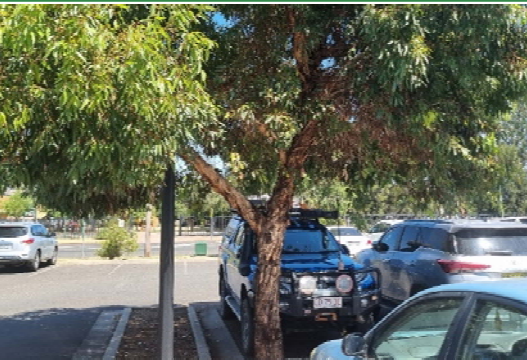


Biodiversity Assessment Report

Gunnedah Hospital



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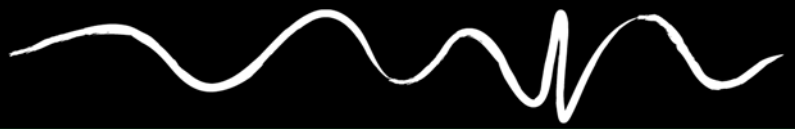
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Executive Summary

This Biodiversity Assessment Report (BAR) has been prepared for NSW Health Infrastructure to accompany a Review of Environmental Factors (REF) for redevelopment works at Gunnedah District Hospital at 10 Anzac Parade, Gunnedah, NSW 2380 (Lot 3 DP 792209).

Key results of the field assessment are as follows:

- Vegetation on site is highly disturbed with a number of open space areas and 67 scattered planted trees; comprising 12 native trees endemic to the North Western Slopes botanical region, 23 native non-endemic trees and 32 exotic species of various ages and conditions.
- Vegetation on site is not representative of any plant community types (PCTs) outlined in the BioNet Vegetation Classification system.
- Six hollow-bearing trees occur on site.
- Feeding and refuge habitat for Koala (*Phascolarctos cinereus*) occurs at the site associated with River Red Gum (*Eucalyptus camaldulensis*). River Red Gum is a regionally recognised Koala food tree species for the Western Slopes and Plains Koala Management Area (DECC, 2008).
- Koala use trees (River Red Gum and Bimble Box - *Eucalyptus populnea*) listed under the State Environmental Planning Policy (Koala Habitat Protection) 2021 are present on site.
- Construction will require removal of 22 trees (comprising three native trees endemic to the North Western Slopes botanical region, three native non-endemic trees and 16 exotic species) and transplanting of one exotic species.
- No NSW *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened flora were recorded on site.
- No BC Act or EPBC Act listed threatened ecological communities (TECs) occur on site.
- Eight threatened fauna species (Speckled Warbler - *Chthonicola sagittata*, Little Lorikeet - *Glossopsitta pusilla*, Superb Parrot - *Polytelis swainsonii*, Koala - *Phascolarctos cinereus*, Grey-headed Flying-fox - *Pteropus poliocephalus*, Corben's Long-eared Bat - *Nyctophilus corbeni* and Yellow-bellied Sheath-tail-bat - *Saccolaimus flaviventris*) are considered to potentially occur within the site and locality.

The Activity would incur the following main biodiversity impacts:

- Removal of 22 planted native and non-endemic/ exotic trees.
- Removal of three Koala feed trees (River Red Gum - *Eucalyptus camaldulensis*).
- Removal of one hollow-bearing tree.

The magnitude of these impacts is not sufficient enough to result in a significant impact to threatened species.

Review of statutory instruments relevant to the Activity was completed as follows:

- BC Act: the Activity is unlikely to significantly impact any threatened species or communities.
- EPBC Act: the Activity is unlikely to significantly affect threatened species or communities, or listed migratory species.



1. Introduction and Background

1.1 Introduction

NSW Health Infrastructure (HI) propose early works (demolition and decanting) as the initial stage of redevelopment works at Gunnedah Hospital (the Activity) at 10 Anzac Parade, Gunnedah, NSW (Lot 3 DP792209) (the site) as part of their delivery of infrastructure solutions and services to support the healthcare needs of the NSW communities.

This Biodiversity Assessment Report (BAR) has been prepared to:

- Identify any biodiversity constraints to the Activity; including identification of habitat for threatened species or communities listed under the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Identify any significant trees or fauna habitat features of biodiversity importance.
- Identify High Environmental Values (HEV).
- Assess the Activity against relevant statutory requirements.

