

COWRA HOSPITAL REDEVELOPMENT

Flora and Fauna Assessment Report



5708

2

19 December 2022

REPORT

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
1	Draft for client review	Angus McClelland	Tara Boreham	Mark Aitkens	05/08/22
1.1	Final Report	Angus McClelland	Tara Boreham	Mark Aitkens	26/08/22
2	Amendments to incorporate new plans	Angus McClelland	Tam Durney	Mark Aitkens	19/12/22

Approval for issue

Mark Aitkens

26 August 2022

This report was prepared by RPS within the terms of RPS' engagement with its client and in direct response to a scope of services. This report is supplied for the sole and specific purpose for use by RPS' client. The report does not account for any changes relating the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. RPS does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

Prepared by:

RPS Consulting AAP Pty Ltd

Angus McClelland
Ecologist

Unit 2A, 45 Fitzroy Street
Carrington NSW 2294

T +61 2 4940 4200
E angus.mcclelland@rpsgroup.com.au

Prepared for:

Central West Project Management Pty Ltd.

Sophie Smith
Assistant Project & Development Manager

4 Scott Street,
Newcastle NSW 2300

T +61 (0) 424 407 022
E Sophie.Smith@cwpm.com.au

Contents

1	INTRODUCTION	1
1.1	Overview	1
1.2	The Proposal	1
1.3	Purpose of Report	2
1.4	Regulatory Context	4
1.4.1	Test of Significance (Section 7.3 of the BC Act)	4
1.5	Qualifications and licensing	4
1.5.1	Qualifications	4
1.5.2	Licensing	4
1.6	Definitions	5
2	METHODS	6
2.1	Overview	6
2.2	Desktop Research	6
2.2.1	Databases	6
2.2.2	Spatial Datasets	6
2.2.3	Literature	6
2.2.4	Likelihood of Occurrence	6
2.2.5	Published Guidelines	7
2.3	Investigation Design	8
2.3.1	Site Selection	8
2.3.2	Time of Day	8
2.3.3	Seasonality	8
2.4	Field Survey Techniques	8
2.4.1	Flora	8
2.4.2	Fauna	9
2.5	Survey Effort	10
2.6	Nomenclature	12
2.6.1	Plant Taxonomy	12
2.6.2	Fauna Taxonomy	12
2.7	Limitations	12
2.7.1	Seasonality	12
2.7.2	Data Availability and Accuracy	12
3	RESULTS	14
3.1	Desktop Analysis	14
3.1.1	Regional Context	14
3.1.2	Likelihood of Occurrence	14
3.2	Fauna	15
3.2.1	Observations	15
3.2.2	Habitat	15
3.3	Flora survey	20
3.3.1	Vegetation Cover	20
3.3.2	Planted Native/ Exotic Vegetation	20
3.3.3	Native Species	22
3.3.4	Exotic Species	22
3.4	Threatened Biodiversity	23
3.4.1	Flora	24
3.4.2	Fauna	24
3.4.3	Threatened Ecological Communities	24
4	IMPACT ANALYSIS	25
4.1	Direct Impacts	25

4.1.1	Vegetation loss	25
4.1.2	Habitat loss	25
4.1.3	Threatened Species.....	25
4.1.4	Threatened Ecological Communities	25
4.2	Indirect Impacts	25
4.2.1	Overview	25
4.2.2	Exotic Flora	26
4.2.3	Runoff	26
4.3	Key Threatening Processes	26
5	IMPACT ASSESSMENT	27
5.1	Test of Significance (Section 7.3 of the BC Act)	27
5.2	EPBC Act Significant Impact Guidelines.....	27
5.2.1	World Heritage Properties	27
5.2.2	National Heritage Places	27
5.2.3	Wetlands of International Importance (declared Ramsar wetlands).....	27
5.2.4	The Great Barrier Reef Marine Park.....	27
5.2.5	Commonwealth Marine Area	27
5.2.6	Listed threatened Ecological Communities	28
5.2.7	Listed Threatened and Migratory Species	28
5.3	Impact Avoidance and Mitigation	28
5.3.1	Impact avoidance.....	28
5.3.2	Mitigation.....	28
6	CONCLUSIONS	29
6.1	Key Biodiversity Values.....	29
6.2	Impact Considerations	29
6.3	Impact Assessment.....	29
6.4	Key Mitigation.....	29
7	REFERENCES	30
	Fauna species	62
	Flora species	62

Tables

Table 1-1	Relevant Legislation, Policy and Guidelines	4
Table 1-2	Definitions	5
Table 2-1	Likelihood of occurrence criteria.....	7
Table 2-2	Flora survey type, dates and effort.....	10
Table 2-3	Fauna survey type, dates and effort.....	10
Table 3-1	Species with a moderate or greater likelihood of occurring	15
Table 3-2	Key fauna habitat features.	16
Table 3-3	Weed species within the Study Area with biosecurity duties under the Biosecurity Act 2015.....	23
Table 5-1	Recommended Mitigation Measures.....	28

Plates

Plate 1	Fairy Martin Nests identified within disused building.....	17
Plate 2	Welcome Swallow next in open air hallway.	17
Plate 3	Salvaged hollow attached to disused building.	18
Plate 4	Crevice/ sheltering habitat.....	18
Plate 5	Crevice/ sheltering habitat.....	19

REPORT

Plate 6 Disused nest.....	19
Plate 7 <i>Corymbia citriodora</i> canopy with exotic mostly grassy understorey.	20
Plate 8 Landscaped gardens showing exotic trees, shrubs and groundcovers.	22

Figures

Figure 1-1 Project Area location.	3
Figure 2-1 Location of field survey effort.	11
Figure 3-1 Site biodiversity values.....	21

Appendices

Appendix A Likelihood of Occurrence	
Appendix B Species List	
Appendix C Assessments	

SUMMARY

Context

Central West Project Management Pty Ltd (hereafter referred to as CWPM), acting on behalf of Health Infrastructure NSW (the Principal), have engaged RPS AAP Consulting Pty Ltd (RPS) to prepare a flora and fauna assessment report for the proposed Cowra Hospital Redevelopment (the Proposal), (Site location: - 33.831838, 148.692399) 64 Liverpool Street, Cowra, NSW 2794 (the Study Area). The Proposal has been assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) with consideration also given to relevant Commonwealth matters listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Methods

Threatened biodiversity listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and EPBC Act of potential relevance to the Proposal were identified to produce a preliminary 'likelihood of occurrence' analysis. Field investigations were performed on 28th of July 2022 to characterise the biodiversity values and field validate the likelihood of occurrence analysis. Plant community types (PCTs) and relevant threatened biodiversity entities were identified (if present). Impact assessments prepared in accordance with relevant legislation and guidelines were performed for matters impacted by the Proposal.

Key Results – Flora Species

A total of 41 flora species were recorded within the Study Area including four native and 37 exotic species. No threatened flora species listed under either the BC Act or EPBC Act were observed within the Study Area. Habitat of no/ low suitability was identified for State and Commonwealth listed threatened flora species due to the absence of native PCTs and extensive habitat modification evident.

Key Results – Fauna Species

No threatened fauna species listed under the BC Act or EPBC Act were observed within the Study Area. Habitat of moderate or greater suitability was identified for six State and Commonwealth listed threatened fauna species.

Key Results – Plant Communities

The vegetation to be impacted was identified as Planted Native/ Exotic Vegetation. This vegetation did not correspond with any locally occurring PCT or Threatened Ecological Community (TEC).

Impacts

It is estimated that the Proposal would result in a vegetation disturbance of about 0.36 ha, comprising of Planted Native/ Exotic Vegetation. Impacts on the vegetation present, and associated habitat values for threatened species and ecological communities listed on the BC Act and EPBC Act were evaluated. Where there is a moderate or greater likelihood of occurrence within the Study Area, a 'Test of Significance' (Section 7.3 of the BC Act) and 'Assessment of Significance' was prepared for State and Commonwealth listed matters respectively. These tests concluded that the impact of the Proposal is not likely to have a significant impact on threatened species, ecological communities, or their habitats.

Conclusion

The impacts include the removal of an area of about 0.36 ha of Planted Native/ Exotic Vegetation and the removal of fauna. This includes several active Fairy Martin (*Petrochelidon ariel*) and Welcome swallow (*Hirundo neoxena*) nests, a disused nest, a salvaged hollow and a range of man-made structures containing a suite of crevice and sheltering habitat. Impact minimisation and mitigation is recommended, which includes management of weeds and surface water. Vegetation clearing and habitat removal by the Proposal is not likely to have a significant impact on threatened species, ecological communities, or their habitats. For this reason, the Proposal application does not require the preparation of a Species Impact Statement or Biodiversity Development Assessment Report. For matters relating to impacts on biodiversity, it is considered that the Proposal is not likely to be classed as a controlled action under the EPBC Act. For this reason, it is considered that an EPBC referral is not required for the Proposal.

1 INTRODUCTION

1.1 Overview

RPS AAP Consulting Pty Ltd (RPS) was engaged by Central West Project Management Pty Ltd (hereafter referred to as CWPM) to prepare a flora and fauna assessment report for the proposed Cowra Hospital Redevelopment, (Site location: -33.831838, 148.692399) 64 Liverpool Street, Cowra, NSW 2794 as shown in **Figure 1-1** and herein referred to as the 'Study Area'.

This report describes the biodiversity values of the Study Area, the investigation methods used to examine and characterise these values, and impact assessments prepared for threatened biodiversity with potential to be affected by the Proposal. The assessment framework applied to relevant State listed threatened biodiversity [i.e. matters listed under the NSW *Biodiversity Conservation Act* 2016 (BC Act)] as required under Section 1.7 of the *Environmental Planning and Assessment Act* 1979 (EP&A Act) (i.e. Application of Part 7 of the BC Act). The report also assesses relevant State Environmental Planning Policies (SEPPs) and relevant matters of national environmental significance (MNES) listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

1.2 The Proposal

The Principal proposes to remove vegetation and habitat within the Study Area (**Figure 1-1**) for the purposes of the construction of the current endorsed Clinical Services Plan including the master planning, design, and delivery of the following health services:

- Emergency Department;
- General inpatient ward;
- Sub-acute inpatient unit;
- Peri-operative suite;
- Maternity and birthing services;
- Ambulatory care;
- Renal dialysis;
- Chemotherapy;
- Oral Health; and
- Integrated outpatient and community clinic rooms and treatment spaces.

This will be facilitated by:

- The construction of a hospital building and associated infrastructure;
- The construction of vehicular access and parking;
- The construction of landscaping components;
- Vegetation removal; and
- Existing infrastructure demolition.

The Proposal assessed in this flora and fauna assessment report is described in Cowra Hospital Redevelopment Site Plan Rev C dated 1st of December 2022 (Health Infrastructure 2022). The estimated vegetation disturbance associated with the construction of the Proposal is approx. 0.36 ha.

1.3 Purpose of Report

The purpose of this report is to assess the impacts of the Proposal on threatened biodiversity listed under the BC Act and EPBC Act in addition to the general biodiversity values of the existing environment. These assessments have been prepared for threatened species and ecological communities with the potential to be impacted by the Proposal in accordance with:

- Section 7.3 of the BC Act (i.e. Test of Significance or 5-Part Test);
- Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DoE 2013) specifically for threatened species and ecological community listings under the EPBC Act.

It is understood that the assessment is under Part 5 of the EP&A Act with the Health Infrastructure NSW being a self-determining authority for the activity.



Legend

-  Project Area
-  Cadastre
-  Arterial road
-  Road/Service lane

**FIGURE 1:
PROJECT AREA LOCATION**

VERSION: A

DATE EXPORTED:
19/12/2022
TECHNICIAN:
Natalie.Wood

LOCATION:
64 Liverpool St Cowra - Cowra Hospital

DATA SOURCES
Client, RPS, Maxar

0 20 40 60 80 m

SCALE 1:2,000 AT A4 SIZE
SPATIAL REFERENCE: GDA2020 MGA Zone 55

CLIENT: Central West Project Management Pty Ltd
PROJ: PR152582
PURPOSE: Due Diligence

IMPORTANT NOTE
1. This plan was prepared for the site purposes of the client for the specific purpose of providing a photographic overview plan. This plan is strictly limited to the purpose and does not extend directly or indirectly and will not be used for any other purpose, project, use or matter. The plan is provided without the assumption of a duty of care to any other person (other than the Client) ("Third Party") and may not be relied on by Third Party.

