



ACT MATERIALS RECOVERY FACILITY

ADDENDUM TO APPENDIX L

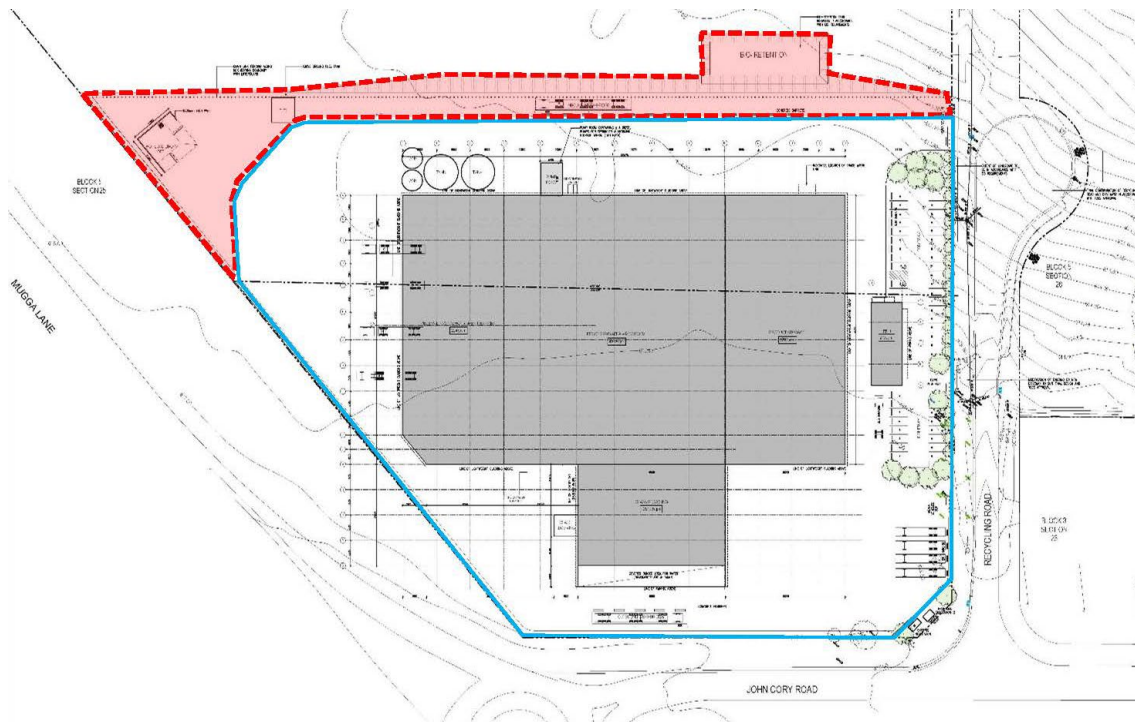
BIODIVERSITY ASSESSMENT REPORT

Prepared for Veolia Environmental Services (Australia) Pty Ltd | 8 August 2025



Due to the change in site layout proposed for the new MRF, Capital Ecology were engaged to assess a narrow strip of land that will be utilised under the Veolia proposed development plan additional to the GHD concept plan area. This area is shown in red in Figure 4.

Figure 4: Additional area assessed (red shading)



The additional ecological investigations by Capital Ecology concluded that the area consists of exotic vegetation, with a very low diversity of native species present. The study area does not support any NC Act native vegetation, nor does it support any EPBC Act and/or NC Act threatened species or ecological communities.

The GHD Report stated that about “2.0 hectares of land will be cleared, including a man-made dam”. This is not the case for the revised Veolia proposal. The additional site area in the Veolia site layout (compared to the area used by the former MRF and currently used by the waste transfer station) is approximately 8,000m² and the existing dam will remain as is.

Further investigations into connectivity

The Conservator of Flora and Fauna of the ACT Government, City and Environment Directorate (the ‘Conservator’) provided the following comments on the revised EIS:

- *“The Revised EIS does not fully address the issue of connectivity. The scoping document requested that the EIS “Provide details of whether the proposal will impact the existing connectivity for the area and whether the site will contribute to the future connectivity of the area”. The EIS only mentions the loss of connectivity for birds and it does not consider the loss of connectivity for grassland fauna”.*
- *“More analysis of this impact is required, along with more details on how the facility could improve connectivity for the future. The development will retain a strip of grassland parallel to Dog Trap creek as well as a large farm dam. Commitment to improved management of these areas could contribute to improved ecological function of the Dog Trap Creek riparian area”.*

Capital Ecology were engaged to:

- further assess the contribution the undeveloped strip of exotic grassland along the northern boundary of the site provides to fauna connectivity in the wider area; and

- provide recommendations on how this strip of exotic grassland can be managed to improve fauna connectivity in the area and the ecological function of the Dog Trap Creek riparian area.

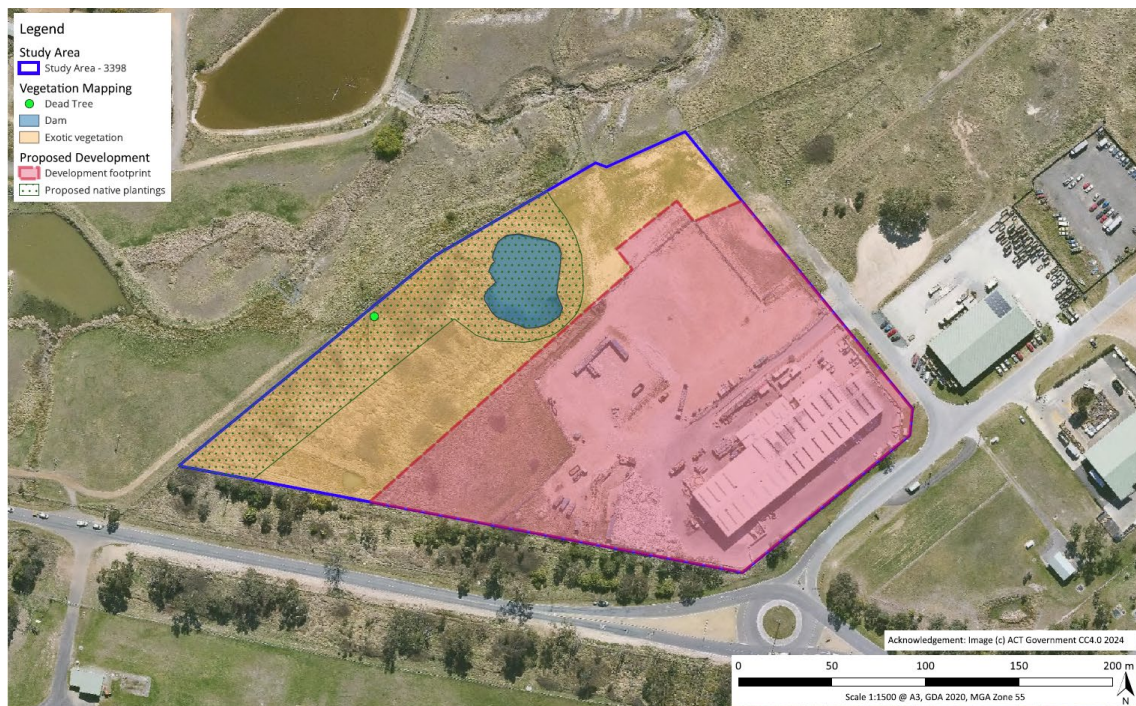
Capital Ecology prepared a supplementary report (included below in Appendix L) which concluded that: *“due to the degraded nature of the vegetation, the study area currently provides very little connectivity value for native fauna. A single dead tree on the north-western boundary of the study area and a row of planted trees and shrubs along Mugga Lane may provide limited connectivity for common birds”*.

In their supplementary report Capital Ecology provided the following recommendations on how the strip of exotic grassland can be managed to improve fauna connectivity:

- Fencing off a 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam.
- Implement a weed control program to remove Blackberry and other significant weeds, with ongoing maintenance to prevent reinvasion.
- Planting the fenced area with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. Capital Ecology’s supplementary report provides a list of suggested species of plants which would be suitable in the context of the surrounding area, the previously existing vegetation type, and the low-lying, wet conditions of the area, while at the same time not increasing bushfire risk.
- Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat.

Figure 5 (Capital Ecology, August 2025) shows the area of exotic grassland along the northern boundary of the site that is proposed to be planted with native vegetation. Rocks and coarse woody debris will be placed in the same area proposed for native plantings.

Figure 5: Proposed development and improvement measures (Capital Ecology, August 2025)



Assessment

The changes in site layout, together with the conclusions of the additional ecological assessments undertaken by Capital Ecology, do not result in any change to the matters considered in [Chapter](#)

5 – Impact Assessment of the GHD *Biodiversity Impact Assessment*, 16 May 2023. This is based on a review of the direct and indirect impacts plus the cumulative impacts considered in the GHD Report.