1.2 The Site

Gunnedah Hospital (herein referred to as 'the site'), is located on Lot 3 DP 792209 at 10 Anzac Parade, Gunnedah (refer to **Illustration 1.1**).

The site occurs within the Liverpool Plains (Interim Biogeographic Regionalisation for Australia [IBRA]) subregion of the Brigalow Belt South IBRA bioregion Version 7 (refer Thackway & Cresswell, 1995). At a local level, the site forms part of the 'Werris Creek Basalt Hills and Valleys' Mitchell Landscape, which is an 'over-cleared' Mitchell landscape.

The site is zoned R2 Low Density Residential under the *Gunnedah Local Environmental Plan* (LEP) 2012.

The site has an approximate area of 3.265 ha in an urban area and is bound by Anzac Parade (to the west), Reservoir Street (to the south) and Marquis Street (to the east). The hospital buildings are spread across the site interspersed with open green spaces with established trees and smaller shrubs and gardens.

1.3 The Activity

1.3.1 Activity Overview

The early works stage of Gunnedah Hospital Redevelopment (the Activity) includes:

- Construction of a plant room.
- Site preparation for demolition of a number of areas within the existing hospital building on site.
- Decanting and construction of temporary structures to enable the redevelopment to commence (with continued operation of the hospital through main works construction and refurbishment stages).



1.3.2 Proposed Activity

As part of the enabling works the existing building structure of the main hospital will need to be demolished to the proposed demolition line. The area of building to be demolished is approximately 1,900m². The demolition includes removal of any in-ground services at the site (if not being re-used) as well as removal of existing foundations. Works are to be completed to ensure a clean site is present for the new building construction.

Asbestos Containing Materials have been identified in some of the buildings which, along with any other hazardous materials such as lead paint, will be handled, managed, and disposed of according to applicable regulations and EPA waste protocols.

Minor works will be required for some of the temporary decanting building/ rooms. A permanent plant room will also be constructed as part of the Activity.

A temporary Contractors Compound will be established on site. On site vehicular access for construction vehicles will be maintained off Reservoir Street. Existing carparking and open spaces areas will be maintained within the compound.

The preliminary concept plan provided by DWP is provided in **Appendix A**.

1.4 Definitions Used in this Report

The following definitions have been used throughout this BAR:

- Activity – as described in Section 1.3.
- Site – the land within which the Activity occurs (Lot 3 DP 792209).
- Study area – the site plus a 100 m buffer around the site. This includes areas of vegetation and associated habitat that may be subject to direct or indirect impacts as a result of the Activity.
- Impact area – this includes all areas to be directly impacted by the Activity.
- Locality – a 10 km buffer around the site.



LEGEND

- The site
- Cadastre

0 40 Metres

Site Plan - Illustration 1.1

2. Methodology

2.1 Desktop Review

The desktop assessment included analysis of the following information sources:

- Aerial photographic imagery.
- NSW Mitchell Landscapes – Version 3.1 (as per NSW Sharing and Enabling Environmental Data (SEED mapping)) (DPE, 2017).
- Interim Biogeographic Regionalisation of Australia (IBRA version 7.0) (Thackway, R & Cresswell, ID, 1995).
- Biodiversity Values mapping (as per the Biodiversity Values Map and Threshold Tool) (DPE, 2022).
- Directory of Important Wetlands of Australia (DCCEEW, 2021).
- Priority weed listings for the North West Coast region (DPI, undated).
- Trees Near Me NSW (DPE, 2021).

2.1.1 Database searches

Table 2.1 outlines the desktop database searches completed prior to field assessment.

