. During the non-breeding period, the distribution of bar-tailed godwit (western Alaskan) is predominately New Zealand, northern and eastern Australia. In Australia, <i>L. l. baueri</i> mainly occur along the north and east coasts.	None - no suitable habitat present in study area	None
<i>Monarcha melanopsis</i>	Black-faced Monarch	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	Bonn	Found along the coast of eastern Australia, becoming less common further south. Occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park, Wombeyan Caves and Canberralt. Found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.	None - no suitable habitat present in study area	None
<i>Motacilla flava</i>	Yellow Wagtail	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	C,J,K	Occurs within Australia in open country habitat with disturbed ground and some water. Recorded in short grass and bare ground, swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land and town lawns. Breeds in temperate Europe and Asia.	None - no suitable habitat present in study area	None

Scientific Name	Common Name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	Bonn	Found along the east coast of Australia from far northern Queensland to Tasmania. Uncommonly seen species, especially in the far south of its range, where it is a summer breeding migrant. Inhabits heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	None - no suitable habitat present in study area	None
<i>Numenius madagascariensis</i>	Eastern Curlew	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	CE,C,J,K,Bonn	Occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. Generally occupies coastal lakes, inlets, bays and estuarine habitats, and is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts in NSW. Rarely seen inland.	None - no suitable habitat present in study area	None
<i>Pandion haliaetus</i>	Osprey	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	-	Bonn	Found right around the Australian coast line, except for Victoria and Tasmania. Common around the northern coast, especially on rocky shorelines, islands and reefs. Uncommon to rare or absent from closely settled parts of south-eastern Australia. Rare records from inland areas. Favours coastal areas, especially the mouths of large rivers, lagoons and lakes. Breeds in NSW from July to September. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	None - no suitable habitat present in study area	None
<i>Rhipidura rufifrons</i>	Rufous Fantail	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	Bonn	Found along NSW coast and ranges. Inhabits rainforest, dense wet forests, swamp woodlands and mangroves. During migration, it may be found in more open habitats or urban areas.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal

Threatened Ecological Communities						
Community name	Presence	NC Act	EPBC Act	Description	Likelihood of occurrence	Likelihood of impact
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Likely to occur within 10km of proposal site	CE	CE	A naturally occurring woodland of the temperate zone, in which Yellow Box co-occurs with Blakely's Red Gum. It includes the species rich understorey of native tussock grasses, herbs and scattered shrubs, together with a large number of native animal species.	Moderate – mapped under the ACTMapi service as occurring in the proposal site	Low – vegetation present does not meet standards for either the NC Act or EPBC Act

Natural Temperate Grassland of the South Eastern Highlands	Likely to occur within 10km of proposal site	CE	CE	A naturally occurring grassland of the temperate zone, dominated by native perennial tussock grasses, with associated native herbs and native fauna.	None – no suitable habitat in proposal site	None
Alpine Sphagnum Bogs and Associated Fens	May occur within 10km of proposal site	E	E	The ACT High Country Bogs and Associated Fens (bogs and fens) community is consistent with the Alpine Sphagnum Bogs and Associated Fens ecological community listed nationally under the EPBC Act but includes some bogs and fens at lower elevation. The bogs and fens community is defined by the presence or absence of <i>Sphagnum spp.</i> on a peat substratum. <i>Sphagnum</i> is not always a major floristic component, and there are some sites in the community where Sphagnum has become depleted or been lost as a result of disturbance. In these cases, the site is considered part of the community if other key species are present and a peat substratum is evident.	None – no suitable habitat in proposal site	None

Key: CE- Critically Endangered, E- Endangered, V- Vulnerable, C- China-Australia Migratory Bird Agreement (CAMBA), J- Japan-Australia Migratory Bird Agreement (JAMBA), K- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA), Bonn- Bonn Convention on Migratory Birds



ghd.com

→ **The Power of Commitment**