Capital Ecology has provided a number of recommendations on how the strip of exotic grassland in the northern part of the site can be managed to improve fauna habitat and connectivity.

As such, the proposed mitigation measures, which are repeated in Table 1 below, remain relevant for the Veolia MRF development proposal, with additional mitigation measures added to improve fauna habitat and connectivity.

Table 1: Mitigation measures to be implemented for the proposal

Potential impact	Measures to reduce impact
Impacts to native vegetation and habitat	<p>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:</p> <ul style="list-style-type: none"> ▪ An approximately 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam will be fenced off. ▪ Removal of areas of native vegetation 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 fauna not assessed in the ecological assessment are identified in the proposal site, work will cease immediately and the environmental manager will be contacted. ▪ Planting the fenced area along the northern boundary of the site with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. ▪ Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat. The quantity of rocks and coarse woody debris, together with the locations for placement, will be determined by Veolia in consultation with a consulting ecologist or the ACT Parks and Conservation Service.
Spread of weeds	<p>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. The WPMP will include the following measures:</p> <ul style="list-style-type: none"> ▪ Weed management may include the following measures: <ul style="list-style-type: none"> - Use of herbicides. - Integrated weed management throughout the proposal site. - Implementing exclusion zones. - Weed removal and disposal prior to construction. ▪ The weed management plan would include: <ul style="list-style-type: none"> - 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. - Identification of specific management measures for individual weed control. - A specific weed control program to remove Blackberry and other significant weeds in the strip of exotic grassland in the northern part of the site, with ongoing maintenance to prevent reinvasion. - 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.

Potential impact	Measures to reduce impact
	<ul style="list-style-type: none"> - Vehicle and machinery wash/brush downs will be required to ensure that weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. - 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 proposal site would be monitored. Weed control will be undertaken if it is determined that 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. <ul style="list-style-type: none"> ▪ Other protocols will include: <ul style="list-style-type: none"> - Minimising the removal of vegetation wherever possible. - Having an ecologist/wildlife carer on site during clearing activities.
Soil erosion, sedimentation and water quality	<p>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:</p> <ul style="list-style-type: none"> ▪ Refuelling or maintenance of plant and machinery will not be undertaken within 50 metres 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 creek lines outside of the study area) 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 that 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.
Invasion and spread of pathogens	<p>The weed and pest management plan will include the following:</p> <ul style="list-style-type: none"> ▪ Protocols to prevent introduction or spread of pathogens like Chytrid Fungus and Phytophthora following the Hygiene guidelines for wildlife (Department of Panning, Industry and Environment (DPIE), 2020). ▪ All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site.

Conclusions

The site has been highly disturbed and is in a degraded condition with no threatened flora or fauna identified during field surveys. Field surveys have confirmed that previously mapped Native Grassland Ecological Community (ACTMAPi) is not present.

It is therefore concluded that the proposal is unlikely to have an impact on any biota or communities listed under the NC Act. The proposal is also unlikely to have an impact on any biota or communities listed under the EPBC Act and a referral is not required.



7 August 2025

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Materials Recycling Facility, Recycling Road, Hume, ACT – Plan to enhance biodiversity and connectivity

Capital Ecology project no. 3439

Dear Raymond Choy,

We understand that Veolia have prepared an Environmental Impact Statement (EIS) under the ACT *Planning Act 2023* for the Materials Recycling Facility (MRF), Recycling Road, Hume, ACT (the 'proposed development'). The 'study area' consists of Block 10 Section 25 (approx. 5.06 ha, see Figure 1). Capital Ecology have been engaged to prepare a plan to improve and enhance the biodiversity and connectivity values of the study area as part of the proposed development.

This letter provides a brief description of the current biodiversity values of the study area, together with an outline of proposed measures to be undertaken to improve and enhance the biodiversity and connectivity values of the study area as part of the proposed development.

Site Description – current biodiversity and connectivity value

As described in Capital Ecology (2025¹), the vegetation across the study area consists of highly degraded exotic grassland, with a very low diversity of native species. Before European occupation, the study area would have been characterised by an open grassy woodland. However, the original vegetation has been almost entirely cleared. No threatened flora or fauna species have been recorded, or are considered likely to occur in, the study area.

Several significant weed species are present in the study area, most notably being the large patches of Blackberry *Rubus fruticosus*. There is a small dam to the north of the study area, which is surrounded by a mix of native and exotic fringing vegetation. This dam is likely to provide habitat for a range of common birds, reptiles and amphibians.

¹ Capital Ecology (2025) *Ecological Values Assessment of land north of the Materials Recycling Facility, Recycling Road Hume, ACT*. Prepared for Veolia. Authors: C. Ross and R. Speirs. Capital Ecology project no. 3398.

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Due to the degraded nature of the vegetation, the study area currently provides very little connectivity value for native fauna. A single dead tree on the north-western boundary of the study area and a row of planted trees and shrubs along Mugga Lane may provide limited connectivity for common birds.

Proposed works

The proposed development will result in the small loss of approx. 0.54 ha of exotic groundstorey vegetation. While this is not expected to result in any significant impacts to the current ecological values, Veolia proposes the following measures to improve and enhance the biodiversity and connectivity values of the study area. In particular, the aim of these proposed measures is to improve habitat value for native fauna, whilst not increasing fire risk to the local area or the proposed development (a Materials Recycling Facility).

As shown in Figure 2, the proposed works include the following.

1. Fencing

An area along the north-western boundary of the study area will be fenced off, including a 30 m wide corridor along the boundary and the area surrounding the dam. This total area is approx. 0.96 ha.

2. Weed control

The study area currently contains several large patches of Blackberry, which is listed as a Weed of National Significance (WoNS) and an ACT Pest Plant. If left uncontrolled, there is a high risk that the Blackberry would continue to spread and invade surrounding areas. As such, part of the proposed plan to improve the biodiversity in the study area is a program of weed control to remove Blackberry and other significant weeds, with ongoing maintenance to prevent reinvasion.

3. Mixed native plantings

The fenced area will be planted with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree, and the dam, and to improve the habitat value for native fauna. Table 1 provides a list of suggested species which would be suitable in the context of the surrounding area, the previously existing vegetation type, and the low-lying, wet conditions of the study area².

Table 1. Suggested planting list

Scientific name	Common name
<i>Bulbine bulbosa</i>	Bulbine Lily
<i>Carex appressa</i>	Tall Sedge
<i>Chrysocephalum apiculatum</i>	Common everlasting
<i>Craspedia variabilis</i>	Billy Buttons
<i>Dianella revoluta</i>	Spreading flax lily
<i>Eleocharis acuta</i>	Tall Spike Rush
<i>Hardenbergia violacea</i>	Purple coral pea
<i>Juncus australis</i>	Austral Rush
<i>Lomandra longifolia</i>	Spiny-headed mat-rush
<i>Phragmites australis</i>	Common Reed
<i>Poa labillardierei</i>	River Tussock Grass
<i>Themeda australis</i>	Kangaroo Grass
<i>Wahlenbergia communis</i>	Common bluebell

² We note that while the study area would have historically supported a grassy woodland, the plantings do not include trees and shrubs due to limitations such as fire risk etc.

4. Placement of rocks and course woody debris

Veolia will source rocks and course woody debris (i.e. large logs, tree trucks) and place these in suitable locations within the fenced native planting area. The quantity of rocks and course woody debris, together with the locations for placement, will be determined by Veolia in consultation with a consulting ecologist or the ACT Parks and Conservation Service.

We trust that this letter provides the information and plan outline required. However, please do not hesitate to contact us should you have any questions relating to letter.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Robert Speirs".