Table 2.1 Threatened Species Database Searches

Database	Search Date	Area Search	Reference
BioNet Atlas species sighting search	18/01/2023	10 km x 10 km centred on the study area	DPE (2022)
EPBC Protected Matters Search Tool	18/01/2023	10 km buffer on the study area	DCCEEW (2022)
NSW Department of Primary Industries (Fishing and Aquaculture) spatial data	18/01/2023	Centred on site and immediate surroundings	DPI (undated)

2.2 Field Assessment

A Preliminary Arboricultural Assessment (Wade Ryan Contracting, 2022) was undertaken to identify trees at the site. Ecologist field assessment was completed by GeoLINK ecologist Quinn Green on 17 and 27 January 2023. The field assessment sought primarily to identify key biodiversity constraints and potential impacts by assessing the type, extent and condition of vegetation and fauna habitat, especially as it pertained to threatened species and ecological communities using the following methodology:

- Vegetation assessment and mapping including identifying vegetation communities to plant community type (PCT) where present.
- Targeted surveys for threatened flora (as identified in BioNET searches) in areas of suitable habitat.
- Identification of threatened ecological communities (TECs).
- Identification and survey (by GPS) of any hollow-bearing trees or habitat features including nests or dreys.
- Targeted searches for Koala faecal pellets under preferred Koala use trees.



3. Vegetation

3.1 Desktop Analysis

3.1.1 Database Search Results

BioNet search results identified records of one threatened flora species (also listed under the EPBC Act) and habitat for nine threatened ecological communities (none of which are listed under the EPBC Act) within the search area (refer to **Appendix B**). PMST results identified habitat for nine threatened flora species and six threatened ecological communities within the search area.

3.2 Background Information

A Preliminary Arboricultural Assessment (Wade Ryan Contracting, 2022) of the site has been prepared (**Appendix C**) and found the following:

- All trees and shrubs on site are considered amenity plantings and include a number of exotic, ornamental species.
- 68 trees were identified across the site, including three large trees fronting Anzac Parade under Council's control. One tree (tree number 3) has since been removed.
- While there are no remnant trees, there are a number of Australian native species.
- The following trees have been identified as significant trees:
 - Three larger trees, *Eucalyptus cladocalyx* (Sugar Gums) controlled by Gunnedah Shire Council located on the verge of Anzac Parade. The trees are in good condition with long life expectancy, positive environmental values as native trees with hollows and positive values to the local ecosystems.
 - Ten trees that form a line on Reservoir Street; *Jacaranda mimosifolia* x 8 and *Eucalyptus camaldulensis* x 2 (River Red Gums)). This is a line of larger trees with amenity values and lengthy replacement time frames.
 - A large eucalyptus species located to the rear of the Ambulance Station. This tree will require tree protection measures.
- A small Magnolia shrub species located near the main entry has been identified as having some cultural value and its preservation has been requested. Its current location is in direct conflict with the development and its lacks adequate irrigation and has a poor soil profile with low nutrient levels. If its value is validated, it may be able to be lifted, stored and replanted elsewhere on the site.
- There are no trees identified as being of national, state or local heritage significance.

3.3 Site Features

3.3.1 Vegetation

Vegetation on site is highly disturbed with a number of open space areas and scattered trees of various ages and conditions. Native trees (endemic to the North Western Slopes Botanical Region of NSW) (Harden 2002) on site comprise:

- Eight River Red Gum (*Eucalyptus camaldulensis*).
- One of each Kurrajong (*Brachychiton populneus*), White Cedar (*Melia azedarach*), Carbeen (*Corymbia tessellaris*), and Bimble Box (*Eucalyptus populnea*).



Native species (non-endemic to the North Western Slopes Botanical Region) include:

- Eight Flowering Gum (hybrid form) (*Corymbia ficifolia*).
- Four Sugar Gum (dwarf) (*Eucalyptus cladocalyx*).
- Three each of Silky Oak (*Grevillea robusta*) and *Eucalyptus* sp.
- Two Crepe Myrtle (*Lagerstroemia* species).
- One of each Bottle Tree (*Brachychiton rupestris*), Lemon-scented Gum (*Corymbia citriodora*), and Yellow Gum (*Eucalyptus leucoxylon*).

Exotic/ ornamental species include:

- 17 Jacaranda (*Jacaranda mimosifolia*)
- Five Golden Elm (*Ulmus glabra* 'Lutescens')
- Three Callery Pear (*Pyrus calleryana* 'Capital')
- Two Desert Ash (*Fraxinus angustifolia* subsp. *Angustifolia*)
- One of each Escallonia species, Citrus species, Claret Ash (*Fraxinus* species), Frangipani (*Plumeria* species), and Magnolia species.

Vegetation on site is not representative of any plant community types (PCTs) outlined in the BioNet Vegetation Classification system (DPE, 2022).