2. RPS Australia East Pty Ltd will not be liable for negligence or otherwise for any direct or indirect loss, damage, liability or claim arising out of or incidental to:
a. a Third Party publishing, using or relying on the plan;
b. RPS Australia East Pty Ltd relying on information provided to it by the Client or a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date or unreliable;
c. any inaccuracies or other faults with information or data sourced from a Third Party.

3. RPS Australia East Pty Ltd relying on surface indicators that are incorrect or inaccurate;
4. the Client or any Third Party not verifying information in this plan where recommended by RPS Australia East Pty Ltd;
5. independent of this plan with any local authority against the recommendations of RPS Australia East Pty Ltd;
6. the accuracy, reliability, suitability or completeness of any representations or estimates made or referred to by RPS Australia East Pty Ltd in the plan.

rps

1.4 Regulatory Context

The regulatory context that defines the assessment framework for the Proposal is outlined in **Table 1-1**.

Table 1-1 Relevant Legislation, Policy and Guidelines

Legislation, Policy and Guidelines	Comment
State	
<i>Environmental Planning and Assessment Act 1979</i>	The Proposal is being assessed under Part 5 of the EP&A Act. Section 1.7 of the EP&A Act requires consideration of Part 7 of the BC Act.
<i>Biodiversity Conservation Act 2016</i>	Provides lists of species, populations and ecological communities with a legal threatened status in NSW. Introduces the Biodiversity Offsets Scheme (BOS) and Biodiversity Assessment Method Order 2017 (BAM). Threatened species, ecological communities and their habitats impacted by Proposals determined under Part 5 of the EP&A Act are assessed in accordance with the 'Test of Significance' as prescribed in Section 7.3 of the BC Act.
<i>Local Land Services Act 2013</i>	Proposals assessed under Part 5 of the EP&A Act are not required to address the removal of native vegetation on rural lands.
State Environmental Planning Policy (Biodiversity and Conservation) 2021-Chapter 4 Koala Habitat Protection 2021	Proposals assessed under Part 5 of the EP&A Act are not required to address Chapter 4 of the Biodiversity and Conservation SEPP (i.e. Koala habitat protection)
Threatened Species 'Test of Significance' Guidelines (OEH 2018)	These guidelines help applicants or Principals of a development or activity to interpret and apply the factors in the test in Section 7.3 of the BC Act.
Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Provides lists of Matters of National Environmental Significance (MNES) such as threatened species and ecological communities. Outlines circumstances where a Principal is required to refer a proposed action for assessment under the EPBC Act (i.e. Section 68).
Significant Impact Guidelines 1.1 – Matters of National Environmental Significance	These significant impact guidelines aid in determining if a proposed action is likely to have a significant impact on a MNES. Consideration of survey methods for specific MNES required where potential impacts are identified.

1.4.1 Test of Significance (Section 7.3 of the BC Act)

A 'Test of Significance' is to be performed in accordance with Section 7.3 of the BC Act to determine if the Proposal is likely to have a significant impact on threatened species, ecological communities or their habitats. The test is applied to listed threatened biota identified as likely to be impacted by the development (i.e. direct and/ or indirect impacts on species with a moderate or greater likelihood of occurrence). A significant impact would represent a trigger for the preparation of a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR); with the assessment approach to be determined by the Principal.

1.5 Qualifications and licensing

1.5.1 Qualifications

This report was written by Angus McClelland (BSc) and reviewed by Mark Aitkens (BSc) of RPS. Fieldwork was undertaken by Angus McClelland and Keagan Jones (BSc, BEnvMng).

1.5.2 Licensing

Investigations performed as part of this study were conducted under the following licences/ approvals/ authorities:

- NSW National Parks and Wildlife Service Scientific Investigation Licence S100536 (Valid to 30 May 2023).
- Animal Research Authority (ARA) for Project No: RVF 21/902(2) with project title *Fauna Surveys as part of Environmental Studies*. This gives authority for animal research to occur under the NSW *Animal Research Act 1985*. The Project Approval Period is from 21 March 2022 to 21 March 2027 with the ARA approval period being from 21 March 2022 to 21 March 2023 (reauthorised annually following compliance with the ARA conditions).

1.6 Definitions

Table 1-2 Definitions

Term	Definition
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCD	Biodiversity Conservation Division
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
EEC	Endangered Ecological Community
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	Hectares
Locality	Area within 10 km radius of Study Area
Proposal	Cowra Hospital Redevelopment at 64 Liverpool Street, Cowra, NSW 2794.
Study Area	Area to be impacted by the Proposal
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TEC	Threatened ecological community

2 METHODS

2.1 Overview

Methods used to characterise the biodiversity values of the Study Area comprised desktop and field-based investigation techniques suitable for deployment in a single diurnal site inspection. The following sections outline the survey methods, effort and limitations of the investigation.

2.2 Desktop Research

2.2.1 Databases

A review of relevant information was performed to gain an understanding of the biodiversity values occurring or potentially occurring within the Study Area. Information sources reviewed for a 10 km radius of the Study Area (i.e. locality) included:

- BAM Calculator species output;
- Flora and fauna records contained in the Biodiversity Conservation Division (BCD) BioNet database (DPE 2022a); and
- Flora and fauna contained in the Department of Climate Change, Energy, the Environment and Water Protected Matters Search tool (DCCEEW 2022).

2.2.2 Spatial Datasets

Desktop analysis of vegetation cover including a review of the resources listed below:

- Mitchell Landscapes (NPWS 2002);
- IBRA Region and subregion mapping (IBRA7);
- NSW State Vegetation Map (DPE 2022d); and
- Recent aerial imagery of the Study Area.

2.2.3 Literature

The following literature was reviewed in the preparation of this report:

- Mitchell Landscapes (NPWS 2002); and
- IBRA bioregion and subregion (IBRA7).

2.2.4 Likelihood of Occurrence

A likelihood of occurrence analysis was prepared to aid in the refinement of the 'subject species' list for consideration. Five 'likelihood of occurrence' categories have been attributed to identified threatened biodiversity; a process that had regard for:

- The recency of threatened species observations [i.e. recent being less than five years as per DPE (2022a)] and proximity to the study area, including application of landscape factors such as patch size and connectivity;
- Habitat descriptions as provided in the TSPD (DPE 2022b);
- Habitat value and condition as determined through the site inspection;
- The results of targeted surveys (where performed); and
- The effect of existing key threatening process (KTPs).

The five likelihood of occurrence ratings are described in **Table 2-1**.

Table 2-1 Likelihood of occurrence criteria

Likelihood Rating Description	
None	Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2 km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
Low	Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2 km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs.
Moderate	Species specific (i.e. important habitat features) and vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) occur within the investigation area. The investigation area may or may not be located within the species known 'area of occurrence' but is within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality may be influencing the capacity for habitat occupancy. Pre-existing and active KTPs may potentially have a negative influence on species incidence and/ or habitat occupancy.
High	Habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is likely to be located within the known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are unlikely to adversely influence the capacity of the species to occupy the habitat. Pre-existing and active KTPs are unlikely to be substantially influencing species incidence and/ or habitat occupancy.
Known	Species observed and habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is located within known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Habitat occupancy is likely to be associated with important life cycle processes; however, the reliance on this habitat would depend on additional factors (e.g. size and extent of local population, effect of KTPs).

2.2.5 Published Guidelines

Survey methods applied in this investigation had reference to the following published guidelines:

State

- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft (DEC 2004);
- 'Species credit' threatened bats and their habitats (OEH 2018);
- Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method (State of NSW 2020);
- NSW Survey Guide for Threatened Frogs (State of NSW 2020);
- Koala (*Phascolarctos cinereus*): Biodiversity Assessment Method Survey Guide (State of NSW 2022).

Commonwealth

- Survey guidelines for Australia's threatened bats (DEWHA 2010);
- Survey guidelines for Australia's threatened birds (DEWHA 2010);
- Survey guidelines for Australia's threatened frogs (DEWHA 2010);
- Survey guidelines for Australia's threatened mammals (DEWHA 2011) and

- Survey guidelines for Australia's threatened reptiles (DEWHA 2011);
- Draft survey guidelines for Australia's threatened orchids (DoE 2014).
-

Survey methods applied were limited to those that could be performed during the single diurnal inspection, with no allowance made for measuring temporal and/ or seasonal variation such as repeated application of diurnal survey methods on separate days and seasons.

2.3 Investigation Design

2.3.1 Site Selection

Site scale environmental factors were used to micro-site flora and fauna survey methods for the purposes of maximising the investigation of biological variability within the Study Area. These included:

- Slope and aspect;
- Topography (e.g. riparian zones, ridges); and
- Vegetation structure, as determined from aerial photograph interpretation, as a proxy for condition.

2.3.2 Time of Day

Field surveys were limited to a single diurnal inspection with no replication.

2.3.3 Seasonality

Field surveys were limited to a single season.

2.4 Field Survey Techniques

Field survey techniques applied during the investigation of the site had regard for the results of the desktop research and relevant survey guidelines specified in **Section 2.2.5**. Methods deployed included:

- Flora plot (**Section 2.4.1.1**);
- Tree canopy species mapping (**Section 2.4.1.2**);
- Active fauna searches (**Section 2.4.2.1**);
- Bird census (**Section 2.4.2.2**); and
- Habitat assessment (**Section 2.4.2.3**).

The following sections describe the survey techniques relevant to this investigation. Survey effort and locations are described in **Section 2.5**.

2.4.1 Flora

The classification and description of native vegetation was aided by the analysis of data from flora plot surveys. Vegetation mapping was aided by the dual consideration of flora plot data analysis, rapid data points (RDPs) and tree canopy species mapping. These survey techniques are further described in the following sections.

2.4.1.1 Flora Plots

All vascular flora species observed within a 32 m x 12.5m plot (400m²) were identified and assigned a per cent cover and abundance estimate.

2.4.1.2 Tree Canopy Species Mapping

The location and identification of each native tree species with a diameter at breast height of greater than 10 cm was recorded. Due to the number of trees within the site, individual trees were not mapped. The following data was recorded for each species:

- DBH range; and
- Presence of hollows (see **Section 2.4.2.3.2** for hollow classification).

2.4.2 Fauna

2.4.2.1 Active Searches

Opportunistic sightings obtained from active searches used secondary indications (scratches, scats, diggings, tracks etc.) and direct observation to census resident fauna. Observations included the evaluation of:

- Distinctive scats left by mammals;
- Scratch marks made by various types of arboreal animals;
- Nests made by various birds;
- Feeding scars on Eucalyptus trees made by Gliders;
- Whitewash, regurgitation pellets and prey remains from Owls;
- Aural recognition of bird and frog calls;
- Skeletal material of vertebrate fauna; and
- Searches beneath rocks and logs for reptiles and frogs.

2.4.2.2 Bird Census

A timed random meander survey was used to survey bird species within the Study Area. Species heard or visually observed within 50 m of the sample point for a 20-minute period were recorded as occurring within the Study Area. Visual/ auditory bird observations made within the 20-minute period but beyond 50 m were recorded as opportunistic sightings.

2.4.2.3 Habitat Assessment

2.4.2.3.1 General

The nature and extent of fauna habitats within the study area was systematically assessed during the targeted flora parallel transect survey. Site assessments for threatened and native fauna included consideration of important indicators of habitat condition and complexity including the occurrence of microhabitats such as tree hollows, fallen logs, bushrock, caves and crevices, manmade structures, riparian areas, wetlands and water bodies. Indirect indicators of fauna use of the site such as droppings, diggings, footprints, scratches, nests, burrow paths and runways were recorded.