Robert Speirs
Director / Principal Ecologist

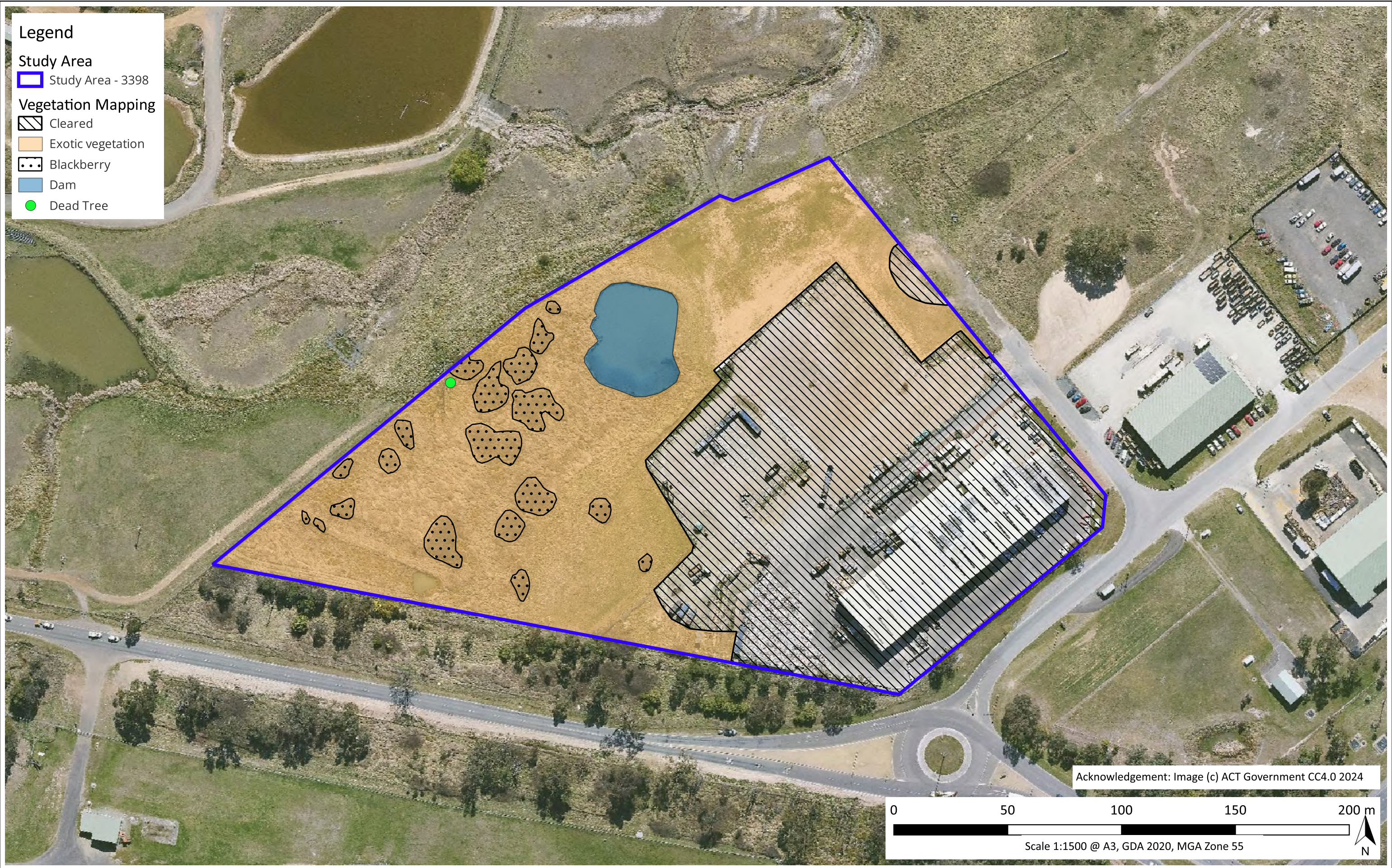
A handwritten signature in black ink, appearing to read "Catherine Ross".

Dr Catherine Ross
Consultant Ecologist

Attachments

Figure 1. The Study Area – mapped biodiversity values

Figure 2. Proposed development and improvement measures



Acknowledgement: Image (c) ACT Government CC4.0 2024

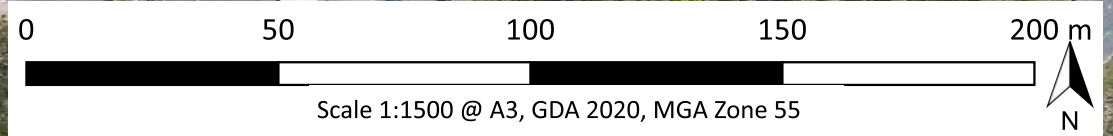


Figure 1. The Study Area - Mapped Biodiversity Values

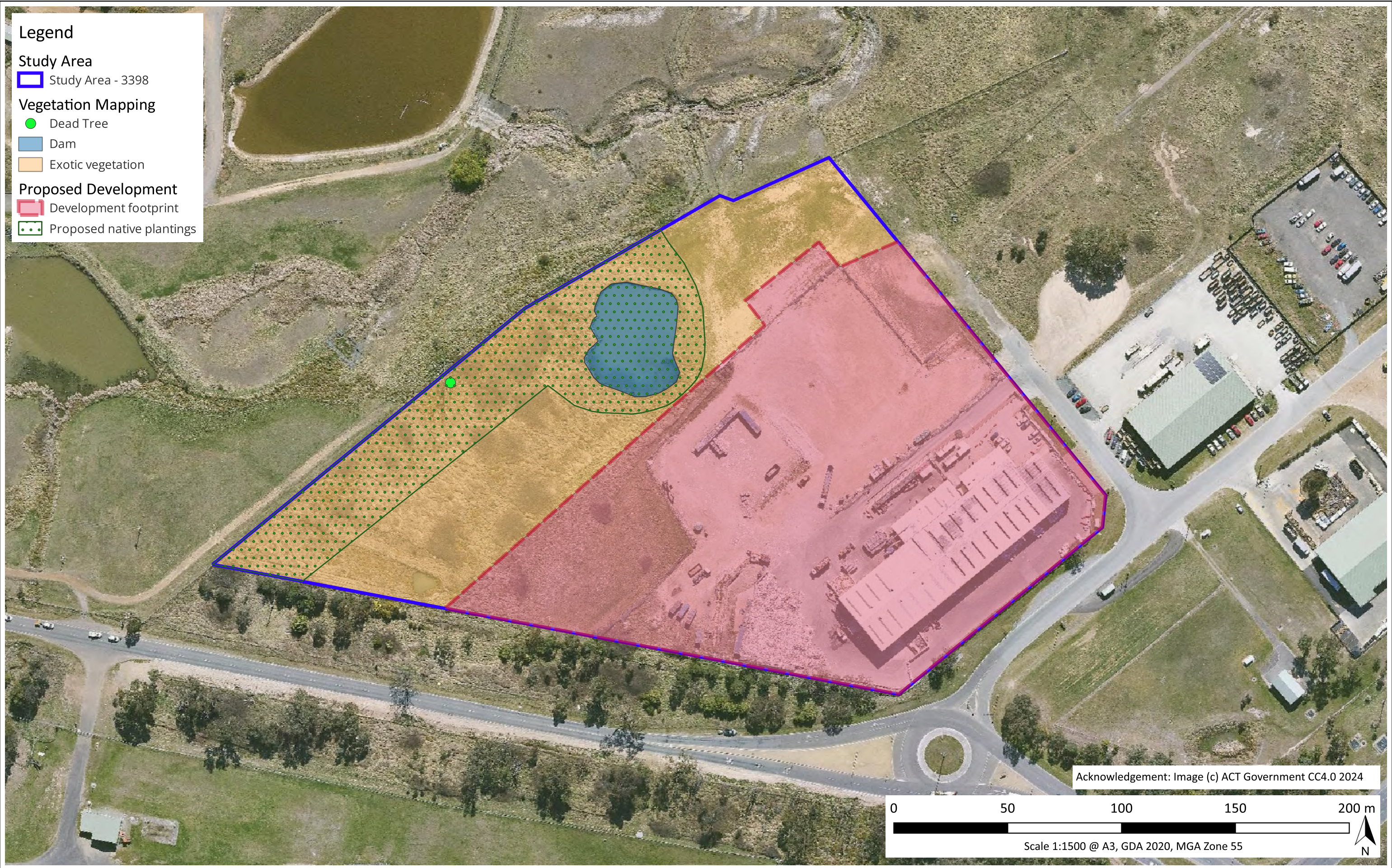


Figure 2. Proposed Development and Improvement Measures



24 January 2025

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Proposed development of Materials Recycling Facility, Recycling Road Hume, ACT– Ecological Impact Assessment

Capital Ecology project no. 3398

Dear Raymond Choy,

Capital Ecology conducted a site visit to the Materials Recycling Facility (MRF), Recycling Road Hume, ACT on 13 January 2025. The area of interest is a small strip of land to the north of the MRF (shown in pink in Figure 1). This letter provides a brief summary of the results of this site visit and the ecological values of the land.