Trees within the site are detailed in **Appendix D**. Vegetation mapping is provided in **Illustration 3.1**.

3.3.2 Threatened Flora

No BC Act or EPBC Act listed threatened flora were recorded at the site.

3.3.3 Threatened Ecological Communities

No BC Act or EPBC Act listed threatened ecological communities (TECs) occur at the site.

3.3.4 Priority Weeds

No *Biosecurity Act 2015* listed priority weeds for the North West Local Land Services region were observed at the site.



LEGEND

- The site
- Cadastre
- Hollow bearing tree
- "Raywood" Claret Ash
- Bimble Box - Koala feed tree
- Bottle Tree
- Callery pear
- Carbeen
- Crepe myrtle
- Desert Ash
- Escallonia
- Eucalyptus
- Frangipani
- Golden Elm
- Hybrid form of flowering gum
- Jacaranda
- Kurrajong
- Lemon Scented Gum
- Magnolia
- Orange
- River Red Gum - Koala feed tree
- Silky Oak
- Sugar Gum dwarf
- White Cedar
- Yellow Gum





4. Fauna Habitat

4.1 Desktop Analysis

4.1.1 Database Search Results

BioNet search results identified records of 18 threatened fauna species (including seven species listed under the EPBC Act) within the search area (refer to **Appendix B**). PMST results identified habitat for 20 threatened fauna species and ten migratory fauna species within the search area.

4.1.2 Connectivity

The site is not within any mapped wildlife corridors as per Scotts (2003). The site offers 'stepping-stone' connectivity values for a range of fauna species moving through the highly modified and fragmented landscape.

4.1.1 Waterways and Aquatic Habitat

The Namoi River is located approximately 1.2 km north of the site. Based on local topography and surrounding land features, the river is the only potential receptor of any surface water flow via the existing stormwater system. No other natural drainage lines or watercourses are located within the vicinity of the site.

4.2 Site Features

4.2.1 Habitat Values

The site provides minimal habitat for fauna species due to the high level of disturbance, human activity, lighting and noise. Established trees on site provide marginal habitat/ foraging resources for locally occurring avifauna, arboreal mammals, microbats and flying-foxes. Due to limited connectivity, these trees are likely only utilised by highly mobile species (i.e. birds) or species which are well adapted to disturbed environments.

4.2.1.1 Hollow-bearing Trees

Six hollow-bearing trees were identified as follows:

- Three Jacaranda (*Jacaranda mimosifolia*):
 - Tree #64: 1 small limb hollow.
 - Tree #66: 1 medium trunk hollow.
 - Tree #67: 2 small limb hollows, 1 basal hollow.
- Two Sugar Gum (dwarf) (*Eucalyptus cladocalyx*):
 - Tree #28: 4 small limb hollows, 1 medium limb hollow.
 - Tree #29: 3 small limb hollows, 2 medium trunk hollows.
- One White Cedar (*Melia azedarach*): Tree #26: 1 basal hollow.



4.2.1 Threatened Fauna

No threatened fauna species were opportunistically detected at the site.

The primary Koala feed tree River Red Gum (*Eucalyptus camaldulensis*) occurs on site. No Koala faecal pellets were identified under preferred Koala use trees.

4.2.2 Potential Threatened Fauna Occurrence

Eight threatened fauna species are considered to potentially occur within the site and locality (refer to **Appendix E**) as follows:

- Speckled Warbler (*Chthonicola sagittata*) – Marginal foraging habitat on site associated with Eucalyptus trees.
- Little Lorikeet (*Glossopsitta pusilla*) and Superb Parrot (*Polytelis swainsonii*) – Marginal foraging habitat on site associated with Eucalyptus trees and potential nesting habitat associated with hollow-bearing trees.
- Koala (*Phascolarctos cinereus*) – The main koala food tree for the Western Slopes and Plains Koala Management Area (DECC, 2008) River Red Gum (*E. camaldulensis*) is present on site.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – *E. camaldulensis*, *C. tessellaris*, *Corymbia citriodora* are present on site and contribute nectar and pollen to the diet of Grey-headed flying foxes.
- Microbats: Corben's Long-eared Bat (*Nyctophilus corbeni*) and Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*) – marginal roosting habitat associated with hollow-bearing trees and marginal foraging habitat in the locality.