2.4.2.3.2 Hollow-bearing Trees

Trees containing hollows were mapped during the tree canopy species mapping described in **Section 2.4.1.2**. For each of these trees, the number and class of hollow were quantified. Hollow classes are listed below:

- Class 1: <5 cm (typically used by microbats, small birds and arboreal mammals);
- Class 2: 5-20 cm (typically used by small to medium parrots and medium to large arboreal mammals);
- Class 3: >20-50cm (typically used by medium to large parrots, small owls and large arboreal mammals); and

- Class 4: >50 cm (typically used by owls and large arboreal mammals).

2.4.2.3.3 Bushrock

Loose surface bush rock suitable for use by reptiles, amphibians and mammals were mapped during the threatened flora search described in **Section 2.4.1.3**. Bush rock was classified as follows:

- Class 1: <5 cm thick and < 0.25 m² (typically used by invertebrates);
- Class 2: <5 cm thick and > 0.25 m² (typically used by invertebrates and small reptiles and frogs);
- Class 3: 5-15 cm and flat (typically used by invertebrates, reptiles including snakes and frogs); and
- Class 4: 5 cm+ and boulder like (typically not used by reptiles or amphibians).

2.5 Survey Effort

Flora survey effort performed is summarised in **Table 2-2** with locations shown in **Figure 2-1**.

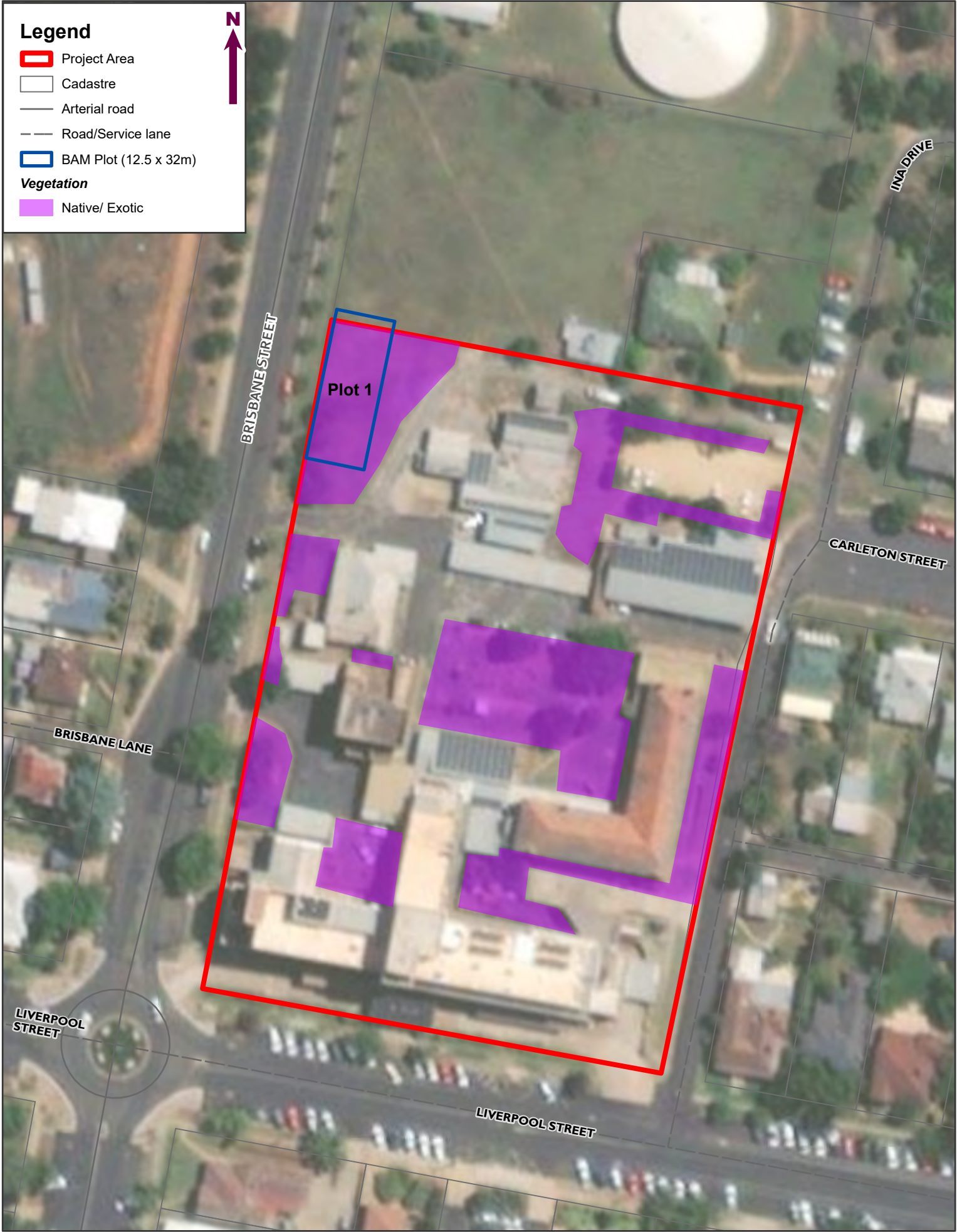
Table 2-2 Flora survey type, dates and effort

Survey Type	Date	Unit	Person hours	Survey Coverage
Flora Plots	28 July 2022	1	1	400 m ²
Parallel transects	28 July 2022	5m	1	Whole Survey Area

Fauna survey effort performed is summarised in **Table 2-3** with locations shown in **Figure 2-1**.

Table 2-3 Fauna survey type, dates and effort

Survey Type	Date	Unit	Person hours	Survey Coverage
Bird Census	28 July 2022	Timed stationary point survey	0.33	Whole Survey Area
Hollow-bearing tree survey	28 July 2022	Hollow class	1	Whole Survey Area
Opportunistic survey	28 July 2022	Undertaken in conjunction with other field methods	1	Whole Survey Area



**FIGURE 2:
NEAREST VEGETATION MAPPING**

VERSION: A

**DATE EXPORTED:
15/07/2022**

**TECHNICIAN:
Natalie.Wood**

**LOCATION:
64 Liverpool St Cowra - Cowra Hospital**

DATA SOURCES
Client, RPS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 10 20 30 m

SCALE 1:1,000 AT A4 SIZE
SPATIAL REFERENCE: GDA2020 MGA Zone 55

CLIENT: Central West Project Management Pty Ltd
PROJ: PR152582
PURPOSE: Due Diligence

IMPORTANT NOTE
1. This plan was prepared for the sole purposes of the client for the specific purpose of providing a photographic overview plan. This plan is strictly limited to the Purpose and does not apply directly or indirectly and will not be used for any other regulatory, planning, or other matter. The plan is presented without the assumption of a duty of care for any other person (other than the Client) ("Third Party") and may not be relied on by Third Party.

2. RPS Australia East Pty Ltd will not be liable (in negligence or otherwise) for any direct or indirect loss, damage, liability or claim arising out of or incidental to:
a. a Third Party publishing, using, or relying on the plan;
b. RPS Australia East Pty Ltd relying on information provided to it by the Client or a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date or unreliable;
c. any inaccuracies or other faults with information or data sourced from a Third Party;

3. RPS Australia East Pty Ltd relying on surface indicators that are incorrect or inaccurate;
4. the Client or any Third Party not verifying information in this plan where recommended by RPS Australia East Pty Ltd;
5. RPS Australia East Pty Ltd, in reliance on any information against the recommendation of RPS Australia East Pty Ltd, the accuracy, reliability, suitability or completeness of any approximations or estimates made or referred to by RPS Australia East Pty Ltd in this plan.

2.6 Nomenclature

2.6.1 Plant Taxonomy

Plant taxonomy used was consistent with the nomenclature of the Flora of NSW (Harden 1990-1993; 2002), except where more recent revisions have been published in recognised scientific journals and accepted by the National Herbarium of New South Wales (as per PlantNet website <http://plantnet.rbgsyd.nsw.gov.au/>).

2.6.2 Fauna Taxonomy

Taxonomy and common names of fauna in this report were from the following sources:

- Mammals: Menkhorst and Knight (2010) and Churchill (2009);
- Birds: Simpson and Day (2010);
- Reptiles: Wilson and Swan (2010);
- Frogs: Tyler and Knight (2011); and
- Land Snails: Staniscic et al (2010).

2.7 Limitations

Limitations associated with this assessment are presented in the following sections. The limitations have been considered specifically in relation to threatened species assessments, results and conclusions.

2.7.1 Seasonality

Some cryptic plant species that occur in the local area are annuals and are present only in the seed bank for much of the year. Other plant species are perennial but are inconspicuous or difficult to identify unless flowering.

Similarly, some fauna species that have been recorded in the local area occur on a seasonal or migratory basis, may be absent from the locality for much of the year. Fauna behaviours may have also affected detectability; species that are easily disturbed or cryptic may not have been detected. It is possible that several flora and fauna species occurring in the flora plot were not detected during the current survey due to the above factors.

These potential limitations have been addressed by a literature research and review and through identification of potential habitats for flora and fauna species and assessment of the potential for targeted species to occur on in the Study Area based on:

- Previous records;
- The type and condition of habitats present;
- The land use throughout the flora plot and surrounds; and
- The landscape context.

The precautionary principle (assumed presence) was applied where habitat was identified, or species were predicted to utilise habitat components at some stage during their life cycle.

2.7.2 Data Availability and Accuracy

The collated threatened flora and fauna species records obtained from the BioNet Database for the region are known to vary in accuracy and reliability. Traditionally, this is due to the reliability of information provided to BCD for collation and/or the need to protect specific threatened species locations. For the purposes of this report this information has been considered to have an accuracy of ± 1 km, however for some threatened species, records may be denatured by up to 2 km.

Threatened flora and fauna records within the region were predominantly sourced from the BioNet database and an EPBC Protected Matters Search. Similar limitations are known to exist with regards to these data

REPORT

sources and their accuracy. Data recorded by RPS during the survey period has been gathered using Garmin 64s handheld GPS units, these devices generally provide sub-four metre accuracy.

3 RESULTS

3.1 Desktop Analysis

3.1.1 Regional Context

The Study Area is in Cowra which is within the Inland Slopes subregion of the NSW Southwestern Slopes IBRA bioregion. This is broadly described as follows:

An extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria with an area of 8,657,426 ha. About 8,070,608 ha or 93.22% of this bioregion occurs in NSW, with the remainder in Vic. (IBRA 5.1). The NSW portion of the bioregion occupies about 10.1% of the state. The bioregion is bounded by 6 other bioregions: the Riverina and Cobar Peneplain bioregions to the west, Darling Riverine Plains and Brigalow Belt South bioregions to the north, Sydney Basin to the northeast and the South-eastern Highlands Bioregion running along much of the eastern boundary. The bioregion extends from Albury in the south to Dunedoo in the northeast. Towns located in the bioregion include Wagga Wagga, Mudgee, Cootamundra, Narrandera, Parkes, Gundagai and Young. Griffith lies just outside the western boundary and Crookwell lies just outside the eastern boundary of the bioregion. The bioregion includes parts of the Murray, Murrumbidgee, Lachlan and Macquarie River catchments.

This bioregion is dominated by a sub-humid climate characterised by hot summers and no dry season. A temperate climate, with warm summers, occurs at higher elevations along the eastern boundary of the bioregion adjacent to the South-eastern Highlands Bioregion. Mean annual temperature increases across the bioregion from low temperatures in the south and east to higher temperatures in the north and west (Gibbons 2001). Rainfall is distributed across the South-western Slopes Bioregion with high (up to around 1200mm) mean annual rainfall in the east, and lower values (around 400mm) for mean annual rainfall in the west (Gibbons 2001).

The overall pattern of soils in these landscapes is one where shallow, stony soils are found on the tops of ridges and hills. Moving downslope, texture contrast soils are the norm with subsoils derived from the underlying weathered rock and the topsoils being a homogenised surface mantle of coarser material derived from all parts of the slope. On valley floors subsoils have drabber colours indicative of poor drainage and they may accumulate soluble salts. Dryland salinity is widespread. Alluvial sands and loams are more common than clays in most parts of the landscape, but alluvial clays become more important nearer to the Riverine Plain. Over the Quaternary, soils in these landscapes have accumulated a considerable quantity of windblown silt and clay from western NSW.