Site Description

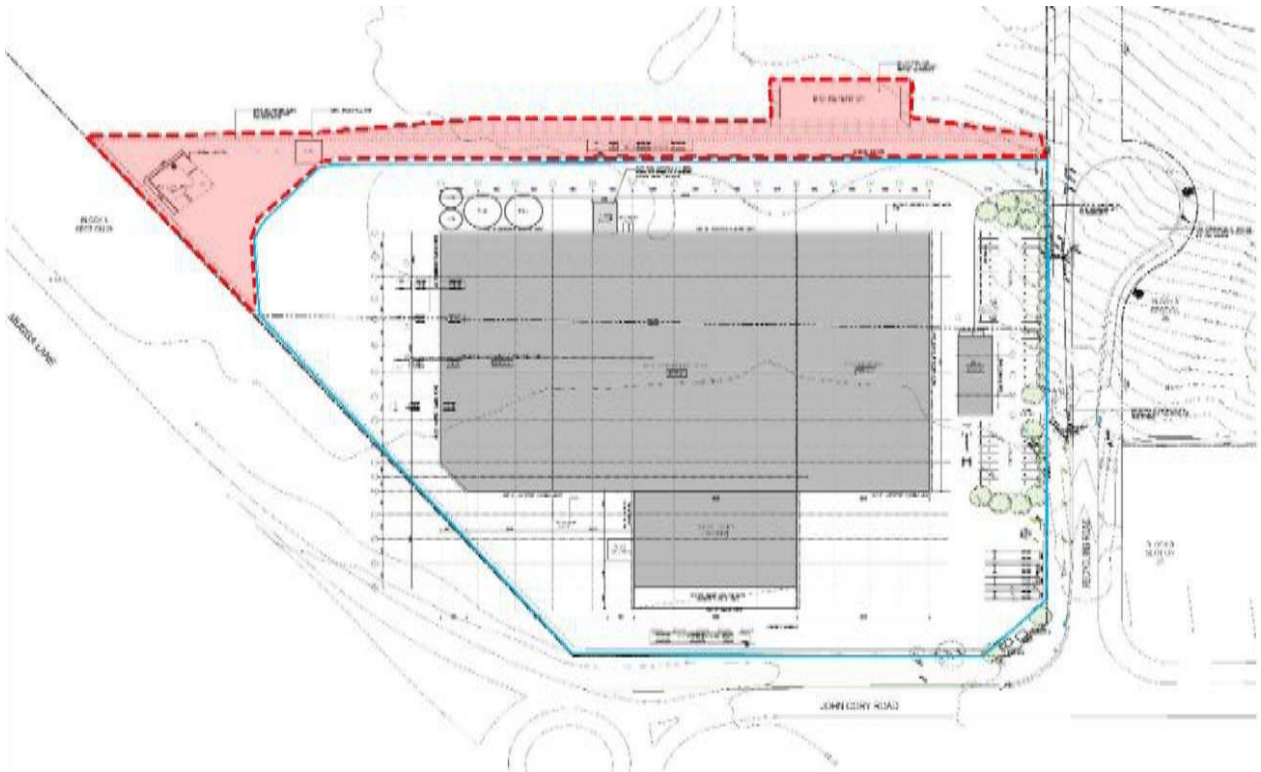
Before European occupation, the study area would have been characterised by an open grassy woodland. However, historic and ongoing impacts have significantly degraded the condition of the vegetation. As a result, the remnant canopy is now absent and the groundstorey is highly modified and dominated by exotic grasses and herbaceous weeds, with a low diversity of native species.

The groundstorey across the entire study area is dominated by exotic grasses and herbaceous weeds, in particular Tall Fescue *Festuca arundinacea*, Phalaris *Phalaris aquatica*, Paspalum *Paspalum sp.*, and Yorkshire Fog *Holcus lanatus*. Very small patches of disturbance-tolerant native grasses are scattered throughout, including Red-leg Grass *Bothriochloa macra*, Wallaby Grasses *Rytidosperma spp.* and Weeping grass *Microlaena stipoides*. There is a low diversity of native forbs.

Several significant weed species are present in the study area, most notably some large patches of Blackberry *Rubus fruticosus*.

There is a small dam to the north of the study area, which is surrounded by a mix of native and exotic fringing vegetation. This dam is likely to provide habitat for a range of birds, reptiles and amphibians.

Figure 1. The study area



Flora and Fauna

During the site visit we recorded a total of 58 flora species, including 18 native species and 40 exotic species. No EPBC Act and/or NC Act listed threatened flora species were recorded in the study area during the field survey, and no listed species have been previously recorded in the study area (as indicated on ACTmapi, BioNet, and Canberra Nature Map).

A total of six native bird species were recorded during the field survey, most of which are common urban-adapted species and are of least concern from a conservation perspective. One species, the Golden-headed Cisticola, is listed as a rare species in the ACT. Another locally rare species, the Australasian Shoveler, has been previously recorded on NatureMapr (formerly Canberra Nature Map).

No EPBC Act and/or NC Act listed threatened fauna species were recorded, or have been previously recorded in the study area. A previous targeted reptile survey by Capital Ecology (2023¹) did not record any threatened reptile species, but did record a number of common reptiles and amphibians.

The exotic pest species Common Starling *Sturnus vulgaris* and Indian Myna *Acridotheres tristis* were recorded in the study area during the field survey, and it can be assumed that the exotic pest species European Rabbit *Oryctolagus cuniculus*, Red Fox *Vulpes vulpes*, and House Sparrow *Passer domesticus* will likely be present or visit the study area. Each of these species is commonly encountered in such peri-urban sites.

Conclusions

As detailed herein, the study area consists of exotic vegetation, with a very low diversity of native species present. The study area does not support any NC Act native vegetation, nor does it support any EPBC Act and/or NC Act threatened species or ecological communities.

The small dam to the north of the study area supports native fringing vegetation and has some value to native fauna, with the potential to provide habitat for rare or threatened water birds. However, the small size of the dam and lack of surrounding remnant vegetation means that it is unlikely to provide important habitat for any such species.

We trust that this letter provides the information, assessment and advice required. If, however, you should have any questions relating to this report, please do not hesitate to contact us.

Yours sincerely,



Robert Speirs



Dr Catherine Ross

Director / Principal Ecologist Consultant Ecologist



Hume Materials Recovery Facility

Biodiversity Assessment Report

Transport Canberra and City Services

16 May 2023

→ The Power of Commitment



Project name		Materials Recovery Facility Hume ACT					
Document title		Hume Materials Recovery Facility Biodiversity Assessment Report					
Project number		12540460					
File name		12540460_REP_MRF Var_Biodiversity Assessment					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0	Rhys Cairncross	A Smith	*Record on file*	A Montgomery	Record on file	15/08/23

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Appendices

Appendix A	Recorded flora and fauna
Appendix B	Likelihood of occurrence tables

Terminology

Terminology	Definition
Impact	The effect of a project, which can be adverse or beneficial, when measured against an existing condition.
Proposal	The construction and operation of the proposed materials recovery facility in Hume, Australian Capital Territory.
Proposal site	The area within which all the Project construction and operational elements will be contained within.
Study area	Consists of land in the vicinity of, and including, the proposal site. The study area is a wider area surrounding the proposal site as defined in this assessment, including land that has the potential to be indirectly impacted by the proposal.

Abbreviations and meaning

Abbreviations	Meaning
ACT	Australian Capital Territory
BAR	Biodiversity Assessment Report
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EIS	Environmental Impact Statement
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPSDD	Environment, Planning and Sustainable Development Directorate
FFMP	Flora and Fauna Management Plan
FOGO	Food Organics and Garden Organics
GHD	GHD Pty Ltd
ha	Hectare
HRRE	Hume Resource Recovery Estate
km	Kilometre
m	Metre
mm	Millimetre
MNES	Matters of National Environmental Significance
MRF	Materials Recovery Facility
NC Act	<i>Nature Conservation Act 2014</i>
NSW	New South Wales
NTG	Natural Temperate Grasslands
P&D Act	<i>Planning and Development Act 2007</i>
PMST	Protected Matters Search Tool
RRP	Rehabilitation and Revegetation Plan
SLL	Striped Legless Lizard
TCCS	Transport Canberra and City Services
TEC	Threatened Ecological Community
TSSC	Threatened Species Scientific Committee
WoNS	Weeds of National Significance
WPMP	Weed and Pest Management Plan

1. Introduction

1.1 Overview

The ACT Government is proposing to replace and upgrade the existing Material Recovery Facility (MRF) on Block 12, Section 25 Hume, ACT (the proposal site). The proposal site is located to the north of the Monaro Highway in an industrial and rural area located approximately 12.5 km south of Canberra City (refer to Figure 1.1). The existing MRF was extensively damaged due to fire on 26 December 2022 and the facility is non-operational. The main shed remains standing and is currently being used as a waste transfer station to accept recyclables, sort, and store materials before being shipped to other processing facilities.

The proposal would replace the existing MRF and provide technological improvements to facilitate greater resource recovery by both increasing the quality of recycled materials and by reducing the amount of nonrecyclable residual waste generated that is currently sent to landfill. The new Hume MRF would be one of the first advanced facilities in Australia to enable separation mixed plastics. Upgraded technology would also improve the quality and therefore marketability of paper and mixed cardboard, mixed plastics and glass that would be received from the ACT and five regional NSW councils.

The proposal would be designed to process up to 115,000 tonnes per year of mixed recyclables. The proposed capacity would provide for population growth and changing consumer behaviours which are expected to contribute to increases in recoverable materials over time.