Due to the limited extent of habitat on site and the site's existing modified state, the site provides only a small portion of the resources associated with any potentially occurring threatened species populations. It is unlikely that any threatened fauna species populations would be dependent on the site to fulfill lifecycle needs.



5. Matters of National Environmental Significance

Matters of National Environmental Significance (MNES), listed under the EPBC Act, are addressed in this section. The following biodiversity MNES protected under the EPBC Act were considered for their relevance to the Action:

- Wetlands of international importance (Ramsar) (EPBC Act sections 16 and 17B) .
- Listed threatened species and communities (EPBC Act sections 18 and 18A).
- Listed migratory species (EPBC Act sections 20 and 20A).

5.1 Wetlands of International Importance

No wetlands of international importance occur within the study area or broader locality. As such, the Action will not impact any wetlands of international importance.

5.2 Listed EPBC Act Threatened Ecological Communities

No threatened ecological communities listed under the EPBC Act occur within the site or study area, or would be impacted by the Action.

5.3 Listed EPBC Act Threatened Flora Species

No threatened flora species listed under the EPBC Act occur within the site or study area, or would be impacted by the Action.

5.4 Listed EPBC Act Threatened Fauna Species

An assessment in accordance with the DoE (2013) *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* has been undertaken for two EPBC Act listed threatened species which potential to occur on site and whose habitat would be directly impacted by the proposed action: Koala and Grey-headed Flying-fox (refer to **Appendix G**). The assessment concluded that the proposed action was not likely to result in a significant impact on these species.

No other EPBC Act listed threatened fauna species are likely to occur on site or be significantly impacted by the Action.

4.5 Listed Migratory Species

A total of ten migratory species listed under the EPBC Act were identified within the search area by the PMST. The site does not comprise important habitat for any of these species as defined in the DoE (2013) *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. The Action is therefore unlikely to have a significant impact on any EPBC Act listed migratory species.



6. Impacts and Mitigation

6.1 Impacts of the Activity

The Activity footprint and associated biodiversity Impacts are displayed in **Illustration 6.1**. Tree removal is based on the tree retention and removal plan dated 30 May 2023 (Drawing number L02, Issue C) (**Appendix H**)*.

*The following discrepancies are noted:

- Tree number 2 is identified as a tree to be removed however is not numbered on the tree removal plan.
- Tree number 17 is not identified on the tree removal plan. Tree number 17 is identified in the arborist assessment as requiring removed and hence has been assumed lost.

6.1.1 Direct Impacts

6.1.1.1 Vegetation removal

The Activity will require removal of 22 planted native and non-endemic/ exotic trees.

Native trees endemic to the North Western Slopes Botanical Region (Harden, 2002) requiring removal include:

- Three River Red Gum (*Eucalyptus camaldulensis*).

Native non-endemic trees requiring removal include:

- Two Crepe Myrtle (*Lagerstroemia* species).
- One Silky Oak (*Grevillea robusta*).


Exotic/ ornamental trees requiring removal include:

- Three Jacaranda (*Jacaranda mimosifolia*).
- Five Golden Elm (*Ulmus glabra* 'Lutescens').
- Three Callery Pear (*Pyrus calleryana* 'Capital').
- One Desert Ash (*Fraxinus angustifolia* subsp. *Angustifolia*).
- One 'Raywood' Claret Ash (*Fraxinus* sp).
- One *Escallonia* species.
- One Citrus species.
- One Frangipani (*Plumeria* species).

No PCTs would be directly impacted. Given the existing modified state of the study area, biodiversity impacts associated with this vegetation removal are not significant.

6.1.1.2 Threatened fauna

Three preferred Koala feed trees (River Red Gum – *Eucalyptus camaldulensis*) would be directly impacted by the Activity. The aforementioned clearing of native vegetation would remove habitat features and foraging resources for a range of species listed under **Section 4.2.2**. While negative, this incremental and cumulative habitat loss is not significant given the existing modified state of the study area.



6.1.1.3 Hollow-bearing trees

One hollow-bearing tree will require removal for the Activity as follows:

- One Jacaranda (*Jacaranda mimosifolia*): Tree #64: one small limb hollow.

While negative, this incremental and cumulative habitat loss is not significant given the existing modified state of the study area.