The proposal is also located within the Canobolas Slopes Mitchell Landscape Unit, which is classed as an over cleared landscape (NPWS 2002). This Landscape unit is comprised of Strike ridges, rounded hills, peaks and ranges on variable Ordovician-Silurian felspathic sandstone, tuffaceous sandstone and thin limestone units, Silurian lithic sandstone, quartz sandstone, tuff and quartz-felspar porphyry, Silurian-Devonian granite. General elevation 500 to 900m local relief 100m. Marked altitudinal shift in vegetation associations as rainfall declines to the west. Red and yellow earth and yellow texture-contrast soils in the east with grassy woodlands of; yellow box (*Eucalyptus melliodora*), grey box (*Eucalyptus microcarpa*), Blakely's red gum (*Eucalyptus blakelyi*), apple box (*Eucalyptus bridgesiana*), and broad-leaved peppermint (*Eucalyptus dives*). Brown gradational sandy loam and harsh yellow texture-contrast soils in the west with woodlands and grassy open forest of; white box (*Eucalyptus albens*), grey box, red ironbark (*Eucalyptus sideroxylon*), red stringybark (*Eucalyptus macrorhyncha*), with yellow box and rough-barked apple (*Angophora floribunda*) on the flats and river oak (*Casuarina cunninghamiana*) along the streams.

3.1.2 Likelihood of Occurrence

Database searches identified 56 threatened fauna species and 14 threatened flora species as having the potential to occur within 10 km of the Proposal (DPE 2022a, DCCEE 2022). Following consideration of available aerial imagery and vegetation mapping, the likelihood of occurrence analysis, as presented in **Appendix A**, identified six of these threatened species as having a moderate or greater potential to occur (**Table 3-1**). Field investigations have focused on evaluating the importance of habitat located within the Study Area for these species.

Table 3-1 Species with a moderate or greater likelihood of occurring

Scientific Name (Common Name)	BC Act	EPBC Act	Likelihood of Occurrence
Fauna species			
<i>Glossopsitta porphyrocephala</i> (Purple-crowned Lorikeet)	V	-	Moderate
<i>Hieraaetus morphnoides</i> (Little Eagle)	V	-	Moderate
<i>Hirundapus caudacutus</i> (White-throated Needle-tail)	-	V	High
<i>Miniopterus orianae oceanensis</i> (Large Bent-winged Bat)	V	-	High
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	V	V	High
<i>Saccolaimus flaviventris</i> (Yellow-bellied Shearwater)	V	-	High

Key: V = Vulnerable; E = Endangered; M = Migratory

3.2 Fauna

3.2.1 Observations

A bird census recorded eight common bird species, namely Pied Currawong (*Strepera graculina*), Australian White Ibis (*Threskiornis molucca*), Sulphur-crested Cockatoo (*Cacatua galerita*), Australian Magpie (*Gymnorhina tibicen*), Australian Wood Duck (*Chenonetta jubata*), Whistling kite (*Haliastur sphenurus*), Fairy Martin (*Petrochelidon ariel*) and Welcome Swallow (*Hirundo neoxena*).

Several active Fairy Martin (*Petrochelidon ariel*) and Welcome Swallow (*Hirundo neoxena*) nests were identified throughout the Study Area, as shown in **Plate 1** and **Plate 2** and mapped in

Figure 3-1.

A salvaged hollow (Class 2: 5-20 cm) was found to be in place fixed to a disused building, as shown in **Plate 3** and mapped in

Figure 3-1. The salvaged hollow may provide habitat for several hollow dwelling fauna species.

Many structures within the Study Area were disused and contained a suite of crevice and sheltering habitat, as shown in **Plate 4** and **Plate 5**. These structures may provide habitat for a great range of fauna species.

One disused nest was identified in a *Callistemon* spp. within the Study Area, as shown in **Plate 6** and mapped in

Figure 3-1.

3.2.2 Habitat

Results of the habitat assessment are summarised in **Table 3-2**.

Table 3-2 Key fauna habitat features.

Habitat feature	Extent and condition within study area
Hollow-bearing trees	Absent.
Dead wood including stags and ground logs	Absent.
Accumulations of leaf litter	Absent.
Weed thickets	Absent.
Bush rock and rocky outcrops	Absent.
Waterbodies such as wetlands, streams, rivers and dams	Absent.
Nests and roosts	Several active Fairy Martin (<i>Petrochelidon ariel</i>) and Welcome Swallow (<i>Hirundo neoxena</i>) nests were identified throughout the Study Area. One disused nest was identified in a <i>Callistemon</i> spp. within the Study Area.
Distinctive scats (e.g. those of the spotted-tailed quoll or koala)	No distinctive scats were observed.
<i>Allocasuarina</i> spp.	Absent.
Flying-fox camps	Absent.
Microchiropteran bat tree roosts	Absent.
Microchiropteran bat subterranean roosts (caves, culverts, tunnels and disused mine shafts and buildings)	Many structures within the Study Area were disused and contained a suite of potential roosting habitat. Furthermore, some structures within the Study Area resembled culvert/ tunnels that may provide roosting habitat to select microbat species.
Winter-flowering eucalypts	<i>Corymbia citriodora</i> is present within the Study area and may provide seasonal foraging habitat.



Plate 1 Fairy Martin Nests identified within disused building.



Plate 2 Welcome Swallow next in open air hallway.



Plate 3 Salvaged hollow attached to disused building.



Plate 4 Crevice/ sheltering habitat.



Plate 5 Crevice/ sheltering habitat.



Plate 6 Disused nest.

3.3 Flora survey

3.3.1 Vegetation Cover

No PCT could be attributed to the field data obtained from the flora plots and transect (**Appendix B**). The Study Area is completely developed and modified including planted native and exotic species. Accordingly, the vegetation of the Study Area is described as Planted Native/ Exotic.

The distribution of this vegetation cover is shown in

Figure 3-1.

3.3.2 Planted Native/ Exotic Vegetation

Description: The canopy contained scattered occurrences of a range of species including planted native species Lemon-scented Gum (*Corymbia citriodora*) and exotic species including Blue Jacaranda (*Jacaranda mimosifolia*), Hinok Cypress (*Chamaecyparis obtusa*), European Nettle (*Celtis australis*) and Japanese pagoda (*Sephora japonicum*). The mid-layer contained planted native species Weeping Bottlebrush (*Callistemon viminalis*) and exotic species Broad-leaf Privet (*Ligustrum lucidum*), Crepe Myrtle (*Lagerstroemia* spp.), Cotoneaster (*Cotoneaster glaucophyllus*), Japanese Maple (*Acer palmatum*) and priority weed African olive (*Olea europaea* subsp. *cuspidata*). The ground layer was generally dominated by Kikuyu (*Cenchrus clandestinus*), White Clover (*Trifolium repens*), Dock (*Rumex* spp.), Red Mallow (*Modiola caroliniana*), Crane's Bill (*Geranium* spp.) and Lawn Burweed (*Soliva sessilis*).

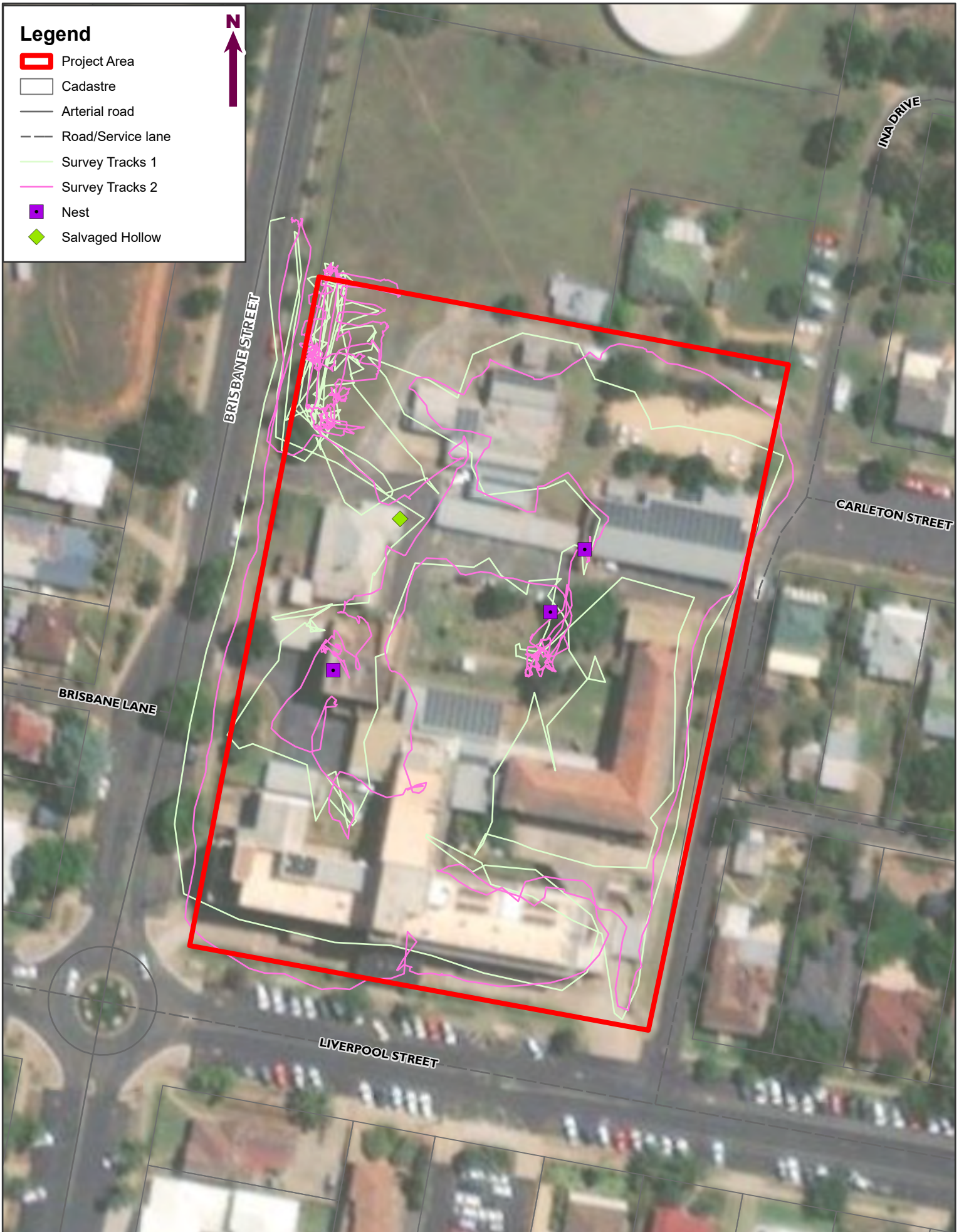
A visual appreciation of the vegetation is provided in **Plate 7** and **Plate 8**.

Flora Plot Number: 1

Classification: Not listed under the BC Act or EPBC Act.



Plate 7 *Corymbia citriodora* canopy with exotic mostly grassy understorey.



**FIGURE 3:
HABITAT MAPPING**

VERSION: A

**DATE EXPORTED:
15/07/2022
TECHNICIAN:
Natalie.Wood**

**LOCATION:
64 Liverpool St Cowra - Cowra Hospital**

DATA SOURCES
Client, RPS, Source: Esri, Maxar, Earthstar Geographics, and
the GIS User Community

0 10 20 30 m

SCALE 1:1,000 AT A4 SIZE
SPATIAL REFERENCE: GDA2020 MGA Zone 55

CLIENT: Central West Project Management Pty Ltd
PROJ: PR152582
PURPOSE: Due Diligence

IMPORTANT NOTE
1. This plan was prepared for the sole purpose of the client for the specific
purpose of producing a photographic covering plan. This plan is strictly limited to the
purpose and does not apply directly or indirectly and will not be used for any other
purpose, purpose, use or matter. The plan is presented without the assumption of
a duty of care for any other person (other than the Client) ("Third Party") and may
not be relied on by Third Party.