Key features of the proposal include:

- Replacement of the existing MRF.
- Additional warehouse style facilities.
- Civil works and piling to support the dynamic loads imposed by rotating and high frequency vibrating equipment.
- Expansion of hardstand space towards the west of the proposal site.
- A trade waste system to capture contaminated stormwater runoff.

1.1.1 Approval and assessment requirements

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact assessment (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 (EPSDD) dated 21 July 2022.

The proposal is subject to approval by the planning and land authority within the EPSDD.

1.2 The proposal location

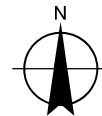
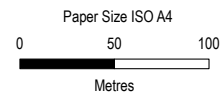
The proposal would be located within the current bounds of the Hume Resource Recovery Estate (HRRE) on Block 12, Section 25 Hume, Recycling Road (see Figure 1.1 and Figure 1.2). The proposal site is surrounded by industrial facilities including:

- ACT Skip Hire across Recycling Road to the east.
- Soft Landing Mattress Recycling located south-east, across John Cory Road.
- Hume Industrial Estate located to the south and east across Monaro Highway.
- Mugga Lane Landfill located approximately 200 metres (m) to the north-west.
- Proposed FOGO facility located to the east, across John Cory Road.

The proposed relevant built area is estimated to be 3.5 hectares (ha) which includes the loading bay, processing area, and car park. The roadways on-site would be 0.5 ha, whereas the building would be 1.05 ha. The new MRF would be accessed via Recycling Road, which is situated at the east of the proposal site.



- Legend**
- Proposal site
 - Cadastre
 - Watercourses



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

**Transport Canberra and City Services
Hume Materials Recovery Facility
Biodiversity Assessment Report**

Project No. 12540460
Revision No. 0
Date 28/07/2023

Proposal location

FIGURE 1.1

1.3 Objectives

The primary objectives of this Biodiversity Assessment Report (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.
- Identify the potential impacts of the proposal on threatened biota and their habitats and advise on 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 study area.
- 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.

1.4 Scope of work

This BAR has been completed in accordance with the NC Act and EPBC Act. To achieve this, the assessment includes:

- A Desktop review that involved:
 - Assessment of vegetation mapping.
 - Assessment of previous records and habitat mapping for threatened biota.
 - Assessment of biophysical characteristics of the proposal site (e.g. soils, geology).
 - Review of aerial imagery.
- A general field survey over the entire proposal site.
- Targeted survey for threatened fauna.

1.5 Scoping document requirements

The scoping document requirements and sections where they are addressed in are presented in Table 1.1.

Table 1.1 Scoping document requirements

Requirement	Section addressed in
Provide a description of ecological values on and adjacent to the proposal site.	Section 4
Provide details of whether the proposal will impact the existing connectivity for the area and whether the proposal site will contribute to the future connectivity of the area.	Section 5.1.2
Consider impact on the area from the facility attracting vermin and associated predators.	Section 5.2.2
Consider impacts from the spread of weeds.	Section 5.2.2
Targeted Striped legless lizard (SLL) survey must be undertaken for the proposal site.	Refer to Striped Legless Lizard survey report
Any impacts identified in the EIS must also consider avoidance and mitigation measures to ensure impacts are reduced.	Section 6

1.6 Limitations

This report 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 1.4 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.

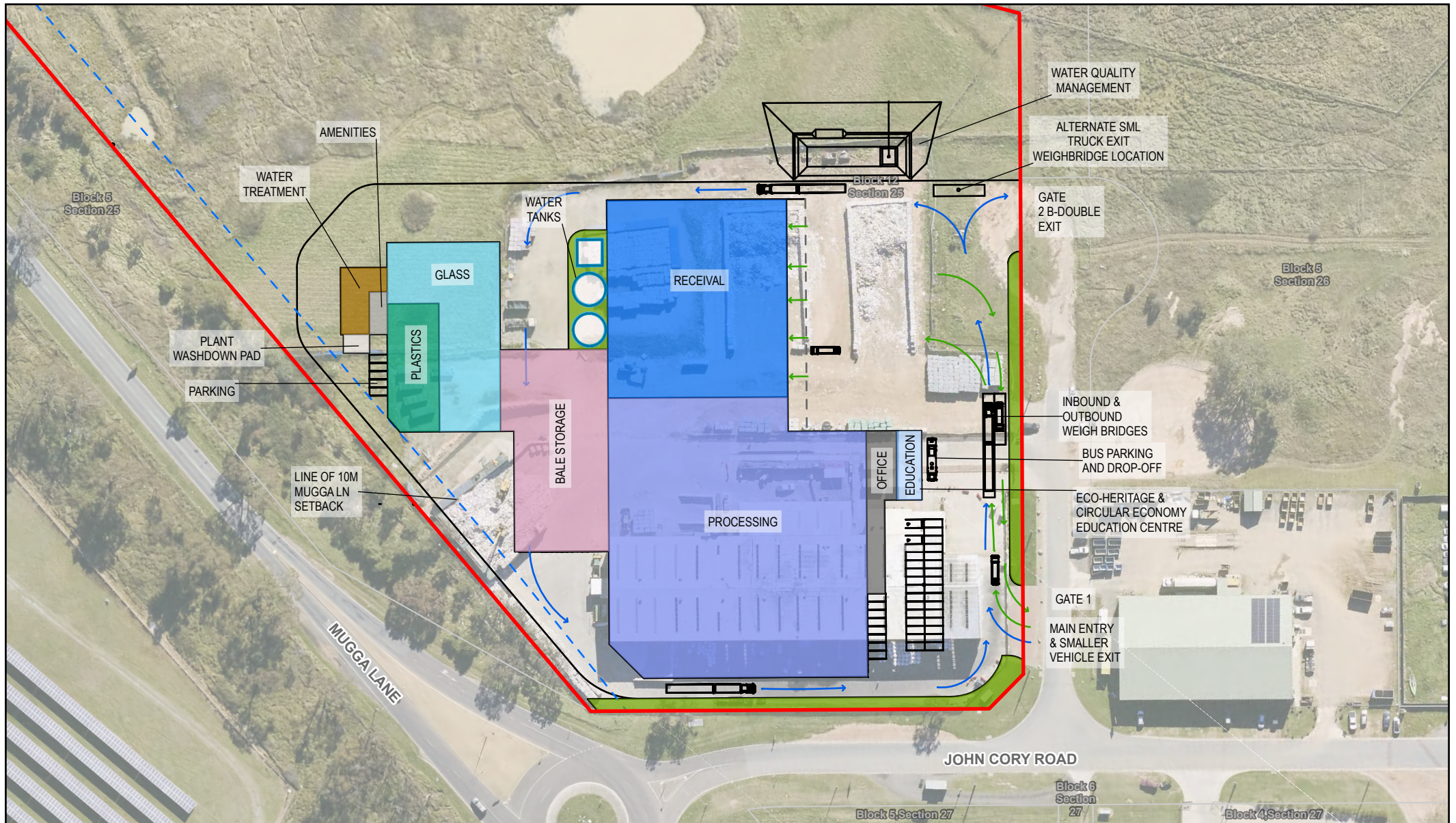
The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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 that 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.

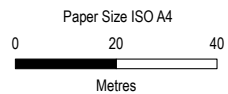
The services undertaken by GHD in connection with preparing this BAR:

- Were limited to those detailed specifically in Section 1.4 of this report.
- Are based on the footprint presented in this report (Figure 1.2).
- Are based on the survey method presented in Section 3 of this report.



Legend

- | | | |
|---------------|----------------|-----------------|
| Proposal site | Education | Processing |
| Cadastre | Glass | Reival |
| Water Tanks | Office | Water Treatment |
| Amenities | Plant Washdown | Grass |
| Bale Storage | Plastics | |



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



**Transport Canberra and City Services
Hume Materials Recovery Facility
Biodiversity Assessment Report**

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

Proposal layout

FIGURE 1.2

2. Statutory framework

2.1 ACT Government legislation

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 relating to 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, and complaints and enforcement.

The study area 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.

As a part of the EIS, impacts to biodiversity must be considered. Assessment of biodiversity has been undertaken in the form of this BAR.

2.1.2 Nature Conservation Act 2014

This report has been prepared to identify the potential habitats and *Nature Conservation Act 2014* (NC Act) listed species and ecological communities that could potentially occur in the study area 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 communities 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 legislation

2.2.1 Environmental 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.

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 by the proposal upon listed threatened species and communities, and MNES has been undertaken as part of this 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 study area. 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 NSW 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 GHD ecologists on 5 May 2022. A threatened ecological community under the NC Act (Yellow Box/Blakely’s Red Gum Tall Grassy Woodland) was identified in the desktop review as potentially occurring adjacent to the study area. Additionally, the Native Grassland ecological community was mapped as occurring within the study area. Depending on the floristics of vegetation present, this community may also correspond to the Natural Temperate Grassland threatened ecological community (Figure 4.5). 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 study area.
- 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 study area, and their habitats that could arise from the proposal during construction and operation.