6.1.2 Indirect Impacts

Based on the construction requirements and nature of the Activity, anticipated indirect development impacts may include temporary disturbance from noise, human activity and machine operations to locally occurring fauna species during construction. Operational noise and lighting is not expected to be significantly different to that which is currently occurring.




6.1.3 Impacts to Threatened Species and TECs

No threatened flora or TECs occur on site or would be impacted by the Activity.

Statutory assessments under the BC Act have been completed for threatened fauna species with the potential to utilise areas of the site and adjacent habitat (refer to **Appendix F**). This assessment has concluded that impacts of the Activity are unlikely to significantly impact the subject threatened fauna species.



LEGEND

-  The site
-  Tree to be removed
-  Tree to be retained


0 20 Metres

6.2 Mitigation

The mitigation measures outlined in **Table 6.1** are recommended to minimise biodiversity impacts associated with the Activity. General environmental mitigation measures are outlined in the corresponding REF and not duplicated here.

Table 6.1 Mitigation measures

Mitigation	Reason
Measures must be implemented during construction works so that machinery and plant do not introduce weed propagules or plant pathogens to the site (e.g. by adoption and implementation of the 'Arrive Clean, Leave Clean' guidelines (DoE 2015).	Minimise introduction or spread of weeds and pathogens.
Any tree pruning or protection works must be completed by a certificate 5 arborist and in accordance with <i>Australian Standard 4970-2009 Protection of trees on development sites</i> .	To ensure tree health is maintained by professional accepted practices.
Pre-clearing surveys must be undertaken each morning prior to vegetation clearing by an ecologist/ spotter-catcher to ensure nesting or roosting fauna are not present within vegetation to be removed; or undertake fauna capture, relocation or rescue as appropriate. Additional Koala and hollow-bearing tree specific requirements are provided below.	To minimise risks to fauna.
Retained trees would be protected in accordance with <i>Australian Standard 4970-2009 Protection of trees on development sites</i> . This includes installing no-go fencing and signage around tree protection zones.	To minimise risks to retained trees.
<i>Hollow-bearing Tree Specific Measures</i>	
Felling of hollow-bearing trees would be supervised by an ecologist or spotter-catcher.	To minimise risks to fauna.
Where trunk hollows or limb hollows require removal, an arboreal inspection of the hollow would be undertaken by the arborist or ecologist/ spotter-catcher.	To minimise risks to fauna.
If unexpected, threatened fauna is discovered, then work would stop immediately, and a plan would be formulated by the ecologist/ wildlife carer to determine the most appropriate course of action.	To minimise risks to fauna.
If the hollow is found to be occupied by a non-threatened arboreal mammal or reptile, where appropriate the hollow entrance would be covered (e.g. stuffed with a pillow case) and the tree limb cut at a suitable distance from the hollow to avoid any fauna impact.	To minimise risks to fauna.
All hollow limbs and trunks containing fauna or are not able to be thoroughly inspected would be lowered to the ground using roping techniques.	To minimise risks to fauna.



All hollows and habitat trees would be inspected by an ecologist/ spotter-catcher after being lowered to the ground to or undertake fauna capture, relocation or rescue as appropriate.	To minimise risks to fauna.
<i>Koala Specific Measures</i>	
On the day of clearing and prior to any clearing taking place, all trees within 50 m of those trees to be cleared are to be inspected for the presence of Koalas by an experienced Koala ecologist/ spotter-catcher.	To minimise risks to Koala.
<p>Should Koalas be present, clearing works must:</p> <ul style="list-style-type: none"> ■ Be temporarily suspended within a range of 50 m from any tree which is occupied by a Koala. ■ Be avoided in any area between the koala and the nearest areas of habitat to allow the animal to move to adjacent refuge. ■ Must not resume until the koala has moved from the tree of its own volition. <p>Should clearing continue in areas away from the Koala, the ecologist/ spotter-catcher would remain as a designated Koala spotter to monitor the animal until the clearing is finished that day in case the animal moves into proximity of the clearing (which would trigger the works to stop).</p>	To minimise risks to Koala.