2. RPS Australia East Pty Ltd will not be liable for negligence or otherwise for
any direct or indirect loss, damage, liability or claim arising out of or incidental to:
a. a Third Party publishing, using or relying on the plan;
b. RPS Australia East Pty Ltd relying on information provided to it by the Client or
a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date
or unreliable;
c. any inaccuracies or other faults with information or data sourced from a Third
Party;

3. RPS Australia East Pty Ltd relying on surface indicators that are incorrect or
inaccurate;
4. the Client or any Third Party not verifying information in this plan where
recommended by RPS Australia East Pty Ltd;
5. judgment of this plan with any local authority against the recommendation of
RPS Australia East Pty Ltd;
6. the accuracy, reliability, suitability or completeness of any approximations or
estimates made or referred to by RPS Australia East Pty Ltd in this plan.





Plate 8 Landscaped gardens showing exotic trees, shrubs and groundcovers.

3.3.3 Native Species

A total of 41 flora species were recorded within the Study Area including four native and 37 exotic species (see full list in **Appendix B**).

3.3.4 Exotic Species

Exotic species were dominant within the Study Area, of which, four were identified to have Biosecurity duties under the *Biosecurity Act* 2015, as seen in **Table 3-3**. No species identified within the Study Area were identified as having status as a Weed of National Significance.

A total of nine exotic species identified within the Study Area are listed as High Threat Weeds in NSW, including:

- *Cenchrus clandestinus* (Kikuyu);
- *Cotoneaster glaucophyllus*;
- *Dactylis glomerata* (Cock's Foot);
- *Ehrharta erecta* (Panic Veltdgrass);
- *Fraxinus angustifolia* (Narrow-leaved ash);
- *Ligustrum lucidum* (Broad-leaf Privet);
- *Olea europaea subsp. Cuspidata* (African Olive);
- *Taraxacum officinale* (Common Dandelion); and
- *Triadica sebifera* (Chinese Tallow)

Table 3-3 Weed species within the Study Area with biosecurity duties under the Biosecurity Act 2015.

Weed Species	Area	Biosecurity Duty
<i>Cotoneaster glaucophyllus</i>	All of NSW	General Biosecurity Duty: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
<i>Ligustrum lucidum</i> (Broad-leaf Privet)	All of NSW	General Biosecurity Duty: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
	Central Tablelands Exclusion zone: urban areas of Bathurst Council, Blayney Council, Lithgow Council, Oberon Council, and Orange City Council	Regional Recommended Measure* (for Regional Priority - Containment) Whole region: The plant should not be bought, sold, grown, carried or released into the environment. Exclusion zone: The plant is prevented from flowering and fruiting. Land managers should mitigate spread from their land. Land managers should mitigate the risk of the plant being introduced to their land. Outside exclusion zone: Land managers reduce impacts from the plant on priority assets.
<i>Olea europaea</i> subsp. <i>Cuspidata</i> (African Olive)	All of NSW	General Biosecurity Duty: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
<i>Triadica sebifera</i> (Chinese Tallow)	All of NSW	General Biosecurity Duty: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

3.4 Threatened Biodiversity

A field validated likelihood of occurrence analysis for threatened species identified in the desktop analysis is provided in **Appendix A**. This analysis identified 14 threatened flora and 53 threatened fauna species as having the potential to occur within the Study Area. Further investigation findings are provided in the following sections.

3.4.1 Flora

No threatened flora species were identified within the Study Area. Following consideration of field survey results and the historically disturbed nature of the Study Area, it is considered that the Study Area is not likely to contain habitat occupied by a threatened flora species.

3.4.2 Fauna

No threatened fauna species were found within the Study Area. The habitat conditions of the Study Area for threatened flora and fauna species identified four species having high potential to occur, two species with moderate potential to occur and remaining assessed as low potential to occur; see **Section 5.1**.

3.4.3 Threatened Ecological Communities

Vegetation cover within the Study Area, as outlined in **Section 3.3.1**, is described as Planted Native/ Exotic. This vegetation is not associated with any listed TEC.

4 IMPACT ANALYSIS

4.1 Direct Impacts

Direct impacts on native vegetation and associated flora and fauna habitat are detailed in the following sections. In this assessment it is assumed that there is a requirement for the clearing of native vegetation for the Proposal.

4.1.1 Vegetation loss

The Proposal would result in a removal of an area of ~0.36 ha of vegetation identified as Planted Native/ Exotic Vegetation. This includes a total of 33 trees proposed for removal in order to facilitate the Proposal. This includes three *Corymbia citriodora* and four *Callistemon viminalis* (McArdle Arboricultural Consultancy 2022) which are planted native trees.

4.1.2 Habitat loss

The Study Area has several habitat items that may provide habitat value for native fauna, including birds' nests, a salvaged hollow and various crevices and cavities of disused structures. All such habitat within the Study Area is proposed for removal as a result of vegetation removal and demolition.

4.1.3 Threatened Species

The field validated likelihood of occurrence analysis provided in **Appendix A** identifies that the Study Area may provide habitat for some locally occurring threatened fauna species. However, it is considered that the Planted Native/ Exotic is disturbed and degraded to a point that would otherwise only offer transient habitat value for threatened fauna. Impacts on such species are considered negligible.

4.1.4 Threatened Ecological Communities

No locally occurring TECs were identified as occurring within the Study Area.

4.2 Indirect Impacts

Indirect effects apply to adjacent landcovers particularly those located adjacent to or downslope of the impact footprint. The area considered for indirect impacts includes a buffer of approximately 10 m. The sections below summarise these indirect impacts.

4.2.1 Overview

The 'edge effect' describes a collection of factors and processes that influence the presence and abundance of species at a boundary such as natural boundaries (e.g. ecotones) or a disturbance of some kind. Edges can occur naturally within ecosystems and include situations such as the common boundary between two ecological communities or the boundary between burnt and unburnt vegetation. Flora and fauna often adapt to the effects of an edge, with some species being partially or wholly reliant on edge effects. Bali (2005) identifies the following main factors and processes that operate at a disturbed edge of an ecological community:

- Microclimate (e.g. localised changes in temperature, wind, light, humidity);
- Hydrology;
- Altered fire frequency and intensity;
- Invasion by exotic plant and animal species;
- Alteration of soil conditions (e.g. increased sedimentation and nutrient availability); and
- Alteration of vegetation structure (e.g. tree death and increased shrub densities).

On average, edge effects have been estimated to occur up to 50 metres from the road edge (Bali 2005), although much greater distances have been recorded in some road studies (Forman et al. 2003). Edge effects are particularly pronounced in patches where a large edge to area ratio exists (i.e. small vegetation patches with a proportionally large perimeter). Such conditions often result in the simplification of biodiversity in favour of generalists or edge specialist species.

These impacts already exist, attributed to the current use of the Study Area as an operating hospital. The proposal is unlikely to have any substantial incremental edge effects on areas surrounding the Study Area. Potential edge effects promoted by the proposal may include:

- Modification of habitat attributes, through increased light and noise levels, and changes to vegetation structure, soil nutrient levels and plant species diversity.

In regard to the above potential edge effects it is considered that establishment of weeds and modification of habitat attributes (i.e. water runoff) are the most likely tangible impacts that may arise from the Proposal.

4.2.2 Exotic Flora

The Study Area already contains a high percentage of exotic flora species, see **Section 3.3.4**. However, potential still exists for further introduction of weeds through the use of earth moving equipment and routine access to the facility; actions that may potentially facilitate the spread of weeds into adjoining areas.

Mitigation measures to be implemented during the construction and operational phases of the Proposal are recommended to manage and control the incidence and effect of noxious and environmental weeds on the receiving environment. There is potential for high threat weeds observed within and adjacent to the Study Area to benefit from construction works and, as such, the management of these species is appropriate for the purposes of lowering any indirect impacts on the adjoining environment.

4.2.3 Runoff

Removal of groundcover vegetation increases the risk of sediment laden storm-water run-off. Operational activities also increase the risk of spills into the environment, specifically petroleum-based materials (e.g. fuel and hydraulic oils). Threatened species and ecological communities most sensitive to these impacts are those that have a facultative and / or obligate relationship with water. No such matters are identified within or adjacent to the Proposal and as such it is considered unlikely that there would be any indirect impact on such matters.

4.3 Key Threatening Processes

Key Threatening Processes (KTPs) are listed under Schedule 4 of the BC Act and EPBC Act.

The act of clearing native vegetation is an action that forms part of the proposal and is, in itself, a key threatening process. While the Study Area is considered an Over Cleared Landscape (NPWS 2022), the Proposal will cause a negligible increase on this key threatening process considering due to the exotic dominated nature of the Study Area.

Other KTPs considered relevant to the Proposal include the following:

- Infection of native plants by *Phytophthora cinnamomi*.

Measures to mitigate the impacts of these processes are discussed in **Section 5.3.2**.

5 IMPACT ASSESSMENT

5.1 Test of Significance (Section 7.3 of the BC Act)

The Proposal will result in the removal of ~0.36 ha of Planted Native/ Exotic Vegetation that does not form part of a listed TEC. The habitat conditions of the Study Area for threatened flora and fauna species identified six affected species, including:

- Four species having high potential to occur, including:
 - *Hirundapus caudacutus* (White-throated Needletail);
 - *Pteropus poliocephalus* (Grey-headed Flying-fox);
 - *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail-bat); and
 - *Miniopterus orianae oceanensis* (Large Bent-winged Bat).
- Two species with moderate potential to occur, including:
 - *Hieraaetus morphnoides* (Little Eagle); and
 - *Glossopsitta porphyrocephala* (Purple-crowned Lorikeet).

All remaining species were assessed as low/ no potential to occur. No threatened species were observed within the Study Area.

A Test of Significance is required to assess the impact of the Proposal on threatened species, which is provided in **Appendix C**. The Test of Significance concluded that the Proposal is not likely to result in a significant impact to any threatened species, ecological communities, or their habitats. A SIS or BDAR is not required for the further assessment of the Proposal. Recommended mitigation measures designed to provide broad impact minimisation outcomes for threatened species and their habitats are provided in **Section 5.3**.

5.2 EPBC Act Significant Impact Guidelines

MNES likely to be impacted by the proposal have been assessed in accordance with the Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (Department of the Environment 2013). The MNES relevant considerations are addressed below.

5.2.1 World Heritage Properties

The Study Area is not within proximity to a World Heritage Properties.

5.2.2 National Heritage Places

The Study Area is not within proximity to a National Heritage Place.

5.2.3 Wetlands of International Importance (declared Ramsar wetlands)

The Study Area is located between 500km and 900km upstream from 4 Ramsar listed wetlands. Given the distance from the site and low risk of runoff, it is considered that the Proposal will not impact upon any Ramsar wetlands.

5.2.4 The Great Barrier Reef Marine Park

The Great Barrier Reef Marine Park does not occur within or adjacent to the Study Area, therefore, the Proposal will not impact upon any areas of the Great Barrier Reef Marine Park.

5.2.5 Commonwealth Marine Area

The Study Area is not located within a Commonwealth Marine Area and is not in close proximity to any such area. Therefore, the Proposal will not impact upon any Commonwealth Marine Area.

5.2.6 Listed threatened Ecological Communities

Three TECs were listed as having potential to occur within the Study Area; however, none of which were identified within the Study Area.

5.2.7 Listed Threatened and Migratory Species

The habitat conditions of the Study Area for threatened flora and fauna species identified two affected species with high potential to occur, including:

- *Hirundapus caudacutus* (White-throated Needletail); and
- *Pteropus poliocephalus* (Grey-headed Flying-fox).

No significant impacts are expected to occur as a result of the Proposal (**Appendix D**). Recommended mitigation measures designed to provide broad impact minimisation outcomes for threatened species and their habitats is provided in **Section 5.3**.

5.3 Impact Avoidance and Mitigation

5.3.1 Impact avoidance

There is no requirement for impact avoidance measures as there is an absence of vegetation and/or habitat of importance for threatened entities within the Study Area.