Further surveys were also conducted by Capital Ecology between 29 September and 1 December 2022. This involved targeted surveys for threatened reptiles associated with grassland communities in the ACT, specifically the Striped Legless Lizard (*Delma impar*).

3.2.1 Survey effort

The survey effort included the following methods described in Table 3.2.

Table 3.2 Survey effort undertaken

Type of survey & biota group	Preferable survey timing of technique	Survey effort during 5 May 2022	Survey effort during 29 September to 1 December 2022
Vegetation condition assessment – random meander transect (Cropper, 1993) All flora	All Year	A random meander transect survey was conducted throughout the study area to identify vegetation types and condition. An incidental flora species list was recorded.	Not undertaken.
Fauna habitat assessment All fauna	All year	Potential fauna habitat identified within study area.	Potential fauna habitat identified within study area.
Opportunistic fauna observations All fauna	All year	Opportunistic fauna observations for all fauna species encountered during flora surveys and habitat assessment.	Not undertaken.
Yellow Box/Blakely's Red Gum Grassy Woodland Native Grassland Vegetation community	All year	As a part of the random meander transect, the study area was assessed for any areas that may contain this community. The extent of the community observed in the study area and the surrounding area was mapped.	Not undertaken.
Targeted surveys – artificial tile survey (DSEWPaC, 2011) Threatened reptiles	September to May (Striped Legless Lizard (<i>Delma impar</i>))	Not undertaken.	Placing 150 tiles through study area for 12 weeks and checking these for the presence of the species once weekly from weeks 2 to 12 over the survey period.

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 3.3.

Table 3.3 Weather conditions during surveys

Survey date	Rainfall past 24 hours (mm)	Temperature (°C)	Weather observations	Wind gusts
5 May 2022	0.0	8.2–17.2	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.	26 km/hr
29 September 2022	7.6	6.5–16.2	Partly cloudy and cool with light breezes. Temperatures warmed slowly during the day.	17 km/hr
4 October 2022	0.0	5.4–19.4	Overcast and cool with no breeze. Temperatures warming to a mild midday peak.	Calm
10 October 2022	0.2	0.0–16.7	Scattered clouds with light breezes. Cold morning that slowly warmed during the day.	11 km/hr
18 October 2022	0.0	10.0–19.6	Overcast with light breezes. Cool morning warming to a mild midday peak.	9 km/hr
28 October 2022	0.2	11.3–15.2	Scattered clouds, mostly clear, with moderate winds gusting up to 33 km/hr.	33 km/hr

Survey date	Rainfall past 24 hours (mm)	Temperature (°C)	Weather observations	Wind gusts
4 November 2022	0.0	5.1–20.4	Scattered clouds, mostly clear, with light breezes. Temperatures warming to a mild peak.	9 km/hr
10 November 2022	0.0	10.4–22.7	Scattered clouds, mostly clear, with light breezes. Temperatures warming to a mild peak.	7 km/hr
17 November 2022	0.0	4.1–17.6	Clear day with no cloud cover. Light breezes.	9 km/hr
25 November 2022	0.0	5.7–24.9	Overcast, cool morning warming to a very mild peak temperature. Light breezes.	4 km/hr
1 December 2022	0.0	11.2–20.9	Overcast, cool morning temperatures warming to a mild peak. Light breezes.	9 km/hr

3.2.3 Flora

Vegetation and floristic attributes were assessed using the random meander technique (Cropper, 1993) during the surveys conducted on 5 May 2022. 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 study area, 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 study area 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.

3.2.4 Fauna

Fauna surveys included opportunistic fauna observations and habitat assessments for fauna during site visits. Incidental records for potential mammal, amphibian and reptile habitat were undertaken and recorded during all 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 also recorded.

Targeted surveying for the Striped Legless Lizard using 150 artificial tiles placed throughout the study area was also carried out between 29 September and 1 December 2022. This technique uses artificially placed structures to replicate the typical rocky habitat of the species and is the best technique for assessing the presence of the lizard in the ACT (DSEWPaC, 2011).

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 study area. 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 study area, 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 5 May 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 it was considered unlikely that threatened flora and fauna were present in the study area due to lacking habitat and no previous records, this was not considered to be a significant limitation. The Striped Legless Lizard surveys were undertaken in the correct season, in accordance with relevant survey guidelines (DSEWPaC, 2011).

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 study area 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 study area, 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 study area occurs within the South-eastern Highlands bioregion and Murrumbateman subregion (Table 4.4).

Table 4.4 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 study area is 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 proposal site slopes gently towards the north towards a creek line outside of the study area. Within the study area is a large man-made dam and, in the western corner of Block 10, multiple small ephemeral waterbodies in a boggy area.

The underlying geology of the soil landscape consists of highly weathered bedrock. The soil parent material is mostly siltstone, shale, sandstone and limestone. However, alluvial material is 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. Moderate 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 study area 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 study area itself and the land use surrounding it 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 study area and a landfill operates approximately 500 m west. Formerly, the study area and surrounding land would have been used for agricultural purposes. Approximately 1 km north is a woodland area and 1 km northwest is the Isaacs Ridge Nature Reserve.

The vegetation is mostly grassland within the study area and its surroundings. 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 study area 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 study area. Commonly encountered threatened species in the ACT including the Pink-tailed Worm-lizard (*Aprasia parapulchella*) and Striped Legless Lizard were not mapped as occurring in the study area, with the nearest locations they are known to occur in 1.7 km to the east.

The desktop review for this database suggested 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 adjacent the study area. Furthermore, it was suggested that a Native Grassland community was present within the study area. This community may be commensurate with the Natural Temperate Grassland threatened community listed as critically endangered under the NC Act and the EPBC Act (listed under Natural Temperate Grassland of the South Eastern Highlands).

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 threatened ecological communities (TECs) that are known to or may occur within 10 km of the study area. The following species was mapped in close proximity (<1 km away) to the study area:

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

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

38 flora species were identified during surveys, including 15 native and 23 exotic species. These are listed in Appendix A. These species were grasses, forbs and small shrubs as the study area is treeless, open, grassland. One dead tree of an unknown Eucalyptus species was present in the northwest corner of the study area. Vegetation cover was dominated by exotic species.

Despite being mapped in proximity to the study area boundary, there is no Yellow Box/Blakely's Red Gum Grassy Woodland community present within the study area. Based on observation when surveying the proposal site, any occurrence of the community in close proximity to the study area would be in a highly degraded condition. Furthermore, as the groundcover within the study area is dominated by exotic vegetation, the grassland present across the proposal site does not conform to the EPBC Act listing of Natural Temperate Grassland of the South Eastern Highlands (TSSC, 2016) or as any of the conservation significance categories for Native Grassland listed under the NC Act (ACT Government, 2017). As such, the habitat present is consistent with that of exotic grassland due to the very low coverage of important native grass species, like *Themeda triandra*, and lacking diversity of native flora within the assemblage of species recorded.

No threatened flora was identified during field surveying. Despite previous records of the Small Purple Pea locally, it is considered unlikely that this or any threatened flora may occur in the proposal site due to previous land clearing and waste dumping by humans contributing to a disturbed soil landscape and a lack of potential habitat from the invasion and domination of exotic flora.

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 4.5. Under the *Pest Plants and Animals Act 2005*, 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 4.5 Weeds of significance in the ACT and Australia that were 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

* Denotes WoNS

4.2.2.2 Fauna

No threatened fauna were identified during field surveys, whilst two invasive species of fauna were identified. Of the species that were 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 only mammal that was identified were Eastern Grey Kangaroo (*Macropus giganteus*). Two reptile species were recorded and frog calls were heard from *Crinia signifera*.

The proposal site provides a man-made dam, ephemeral ferns and boggy areas (Figure 4.3). This is potential habitat for aquatic and semi-aquatic species, like amphibians, and wetland birds including migratory species. A common wetland bird species, the Pacific Black Duck (*Anas superciliosa*) was recorded utilising the dam and the vegetation surrounding it. However, this habitat is of low quality due to the invasion of exotic groundcover species surrounding the dam and elevated sediment loads clearly visible in the waterways (Figure 4.3 and Figure 4.4). Considering the disturbed nature of the habitat present, lacking records in close proximity to the study area and isolation from higher quality patches of habitat, it is not expected that any migratory birds or threatened amphibians would rely on the study area for survival. It is possible that the dam and associated wetter areas around it may be a temporary refuge for wetland birds, including migratory species, by providing a small amount of concealment and some foraging resources. However, due to its highly degraded condition, it would be unlikely constitute any habitat critical for breeding or survival, if it were to be used at all.

No threatened reptiles were recorded despite targeted surveys for the Striped Legless Lizard. Grassland in degraded condition, such as that present in the study area, is generally insufficient for the survival of this and other threatened reptiles known in the ACT. No other signs of potential habitat for reptiles, like partially embedded rocks, was recorded. However, a small area of partially embedded rock was recorded in the property adjacent the study area, suggesting there may be some suitable patches of habitat in the locality for threatened reptiles.

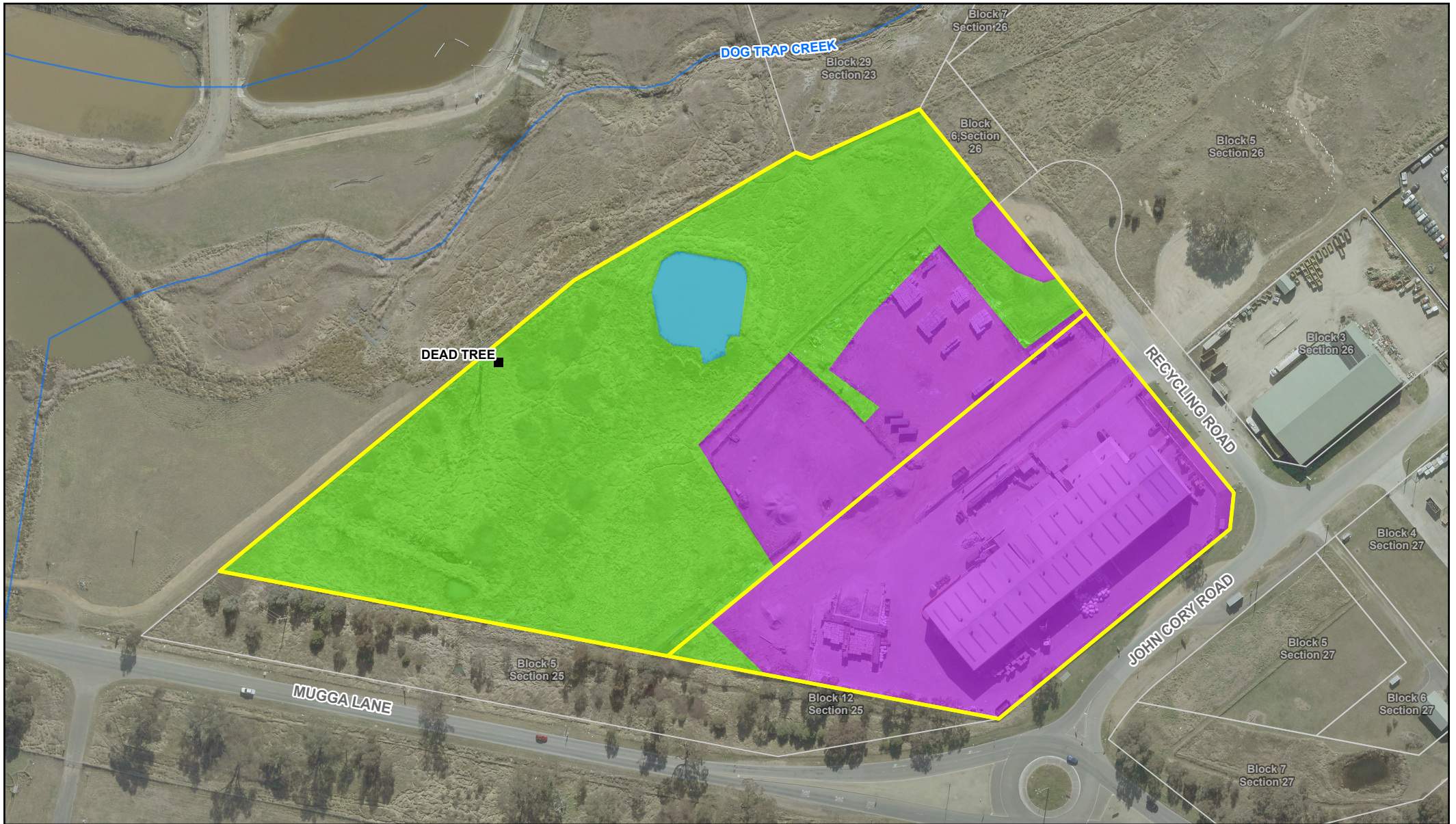
A single dead tree was present within the northwest of the study area (Figure 4.5). No hollows were observed in the tree. Fauna using this tree would primarily be birds due to a lack of hollows and connectivity to other trees, which is needed by arboreal mammals for foraging and refuge. Birds would be unlikely to roost or nest in the tree due to the lack of hollows and exposure from the lacking foliage. Nonetheless, birds evidently perch in the tree branches as they forage or whilst resting with signs of usage seen including whitewash present at its base. The tree may be a perch for raptors during foraging, such as the Nankeen Kestrel (*Falco cenchroides*) which was observed gliding over the study area during surveys.



Figure 4.3 *Man-made dam with surrounding vegetation within study area*

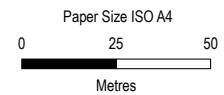


Figure 4.4 *Elevated sediment content of waterways within study area*

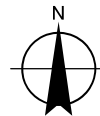


Legend

- Watercourses
- Cadastre
- Study area
- Exotic grassland
- Man-made watercourse
- Previously developed area



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



Transport Canberra and City Services Directorate
Materials Recovery Facility Hume ACT
Biodiversity Assessment

Project No. **12540460**
Revision No. **A**
Date **11/01/2023**

Vegetation Mapping

FIGURE 4.5

5. Impact assessment

5.1 Direct impacts

5.1.1 Vegetation removal

The proposed development would be around two hectare (ha) in area. This area mostly comprises land that has been previously developed for the current Hume MRF. A small area of grassland habitat bordering the current facility would also need to be cleared to facilitate construction. This would be less than one ha in area. 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 known in the ACT. No trees are present within the study area. The single dead tree that was present within the northwest of the study area would be retained.

5.1.2 Fauna habitat and fragmentation

The potential habitat to be removed consists entirely of exotic grassland. However, a large portion of grassland within the study area remains outside the construction footprint and would be retained after construction is completed. Further, the grassland to be impacted occurs on the edge of the current facility present in the study area and is in a degraded condition due to edge effects. Accordingly, the proposal is unlikely to cause any fragmentation of habitat in the locality. Further, the dead tree in the study area that provides a perch for birds would be retained whilst avoiding direct impacts to the dam and ephemeral waterbodies near it minimises potential fragmentation of habitat for aquatic species, including any wetland birds that choose to utilise it.

No woodland would be disturbed during construction. As such, impacts to woodland habitat connectivity are low to negligible. The waterbody within the study area would be retained, with no potential loss of wetland habitat proposed.

5.1.3 Threatened and migratory species impacts

No threatened flora or fauna were observed in the study area and there are also limited records in the immediate surrounding area. Due to the disturbed nature of the habitat present it is unlikely the construction of the proposal will impact threatened species.

Migratory species may currently utilise the existing dam and surrounding vegetation on passage between better quality and larger wetland areas that occur in the locality. However, this would be a rare occurrence if it were to happen at all as this habitat resource is in a degraded condition and would not be sufficient to support many migratory wetland bird species.

5.1.4 Disturbance, injury and mortality of fauna

During construction, death or injury may occur to fauna present during clearing of 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 study area 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 study area, such as the dead tree, 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 study area.

With the implementation of safeguards, 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

Naturally occurring ephemeral waterbodies and boggy areas occur within the exotic grassland present, but no natural waterways are present, with the dam currently in the study area being human made. This dam and all other wetter areas within the study area are already impacted by erosion and sedimentation, with the water present visibly turbid from high sediment loads (See Figure 4.4). Excavations and other disturbance due to construction in proximity to the dam and ephemeral waterbodies poses a risk of worsening erosion and sedimentation. By extension this could cause erosion and sedimentation within areas outside of the study area, such as waterways adjacent to the study area boundary. Safeguard measures would be implemented to minimise the potential for soils to be washed into waterways.

5.2.2 Invasion and spread of pests, weeds, pathogens and disease

Cover of exotic species was very high throughout the study area. 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 movement. 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 study area can spread weeds into the surrounding area.

Pathogens and diseases, such as 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 that are 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 study and surrounding area. Safeguards would still be implemented to further minimise these risks.

The proposal involves storage and processing waste, which may attract vermin and pests like the Black Rat (*Rattus rattus*). However, as the proposal would be entirely contained, with all waste processing occurring indoors, the likelihood of this is lowered. Further, the study area is already degraded and within a peri-urban environment. It is likely that introduced pests and predators are already present considering they thrive in disturbed landscapes, however the proposal would be unlikely to increase the suitability of habitat for these species significantly.