5.3.2 Mitigation

Table 5-1 lists the primary mitigation measures recommended for minimising the Proposal's direct and indirect impacts on biodiversity.

Table 5-1 Recommended Mitigation Measures

Impact	Mitigation Measures	Timing
Habitat	<p>All habitat is to be removed prior to demolition and is to be supervised by a suitably qualified Ecologist to ensure appropriate techniques are utilised. Any fauna injured during such activities should be transported to a veterinary clinic or taken by a Wires volunteer.</p> <p>Bat detection devices (Anabat) should be used in all areas of potential habitat prior to demolition activities.</p> <p>Appropriate hygiene measures such as removal of contractor rubbish, vehicle and equipment cleaning protocols are to be implemented to ensure that operations within the Study Area do not contribute to the encouragement or spread of feral pest, disease or weed species.</p>	Prior and during tree removal, demolition and construction
Minimise risk from spills	All fuels, chemicals and other hazardous materials will be stored in a roofed, fire-protected and impervious bunded area at least 50 metres from waterways, drainage lines, basins, flood-affected areas or slopes above 10%. Bunding design will comply with relevant Australian Standards and should generally be in accordance with guidelines provided in the EPA Authorised Officers Manual.	During tree removal and construction

6 CONCLUSIONS

6.1 Key Biodiversity Values

The Proposal will result in the removal of ~0.36 ha of Planted Native/ Exotic Vegetation. No threatened flora or fauna species were identified in the Study Area. No TECs were identified within the Study Area. Fauna habitat is proposed for removal, including:

- Bird nests belonging to the Fairy Martin (*Petrochelidon ariel*) and Welcome Swallow (*Hirundo neoxena*);
- A disused nest;
- A salvaged hollow attached to a building; and
- Various crevices and cavities in buildings across the Study Area.

6.2 Impact Considerations

The direct impacts of the Proposal include the clearing of ~0.36 ha of Planted Native/ Exotic Vegetation and removal of fauna habitat listed above. Impacts to threatened flora and fauna that may associate with this vegetation were assessed, with the conclusion being that the Proposal is not likely to have a significant impact on this matter. Indirect impacts have been identified, including weeds and surface water. Mitigation measures to minimise risk of these indirect impacts are recommended in **Section 5.3**.

6.3 Impact Assessment

The Proposal involves a vegetation disturbance of ~0.36 ha that would impact Planted Native/ Exotic Vegetation. It has been concluded that this loss of vegetation cover would:

- Not have a significant impact on a threatened species, ecological community or its habitat listed under the BC Act (i.e. no loss of habitat for a threatened species or ecological community); and
- Not have a significant impact on a threatened species, ecological community or its habitat listed under the EPBC Act (i.e. no loss of habitat for a threatened species or ecological community).

6.4 Key Mitigation

Mitigation for direct and indirect impacts have been addressed in **Table 5-1**. Key impact mitigation outcomes recommended are:

- All habitat is to be removed prior to demolition and is to be supervised by a suitably qualified Ecologist to ensure appropriate techniques are utilised. Any fauna injured during such activities should be transported to a veterinary clinic or taken by a Wires volunteer;
- Bat detection devices (Anabat) should be used in all areas of potential habitat prior to demolition activities;
- Appropriate hygiene measures such as removal of contractor rubbish, vehicle and equipment cleaning protocols are to be implemented to ensure that operations within the Study Area do not contribute to the encouragement or spread of feral pest, disease or weed species; and
- All fuels, chemicals and other hazardous materials will be stored in a roofed, fire-protected and impervious bunded area at least 50 metres from waterways, drainage lines, basins, flood-affected areas or slopes above 10%. Bunding design will comply with relevant Australian Standards and should generally be in accordance with guidelines provided in the EPA Authorised Officers Manual.

7 REFERENCES

- Department of Environment and Conservation [DEC] (2004). Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Working Draft. Department of Environment and Conservation NSW, Sydney.
- Department of Environment and Climate Change [DECC] (2008). Threatened Species Assessment Guidelines: The Assessment of Significance. Web Link: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/634947/Threatened-Species-Guidelines.pdf
- Department of Planning and Environment [DPE] (2022a). BioNet Atlas of NSW Wildlife. Accessed July 2022. Web Link: http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx
- DPE (2022b). Threatened species profile search. Accessed July 2022. Web Link: <http://www.environment.nsw.gov.au/threatenedSpeciesApp/>
- DPE (2022c). BioNet Vegetation Classification. Accessed July 2022. Web Link: <https://www.environment.nsw.gov.au/research/Visclassification.htm>
- [DPE (2022d). NSW State Vegetation Map.
- Department of Planning, Industry and Environment [DPIE] (2020a) Biodiversity Assessment Method.
- Department of Planning, Industry and Environment [DPIE] (2020b). Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method. Department of Planning, Industry and Environment, Sydney NSW.
- Department of Environment [DoE] (2013). Matters of National Environmental Significance: Significant Impact Guidelines 1.2 Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies. Department of the Environment, Canberra.
- Department of Climate Change, Energy, the Environment and Water [DCCEEW] (2022). EPBC Protected Matters Search Tool. Accessed July 2022. Web Link: <http://www.environment.gov.au/epbc/pmst/index.html>
- Harden, G.J. (1993). Flora of New South Wales Volume 4 revised edition. NSW University Press, Sydney NSW.
- Harden, G.J. (2000). Flora of New South Wales Volume 1 revised edition. NSW University Press, Sydney NSW.
- Harden, G.J. (2002). Flora of New South Wales Volume 2 revised edition. NSW University Press, Sydney NSW.
- Health Infrastructure (2022) Cowra Hospital Redevelopment Site Plan Rev C dated 1st of December.
- McArdle Arboricultural Consultancy (2022) Arborist Impact Assessment: Central West Project Management Pty Ltd, Sophie Smith, Cowra Health Services, Liverpool Street, Cowra NSW 2794. Version 8.0.
- National Parks and Wildlife Service [NPWS] (2002). Descriptions for NSW (Mitchell) Landscapes Version 2. National Parks and Wildlife Service, Hurstville.
- Office of Environment and Heritage [OEH] (2016). NSW Guide to Surveying Threatened Plants. Office of Environment and Heritage, Sydney NSW.
- OEH (2018). Threatened Species Test of Significance Guidelines. Office of Environment and Heritage, Sydney NSW.
- Simpson, K. and Day, N. (2010). Field Guide to the Birds of Australia. Penguin Group, Australia.
- Stanisic, J., Shea, M., Potter, D. and Griffiths, O. (2010). Australian Land Snails Volume 1: A field guide to eastern Australian species. Bioculture Press, Riviere des Anguilles, Mauritius for the Australian Museum.
- Tyler and Knight (2011) Field Guide to the Frogs of Australia. CSIRO Publishing, Victoria.
- Wilson and Swan (2010) A complete Guide to Reptiles of Australia. New Holland Publishers, Australia.

Appendix A
Likelihood of Occurrence

Scientific Name (Common Name)	B C	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Crinia sloanei</i> (Sloane's Froglet)	V	E	Sloane's Froglet has been recorded from widely scattered sites throughout the Murray-Darling Basin throughout central western NSW. However, the majority of records are from the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats, but also uses permanent dams. The species may be more widespread than currently recognised, but calls infrequently and may be easily confused with the much more common Plains Froglet. Males call from the base of vegetation found around the edges of the breeding sites	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Litoria booroolongensis</i> (Booroolong Frog)	E	E	The Booroolong Frog is found along permanent western flowing streams of the Great Dividing Range through most of NSW and down into northern Victoria. Streams range from small slow-flowing creeks to large rivers and the adults are found on or near cobble banks and other rock structures within stream margins and shelter under rocks or amongst vegetation near the ground on the stream edge. The species occurs along streams in both forested areas and open pasture, but has been affected by the presence of the introduced willow tree. Booroolong Frogs sometimes basks in the sun on exposed rocks near flowing water during summer.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Aprasia parapulchella</i> (Pink-tailed Legless Lizard)	V	V	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Scientific Name (Common Name)	B C	EPB C Ac Act t	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Delma impar</i> (Striped Legless Lizard)	V	V	Found mainly in natural temperate grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near natural temperate grassland and occasionally in open box-gum woodland. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Leipoa ocellata</i> (Malleefowl)	E	V	Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as inland grey box, ironbark or bumble box woodlands with thick understorey, or in other woodlands such dominated by mulga or native cypress pine species.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Stictonetta naevosa</i> (Freckled Duck)	V	0	The freckled duck breeds in permanent fresh swamps that are heavily vegetated. Found in fresh or salty permanent open lakes, especially during drought. Often seen in groups on fallen trees and sand spits.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Hirundapus caudacutus</i> (White-throated Needletail)	P	V,M, MAR	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	0	High. Habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is likely to be located within the known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are unlikely to adversely influence the capacity of the species to occupy the habitat. Pre-existing and active KTPs are unlikely to be substantially influencing species incidence and/ or habitat occupancy. Not recently observed in the locality (NSW BioNet records).
<i>Botaurus poiciloptilus</i> (Australasian Bittern)	E	E	The Australasian Bitterns is widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Ixobrychus flavicollis</i> (Black Bittern)	V	0	Usually found on coastal plains below 200 m. Often found along timbered watercourses, in wetlands with fringing trees and shrub vegetation. The sites where they occur are characterized by dense waterside vegetation.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Circus assimilis</i> (Spotted Harrier)	V	0	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)	V	0	Inhabits coastal and near coastal areas, building large stick nests, and feeding mostly on marine and estuarine fish and aquatic fauna.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Hieraaetus morphnoides</i> (Little Eagle)	V	0	Most abundant in lightly timbered areas with open areas nearby. Often recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. May nest in farmland, woodland and forest in tall trees.	1	Moderate. Species specific (i.e. important habitat features) and vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) occur within the investigation area. The investigation area may or may not be

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					located within the species known 'area of occurrence' but is within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality may be influencing the capacity for habitat occupancy. Pre-existing and active KTPs may potentially have a negative influence on species incidence and/ or habitat occupancy. Species recently observed in the locality (NSW BioNet records).
<i>Lophoictinia isura</i> (Square-tailed Kite)	V	0	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by <i>Eucalyptus longifolia</i> , <i>Corymbia maculata</i> , <i>E. elata</i> or <i>E. smithii</i> . Individuals appear to occupy large hunting ranges of more than 100km ² . They require large living trees for breeding, particularly near water with surrounding woodland -forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Falco hypoleucos</i> (Grey Falcon)	E	0	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.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Falco subniger</i> (Black Falcon)	V	0	The Black Falcon is found along tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. It roosts in trees at night and often on power poles by day.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Burhinus grallarius</i> (Bush Stone-curlew)	E	0	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Rostratula australis</i> (Australian Painted Snipe)	E	E	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
			Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.		based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	E	CE, M,M AR	The Curlew Sandpiper is distributed around most of the coastline of Australia. It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Numenius madagascariensis</i> (Eastern Curlew)	P	CE, M,M AR	The Eastern curlew spends its breeding season in northeastern Asia, including Siberia to Kamchatka, and Mongolia. Its breeding habitat is composed of marshy and swampy wetlands and lakeshores. Most individuals winter in coastal Australia, with a few heading to South Korea, Thailand, Philippines and New Zealand, where they stay at estuaries, beaches, and salt marshes. It uses its long, decurved bill to probe for invertebrates in the mud. It may feed in solitary but it generally congregates in large flocks to migrate or roost. Its call is a sharp, clear whistle, cuuue-reee, often repeated.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)	V	E	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
			subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.		types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Calyptrorhynchus lathamii</i> (Glossy Black-Cockatoo, Riverina population)	E P	0	Inhabits forest with low nutrients, characteristically with key <i>Allocasuarina</i> spp. Tends to prefer drier forest types with a middle stratum of <i>Allocasuarina</i> below <i>Eucalyptus</i> or <i>Angophora</i> . Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead. Endangered population in the Riverina.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Glossopsitta porphyrocephala</i> (Purple-crowned Lorikeet)	V	0	Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering eucalypts, including planted trees in urban areas.	0	Moderate. Species specific (i.e. important habitat features) and vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) occur within the investigation area. The investigation area may or may not be located within the species known 'area of occurrence' but is within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality may be influencing the capacity for habitat occupancy. Pre-existing and active KTPs may potentially have a negative influence

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					on species incidence and/ or habitat occupancy. Not recently observed in the locality (NSW BioNet records).
<i>Glossopsitta pusilla</i> (Little Lorikeet)	V	0	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Lathamus discolor</i> (Swift Parrot)	E	CE, MAR	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).

Scientific Name (Common Name)	B C	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Neophema pulchella</i> (Turquoise Parrot)	V	0	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Polytelis swainsonii</i> (Superb Parrot)	V	V	The Superb Parrot is 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. Inhabits box-gum, box-cypress-pine and boree woodlands and river red gum forest.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Ninox connivens</i> (Barking Owl)	V	0	Generally found in open forests, woodlands, swamp woodlands and dense scrub. Can also be found in the	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
			foothills and timber along watercourses in otherwise open country.		types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Tyto novaehollandiae</i> (Masked Owl)	V	0	Inhabits a diverse range of wooded habitat that provide tall or dense mature trees with hollows suitable for nesting and roosting. Mostly recorded in open forest and woodlands adjacent to cleared lands. Nest in hollows, in trunks and in near vertical spouts or large trees, usually living but sometimes dead. Nest hollows are usually located within dense forests or woodlands. Masked owls prey upon hollow-dependent arboreal marsupials, but terrestrial mammals make up the largest proportion of the diet.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Climacteris picumnus victoriae</i> (Brown Treecreeper (eastern subspecies))	V	0	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	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
			mallee and river red gum 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.		'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Chthonicola sagittata</i> (Speckled Warbler)	V	0	The Speckled Warbler lives in a wide range of eucalypt dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Anthochaera phrygia</i> (Regent Honeyeater)	C E	CE	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. The distribution of the species has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
			distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.		quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Grantiella picta</i> (Painted Honeyeater)	V	V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Meliphreptus gularis</i> <i>gularis</i> (Black-chinned Honeyeater (eastern subspecies))	V	0	Eucalypt woodlands within an approximate annual rainfall range of 400-700mm.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Pomatostomus temporalis</i> <i>temporalis</i> (Grey-crowned Babbler (eastern subspecies))	V	0	In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open box-gum woodlands on the slopes, and box-cypress-pine and open box woodlands on alluvial plains.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Daphoenositta chrysoptera</i> (Varied Sittella)	V	0	Inhabits wide variety of dry eucalypt forests and woodlands, usually with either shrubby under storey or grassy ground cover or both, in all climatic zones of Australia. Usually in areas with rough-barked trees, such as stringybarks or ironbarks, but also in paperbarks or mature Eucalypts with hollows.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Artamus cyanopterus</i> (Dusky Woodswallow)	V	0	The Dusky Woodswallow is widespread in eastern, southern and southwestern Australia. In New South Wales it is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. The Dusky Woodswallow is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. At sites where Dusky Woodswallows are recorded the understorey is typically open with sparse eucalypt saplings, acacias and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris (Higgins and Peter 2002). Birds are also often observed in farm land, usually at the edges of forest or woodland or in roadside remnants or wind breaks with dead timber.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Melanodryas cucullata</i> (Hooded Robin (south-eastern form))	V	0	Occupy a wide range of eucalypt woodlands, Acacia shrublands and open forests.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					observed in the locality (NSW BioNet records).
<i>Petroica boodang</i> (Scarlet Robin)	V	0	The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Petroica phoenicea</i> (Flame Robin)	V	MAR	Flame Robins are found in a broad coastal band from southern Queensland to just west of the South Australian border. The species is also found in Tasmania. The preferred habitat in summer includes eucalyptus forests and woodland, whilst in winter prefers open woodlands and farmlands. It is considered migratory. The Flame Robin breeds from about August to January.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Stagonopleura guttata</i> (Diamond Firetail)	V	0	Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). Found in grassy eucalypt woodlands, including box-gum woodlands and snow gum woodlands. Also occurs in open forest, mallee, natural temperate grassland, and in secondary grassland derived from other communities.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Dasyurus maculatus</i> (Spotted-tailed Quoll)	V	E	Spotted-tailed Quoll are found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. 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.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Phascogale tapoatafa</i> (Brush-tailed Phascogale)	V	0	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Phascolarctos cinereus</i> (Koala)	E	E	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Petaurus norfolcensis</i> (Squirrel Glider)	V	0	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow bearing trees and a mix of eucalypts, banksias and acacias. There is only limited information available on den tree use by Squirrel gliders, but it has been observed using both living and dead trees as well as hollow stumps. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked. Endangered population in the Wagga Wagga LGA.	1	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Petrogale penicillata</i> (Brush-tailed Rock-wallaby)	E	V	Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves and crevices.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	V	V	This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	76	High. Habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is likely to be located within the known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are unlikely to adversely influence the capacity of the species to occupy the habitat. Pre-existing and active KTPs are unlikely to be substantially influencing species incidence and/ or habitat occupancy. Species recently observed in the locality (NSW BioNet records).
<i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tail-bat)	V	0	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	0	High. Habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is likely to be located within the known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are unlikely to adversely influence the capacity of the species to occupy the habitat. Pre-existing and active KTPs are unlikely to be substantially influencing species incidence and/ or habitat occupancy. Not recently observed in the locality (NSW BioNet records).
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat)	V	V	Located in a variety of drier habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Can also be found on the edges of rainforests and in wet sclerophyll forests. This species roosts in caves and mines in groups of between 3 and 37 individuals.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Falsistrellus tasmaniensis</i> (Eastern False Pipistrelle)	V	0	Inhabit sclerophyll forests, preferring wet habitats where trees are more than 20 m high. Two observations have been made of roosts in stem holes of living eucalypts. There is debate about whether or not this species moves to lower altitudes during winter, or whether they remain sedentary but enter torpor. This species also appears to be highly mobile and records showing movements of up to 12 km between roosting and foraging sites.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Nyctophilus corbeni</i> (Corben's Long-eared Bat)	V	V	The South-eastern Long-eared Bat has a limited distribution that is restricted around the Murray-Darling Basin in south-eastern Australia. Even in this region its distribution is scattered and it is rarely recorded. It occurs in far eastern South Australia, in areas north of the Murray River, east of Canegrass Station and south of the Barrier Highway. These areas include the Riverland Biosphere Reserve, Dangali Conservation Park and the Birds Australia Gluepot Reserve. It is distributed throughout inland NSW except in the north-west area which is dominated by treeless plains. It can be found in the Hunter Valley, extending from central NSW to the eastern Hunter Valley coast.	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Miniopterus orianae oceanensis</i> (Large Bent-winged Bat)	V	0	Eastern Bent-wing Bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	0	High. Habitat values within the investigation area are generally consistent with descriptions provided in the BCD TSPD. Habitat is likely to be located within the known 'extent of occurrence' and 'area of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are unlikely to adversely influence the capacity of the species to occupy the habitat. Pre-existing and active KTPs are unlikely to be substantially influencing species incidence and/ or habitat occupancy. Not recently observed in the locality (NSW BioNet records).
<i>Synemon plana</i> (Golden Sun Moth)	E	CE	The Golden Sun Moth's NSW populations are 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 spp.</i>	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Keyacris scurra</i> (Key's Matchstick Grasshopper)	E	0	Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass <i>Themeda triandra</i>) and known food plants (particularly Asteraceae)	0	Low. Vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are present; however, species specific habitat types (i.e. important habitat features) are either absent, in low abundance and/ or in a disturbed state. The

Scientific Name (Common Name)	B C Ac t	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
					investigation area is likely to be located outside the species known 'area of occurrence' but may be within the known 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Factors such as connectivity, patch size, habitat quantum and/ or quality are likely to be negatively influencing the likelihood of habitat occupancy. If detected, species activity is most likely low and associated with landscape scale habitat use such as movement between areas of higher value habitat, the use of supplementary habitat or reflect the negative effects of active/ uncontrolled KTPs. Not recently observed in the locality (NSW BioNet records).
<i>Tylophora linearis</i> (NULL)	V	E	<i>Tylophora linearis</i> has rarely been collected and is known from eight localities in the Dubbo area and Mt Crow near Barraba in NSW, and 'Myall Park' near Glenmorgan in Queensland. This species is conserved within Goobang National Park, Eura State forest, Goonoo SF, Pilliga West SF and Coolbaggie Nature Reserve. <i>Tylophora linearis</i> grows in dry scrub, open forest and woodlands associated with <i>Melaleuca uncinata</i> , <i>Eucalyptus fibrosa</i> , <i>E. sideroxylon</i> , <i>E. albens</i> , <i>Callitris endlicheri</i> , <i>C. glaucophylla</i> , <i>Allocasuarina luehmannii</i> , <i>Acacia hakeoides</i> , <i>A. lineata</i> , <i>Myoporum spp.</i> , and <i>Casuarina spp.</i>	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Ammobium craspedioides</i> (Yass Daisy)	V	V	Found in moist or dry forest communities, box-gum woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts. Apparently unaffected by light grazing, as populations persist in some grazed sites.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Scientific Name (Common Name)	B C	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Senecio macrocarpus</i> (NULL)	0	V	In NSW, Large-fruit Fireweed occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Lepidium aschersonii</i> (Spiny Peppercress)	V	V	Found on ridges of gilgai clays dominated by brigalow, with wallaby and spear grasses in the understorey. The species grows as a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense brigalow, with sparse grassy understorey and occasional heavy litter.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Swainsona recta</i> (Small Purple-pea)	E	E	Before European settlement, this species occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's red gum, yellow box, candlebark gum and long-leaf box. Grows in association with understorey dominants that include kangaroo grass, poa tussocks and spear-grasses.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Scientific Name (Common Name)	B C	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Swainsona sericea</i> (Silky Swainson-pea)	V	0	Recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Found in Natural Temperate Grassland and Snow Gum Woodland on the Monaro. Found in Box-Gum Woodland in the Southern Tablelands and South West Slopes. Sometimes found in association with cypress-pines.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Acacia ausfeldii</i> (Ausfeld's Wattle)	V	0	Found to the east of Dubbo in the Mudgee, Ulan - Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions. Associated species include <i>Eucalyptus albens</i> , <i>E. blakelyi</i> and <i>Callitris spp.</i> , with an understorey dominated by <i>Cassinia spp.</i> and grasses.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Prasophyllum petilum</i> (Tarengo Leek Orchid)	E	E	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites and in grassy woodland in association with River Tussock <i>Poa labillardieri</i> , Black Gum <i>Eucalyptus aggregata</i> and tea-trees <i>Leptospermum spp.</i> near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Scientific Name (Common Name)	B C Ac t	EPB C Act	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Prasophyllum</i> sp. Wybong	P	CE	Endemic to NSW. It is known from seven populations in eastern NSW near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell and Tenterfield.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Euphrasia arguta</i>	C E	CE	Occur in eucalypt forest with a mixed grass and shrub understorey within Nundle State forest. Sites have either been logged in the last few decades or appear to have regrown from past clearing.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Amphibromus fluitans</i> (Floating Swamp Wallaby-grass)	V	V	<i>Amphibromus fluitans</i> grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with Potamogeton and Chamaeraphis species. Flowering time is from spring to autumn or November to March.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Scientific Name (Common Name)	B C	EPB C	Habitat	Number of Records (DPE 2022)	Likelihood of Occurrence
<i>Austrostipa wakoolica</i> (A spear-grass)	E	E	Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Grevillea wilkinsonii</i> (Tumut Grevillea)	C	E	Highly restricted distribution in the NSW South-west Slopes region. At the Goobarragandra River sites (main occurrence) the species generally grows in close proximity to the water, at altitudes between 310 and 340 m. Most healthy adult plants occur in open sunny areas. The associated native vegetation in the Goobarragandra sites are typically remnant riverine shrub communities adjacent to open-forest. The population at Gundagai is growing on the upper slope of a steep hill on Serpentine rock. The associated native vegetation at this site is a grassy White Box (<i>Eucalyptus albens</i>) woodland.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.
<i>Thesium australe</i> (Austral Toadflax)	V	V	Grows in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Occurs in grassland or grassy woodland. Grows on kangaroo grass tussocks but has also been recorded within the exotic coolatai grass.	0	None. Species specific habitat types (i.e. important habitat features) and known vegetation classification based habitat surrogates (i.e. PCT and/ or vegetation formations) are absent from the investigation area. The investigation area is also likely located outside the species known 'area of occurrence' and may also occur outside the species 'extent of occurrence' [i.e. standard grid size of 2x2km (IUCN 2017)]. Species incidence is not expected and, if detected, would likely represent atypical occurrence (e.g. incidence linked with transient activity). Presence unlikely associated with habitat occupancy involving important lifecycle processes.