5.2.3 Edge effects

'Edge effects' can include increased noise and light, weed incursion, 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 that most of the remnant vegetation has been cleared and the study area and surrounding area has been historically modified by humans, it is unlikely that 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 proposed FOGO Waste Facility in the adjacent HRRE. However, this is expected to be a negligible cumulative impact and is unlikely to have major impacts on flora and fauna considering the surrounding area is dominated by exotic grassland and is subject to human disturbance.

5.4 Significance of impacts

The likelihood of occurrence of species listed under the NC Act and EPBC Act identified during the desktop review were assessed as a part of this report (Appendix B). Only a small number of threatened species were identified as potentially occurring in the surrounding area. It was assessed that 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.

Additionally, the grassland present does not meet the description of a Natural Temperate Grassland threatened ecological community under the NC Act or EPBC Act. As such, there would be no likelihood of a significant impact to any MNES and 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 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 6.6 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 6.6 Mitigation measures to be implemented for the proposal

Potential impact	Measures to reduce impact
Impacts to native vegetation and habitat	<p>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:</p> <ul style="list-style-type: none"> – Removal of areas of native vegetation 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 fauna not assessed in the ecological assessment are identified in the proposal site, work will cease immediately and the environmental manager will be contacted.
Spread of weeds	<p>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. The WPMP will include the following measures:</p> <ul style="list-style-type: none"> – Weed management may include the following measures: <ul style="list-style-type: none"> • Use of herbicides. • Integrated weed management throughout the proposal site. • Implementing exclusion zones. • Weed removal and disposal prior to construction. – The weed management plan would include: <ul style="list-style-type: none"> • 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. • 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 that weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. – 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.

Potential impact	Measures to reduce impact
	<ul style="list-style-type: none"> – The spread of exotic plant species within and adjacent to the proposal site would be monitored. Weed control will be undertaken if it is determined that 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. <p>Other protocols will include:</p> <ul style="list-style-type: none"> – Minimising the removal of vegetation wherever possible. – Having an ecologist/wildlife carer on site during clearing activities.
Soil erosion, sedimentation and water quality	<p>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:</p> <ul style="list-style-type: none"> – Refuelling or maintenance of plant and machinery will not be undertaken within 50 metres 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 creek lines outside of the study area) 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 that 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.
Invasion and spread of pathogens	<p>The weed and pest management plan will include the following:</p> <ul style="list-style-type: none"> – Protocols to prevent introduction or spread of pathogens like Chytrid Fungus and Phytophthora following the Hygiene guidelines for wildlife (Department of Panning, Industry and Environment (DPIE), 2020). – All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site.

7. Conclusion

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

To construct the proposal, up to around 2.0 hectares of land will be cleared, including a man-made dam. The land surrounding this is mostly exotic grassland, with introduced flora species dominating the groundcover vegetation present.

No threatened flora or fauna were identified during field surveys. Desktop review indicated that a threatened ecological community (Yellow Box/Blakely's Red Gum Grassy Woodland) may be present adjacent the study area. Furthermore, a Native Grassland ecological community was mapped within the study area. Both of these communities are listed under the NC Act and EPBC Act. Ground truthing during field surveys indicated that the vegetation present did not meet the requirements to be classified as either community.

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

8. References

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Appendices

Appendix A

Recorded flora and fauna

Table A Recorded species

Scientific Name	Common Name
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
<i>Sturnus vulgaris</i> *	Common Starling
<i>Vanellus miles</i>	Masked Lapwing
Mammals	
<i>Macropus giganteus</i>	Eastern Grey Kangaroo
Reptiles	
<i>Hermiergus talbingoensis</i>	Three-toed Skink
<i>Lampropholis delicata</i>	Delicate Skink
Flora	
<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

Scientific Name	Common Name
<i>Cyperus polystachyos</i>	-
<i>Echium plantagineum</i> *	Paterson's Curse
<i>Eleusine tristachya</i> *	Goose Grass
<i>Enchylaena tomentosa</i>	Ruby Saltbush
<i>Eragrostis curvula</i> *	African Lovegrass
<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
<i>Pyracantha crenulata</i> *	Nepal Firethorn
<i>Rosa rubiginosa</i> *	Sweet Briar
<i>Rubus fruticosus</i> sp. agg.*	Blackberry complex
<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>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzweed

Key: * = introduced species.

Appendix B

Likelihood of occurrence tables

Likelihood of occurrence

Likelihood	Definition
None	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	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level 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 – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level 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 – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<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	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level 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 lathamii</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 trees of the Casuarinaceae family present in study area	None

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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.	Low - minimal suitable habitat in study area	Low - unlikely to rely on any areas that would be affected by the proposal
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level 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 Eucalyptus pauciflora 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	Species or species habitat may occur within 10 km (DCCEEW 2023)	E	CE	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 present in study area	None

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Maccullochella macquariensis</i>	Trout Cod	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	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 Yarrowonga, 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 present in study area	None
<i>Maccullochella peelii</i>	Murray Cod	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	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 present in study area	None
<i>Macquaria australasica</i>	Macquarie Perch	Species or species habitat known to occur within 10 km (DCCEEW 2023)	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. They are also found	None - no suitable habitat present in study area	None
Frog							

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Litoria aurea</i>	Green and Golden Bell Frog	Species or species habitat may occur within 10 km (DCCEEW 2023)	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 water-bodies 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 present in study area	None
<i>Litoria booroolongensis</i>	Booroolong Frog	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	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 present in study area	None
<i>Litoria castanea</i>	Yellow-spotted Bell Frog	Species or species habitat likely to occur within 10 km (DCCEEW 2023)	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 present in study area	None

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Litoria raniformis</i>	Southern Bell Frog	Species or species habitat may occur within 10 km (DCCEEW 2023)	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 present in study area	None
<i>Insect</i>							
<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 sites 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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
Mammal							
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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
Migratory							
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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 proposal 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
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Calidris melanotos</i>	Pectoral Sandpiper	Species or species habitat known to occur within 10 km (DCCEEW 2023)	-	J,K,B onn	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,B onn	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
<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 proposal site	Low - unlikely to rely on any areas that would be affected by the proposal

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Numerius madagascariensis</i>	Eastern Curlew	Species or species habitat may occur within 10 km (DCCEEW 2023)	-	CE,C, J,K,B onn	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
Reptile							

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	76 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	V	V	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. Inhabit sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. 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.	None – very minimal habitat in the study area for this species	None
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Tympanocryptis pinguicollis</i>	Grassland Earless Dragon	Species or species habitat known to occur within 10 km (DCCEEW 2023)	CE	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 Nimitabel. 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 rely on any areas that would be affected by the proposal
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
<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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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	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 Peppercress	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 luehmanii</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
<i>Lepidium ginninderrense</i>	Ginninderra Peppercress	Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	V	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 (part of the Eastern Broadacre Strategic Assessment) by a grassland expert. There is an historical record from Reid in 1952, but no plants have been found since. Seed sets in December and disperses in autumn and winter. The plant appears to prefer living in alluvial soil in slight, bare depressions that hold water after rain. They are often surrounded by other native grassland species.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<i>Lepidium hyssopifolium</i>	Basalt Pepper- cress	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. The cryptic and non-descript nature (appearing like several weed species) of the species makes it hard to detect.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected
<i>Leucochrysum albicans subsp. tricolor</i>	Hoary Sunray	228 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	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. In NSW it currently occurs on the Southern Tablelands adjacent areas in an area roughly bounded by Albury, Bega and Goulburn, with a few scattered localities known from beyond this region. 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. In some areas, disturbance is required for successful establishment.	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	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 Millennium Drought. The sprawling shrub grows into a mounded, loosely tangled mass approximately 1 metre high and 1–2 metres across. Flowers are cream–green. Plants are mostly unisexual, that is either male or female, with only one female plant found. This plant is not known to have ever set seed. The plant does grow readily from cuttings but it is not yet known if it disperses vegetatively in the wild. Attempts to translocate plants have had limited success, with close to a dozen individuals still surviving five years post translocation.	Low – very minimal habitat in the proposal site for this species	Low – unlikely to occur and be affected

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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 Kanagroo 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>Rutidosis leptorrhynchoides</i>	Button Wrinklewort	20 records within 10 km (DPE 2023). Species or species habitat known to occur within 10 km (DCCEEW 2023)	E	E	Local populations in Goulburn, the Canberra - Queanbeyan area and Michelago. Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony red-brown clay loams; tends to occupy areas where there is relatively less competition from herbaceous species. Exhibits an ability to colonise disturbed areas (eg. vehicle tracks, bulldozer scrapings and areas of soil erosion).	Low – 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

Scientific name	Common name	Record source	NC Act	EPBC Act	Habitat description	Likelihood of occurrence	Level of impact
<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
<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

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.



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