Appendix B **Species List**

Scientific Name	Common Name	Family	BC Act	EPBC Act	HTW	Opport	BAM 1 Cover	BAM 1 Abund
<i>Acer palmatum</i>	Japanese maple	Sapindaceae				X		
<i>Buxus spp.</i>	Box	Buxaceae				X		
<i>Callistemon viminalis</i>	Weeping Bottlebrush	Myrtaceae				X		
<i>Camellia spp.</i>		Theaceae				X		
<i>Celtis australis</i>	European nettle tree	Cannabaceae				X		
<i>Cenchrus clandestinus</i>	Kikuyu	Poaceae			Yes		25	300
<i>Cerastium spp.</i>		Caryophyllaceae				X		
<i>Chamaecyparis obtusa</i>		Cupressaceae				X		
<i>Colocasia spp.</i>	Taro	Araceae				X		
<i>Corymbia citriodora</i>	Lemon-scented gum	Myrtaceae					18	3
<i>Cotoneaster glaucophyllus</i>	Cotoneaster	Rosaceae			Yes	X		
<i>Dactylis glomerata</i>	Cocks Foot	Gramineae			Yes		0.3	25
<i>Ehrharta erecta</i>	Panic Veldtgrass	Poaceae				X		
<i>Fraxinus angustifolia</i>	Narrow-leaved ash	Oleaceae			Yes	X		
<i>Geranium spp.</i>	Crane's-bill	Geraniaceae					0.1	15
<i>Gonocarpus spp.</i>		Haloragaceae					0.1	2
<i>Jacaranda mimosifolia</i>	Blue Jacaranda	Bignoniaceae				X		
<i>Juniperus chinensis</i>	Chinese juniper	Cupressaceae				X		
<i>Lagerstroemia indica</i>	Crepe Myrtle	Lythraceae				X		
<i>Ligustrum lucidum</i>	Broad-leaf Privet	Oleaceae			Yes	X		
<i>Liquidambar styraciflua</i>	Liquidamber	Altingiaceae				X		
<i>Lotus spp.</i>		Fabaceae					0.1	5
<i>Malva parviflora</i>	Cheeseweed	Malvaceae					0.2	20
<i>Medicago spp.</i>	Medick	Fabaceae					0.1	6
<i>Modiola caroliniana</i>	Red Mallow	Malvaceae	Not Listed	Not Listed			0.1	5
<i>Nandina domestica</i>	Sacred Bamboo	Berberidaceae	Not Listed	Not Listed		X		
<i>Olea europaea subsp. cuspidata</i>	African Olive	Oleaceae	Not Listed	Not Listed	Yes	X		
<i>Oxalis spp.</i>	Wood sorrels	Oxalidaceae	Not Listed	Not Listed			0.1	3
<i>Poa annua</i>	Winter Grass	Poaceae	Not Listed	Not Listed			1	150
<i>Poa spp.</i>		Poaceae	Not Listed	Not Listed			0.1	15

Scientific Name	Common Name	Family	BC Act	EPBC Act	HTW	Opport	BAM 1 Cover	BAM 1 Abund
<i>Quercus robur</i>	English Oak	Fagaceae	Not Listed	Not Listed		X		
<i>Rumex spp.</i>	Dock	Polygonaceae	Not Listed	Not Listed			0.1	25
<i>Salvia rosmarinus</i>	Rosemary	Lamiaceae	Not Listed	Not Listed		X		
<i>Sephora japonicum</i>	Japanese pagoda tree	Fabaceae	Not Listed	Not Listed		X		
<i>Soliva sessilis</i>	Lawn Burweed	Asteraceae	Not Listed	Not Listed			0.1	5
<i>Sonchus oleraceus</i>	Common sowthistle	Asteraceae	Not Listed	Not Listed			0.1	25
<i>Stellaria media</i>	Chickweed	Caryophyllaceae	Not Listed	Not Listed			1	100
<i>Syzygium spp.</i>		Myrtaceae	Not Listed	Not Listed		X		
<i>Taraxacum officinale</i>	Common Dandelion	Asteraceae	Not Listed	Not Listed	Yes		0.1	3
<i>Triadica sebifera</i>	Chinese Tallow	Euphorbiaceae	Not Listed	Not Listed	Yes	X		
<i>Trifolium repens</i>	White Clover	Fabaceae	Not Listed	Not Listed			0.1	10

Appendix C Assessments

The 5 part Tests of Significance under the BC Act are provided below for species with a 'moderate or greater likelihood' of occurring. Considerations of the effects of the Project under the guidelines of Section 7.3 of the BC Act for the concerned threatened species / populations / ecological communities are given below.

The majority of information used for the assessment has been sourced from OEH Threatened Species Information and Environmental Impact Assessment Guidelines, BioNet Atlas and other published or widely available literature sources such as scientific journals and reports.

The species listed below are assessed in 'guilds' according to habitat requirements.

Fauna species

Birds

- *Glossopsitta porphyrocephala* (Purple-crowned Lorikeet);
- *Hieraaetus morphnoides* (Little Eagle); and
- *Hirundapus caudacutus* (White-throated Needle-tail).

Reptiles

Nil.

Mammals

- *Miniopterus orianae oceanensis* (Large Bent-winged Bat);
- *Pteropus poliocephalus* (Grey-headed Flying-fox); and
- *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail-bat).

Flora species

Nil.

Test of Significance: Birds

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The proposal will reduce the extent of potential sub-optimal habitat (given the urbanised nature of the Study Area) for *Glossopsitta porphyrocephala* (Purple-crowned Lorikeet) and *Hieraaetus morphnoides* (Little Eagle). 'Loss' includes impacts to ~0.36 ha of habitat that may be utilised infrequently by these species as part of their lifecycle within a landscape context that is estimated to be in an over cleared state (NPWS 2022). Impact avoidance measures have been introduced, where possible, to minimise direct and indirect impacts. While it is possible that the Proposal may have an adverse impact on the life cycle of these species, it is considered that this impact is negligible and inconsequential and therefore not of an extent and/ or intensity that is likely to place a local viable population of these species at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Assessment not applicable to this species.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Assessment not applicable to this species.

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The Proposal will result in a reduction of these species habitat extent by an estimated < 0.01% relative to similar habitat within the region. This is a negligible impact on the extent of this species habitat.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The Proposal will not fragment or isolate the habitat of these species.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

These species have potential to utilise foraging habitat occurring within the Study Area, although they have not been detected within this area. The area to be impacted is not important for genetic flow, life cycle function or persistence within the locality and is highly urbanised. On this basis it is considered that the importance of the habitat to be removed is low.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The Proposal is not likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The Proposal has potential to increase the impact of the following KTP:

- Clearing of native vegetation.

Notwithstanding the increased impact of the above KTP, it is considered that the Proposal will have a minor and inconsequential influence on the effect of these KTP. Mitigation measures are recommended to minimise the effect of these KTP.

Conclusion

The listed bird species are highly mobile and extensive habitat is available adjacent to the Study Area. The Proposal is not likely to substantially reduce the extent nor connectivity of habitat important for threatened birds within the local area. Impact avoidance measures have been introduced, where possible, to minimise direct and indirect impacts. The lifecycle of the species is not likely to be adversely impacted to an extent that would threaten a viable local population of the species. On this basis, it is considered that the Proposal is not likely to have a significant impact on the listed bird species.

Test of Significance: Mammals

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The proposal will reduce the extent of potential habitat for *Miniopterus orianae oceanensis* (Large Bent-winged Bat), *Pteropus poliocephalus* (Grey-headed Flying-fox) and *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail-bat). 'Loss' includes impacts to ~0.36 ha of habitat that may be utilised infrequently by these species as part of its lifecycle within a landscape context that is estimated to be over cleared (NPWS 2002). Impact avoidance measures have been introduced, where possible, to minimise direct and indirect impacts. While it is possible that the Proposal may have an adverse impact on the life cycle of these species, it is considered that this impact is negligible and inconsequential and therefore not of an extent and/or intensity that is likely to place a local viable population of these species at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

Assessment not applicable to this species.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Assessment not applicable to this species.

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The Proposal will result in a reduction of these species habitat extent by an estimated < 0.01% relative to similar habitat within the region. This is a negligible impact on the extent of these species habitat.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The Proposal will not fragment or isolate the habitat of these species.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

These species have potential to occupy habitat occurring within the Study Area, although they have not been detected within this area. The habitat area to be impacted is not important for genetic flow, life cycle function or persistence within the locality and is highly urbanised. On this basis it is considered that the importance of the habitat to be removed is low.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The Proposal is not likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The Proposal has potential to increase the impact of the following KTP:

- Clearing of native vegetation.

Notwithstanding the increased impact of the above KTP, it is considered that the Proposal will have a minor and inconsequential influence on the effect of these KTP. Mitigation measures are recommended to minimise the effect of these KTP.

Conclusion

The proposal is not likely to substantially reduce the extent nor connectivity of habitat important for mammals within the local area. Impact avoidance measures have been introduced, where possible, to minimise direct and indirect impacts. The lifecycle of the species is not likely to be adversely impacted to an extent that would threaten a viable local population of the species. On this basis, it is considered that the Proposal is not likely to have a significant impact on the above listed mammal species.

Assessment of Significance under the EPBC Act are provided below for threatened species with a 'moderate or greater likelihood' of occurring. Mobile fauna species have been omitted from this assessment.

Commonwealth Assessments – Vulnerable species

The proposal is likely to have an impact on the habitat of the following species:

- *Hirundapus caudacutus* (White-throated Needletail); and
- *Pteropus poliocephalus* (Grey-headed Flying-fox).

Assessments against the criteria of vulnerable species is provided as follows.

Lead to a long-term decrease in the size of an important population of a species

The Proposal will not result in a reduction of occupied habitat for a threatened species and/ or an extent of habitat that would influence the size and functioning of an important population. It is considered that the Proposal is not likely to lead to a long-term decrease in the size of an important population of a species.

Reduce the area of occupancy of the species

The Proposal is likely to result in a negligible reduction in the area of occupancy for the assessed threatened species.

Fragment an existing population into two or more populations

The Proposal will not result in the fragmentation of potential habitat. It is considered that the proposal will not separate any populations into two or more populations.

Adversely affect habitat critical to the survival of an important population

The Proposal will have no impact on habitat important to the species. The Proposal is unlikely to affect habitat critical to the survival of the species.

Disrupt the breeding cycle of a population

The Proposal will not disrupt the breeding cycle of a population.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

The Proposal is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that a listed vulnerable species is likely to decline.

Result in invasive species that are harmful to vulnerable species becoming established in the vulnerable species' habitat

The Proposal is not expected to result in additional invasive species that are harmful to a threatened species.

Introduce disease that may cause the species to decline

The proposal is not expected to introduce a disease harmful to a threatened species.

Interfere with the recovery of the species

The Proposal is not expected to interfere with the recovery of a threatened species.

CONCLUSION

The Proposal is not likely to substantially reduce the extent or fragment any populations of a threatened species. Habitat critical to the survival of a threatened species would not be adversely affected by proposal. The proposal will not interfere with the recovery of a threatened species. On this basis, it is considered that the proposal is not likely to have a significant impact on a Commonwealth listed threatened species.