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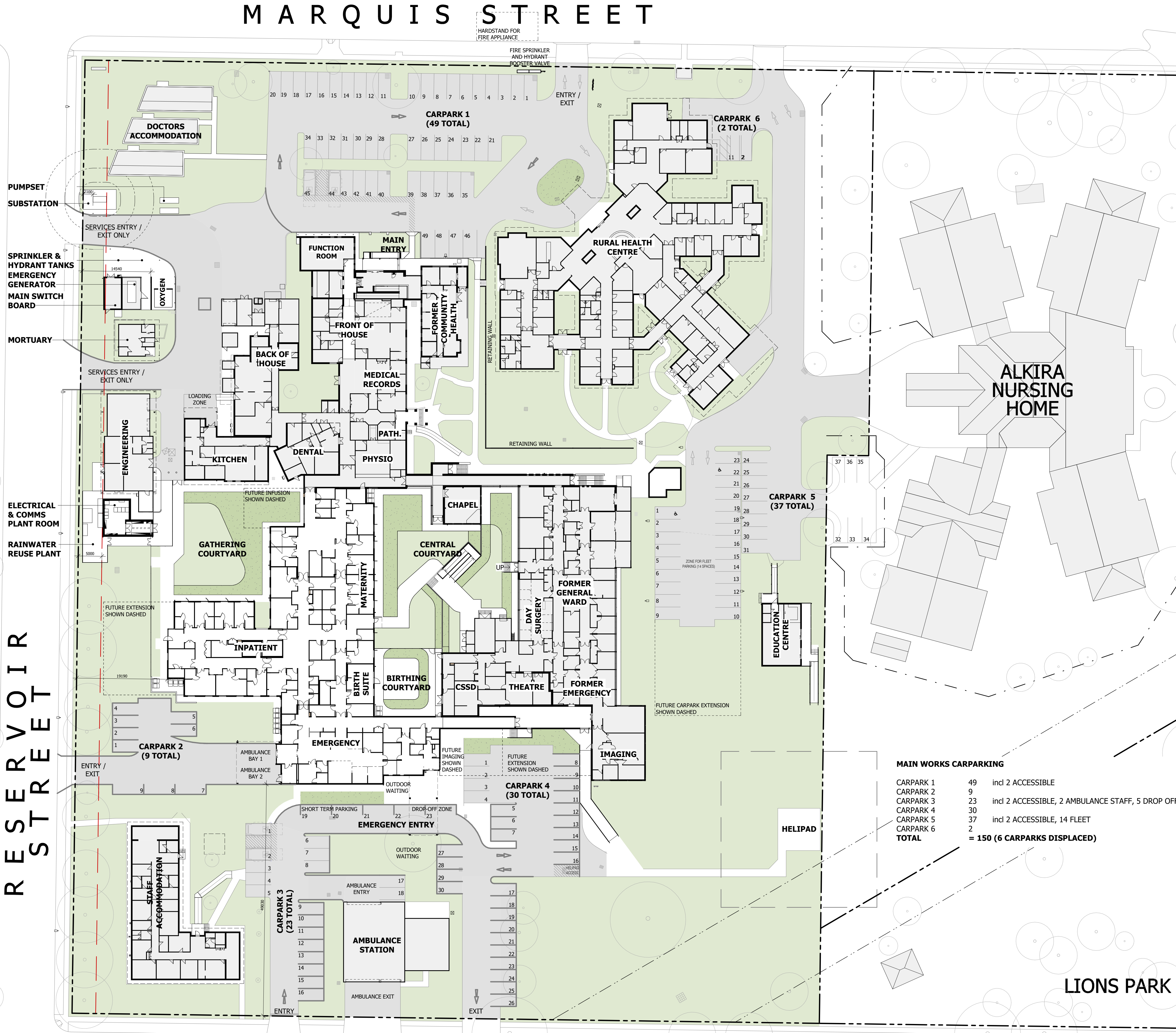
Appendix A

Concept Plan

MARQUIS STREET

RESERVOIR STREET

ANZAC PARADE



MAIN WORKS CARPARKING

CARPARK 1	49	incl 2 ACCESSIBLE
CARPARK 2	9	
CARPARK 3	23	incl 2 ACCESSIBLE, 2 AMBULANCE STAFF, 5 DROP OFF
CARPARK 4	30	
CARPARK 5	37	incl 2 ACCESSIBLE, 14 FLEET
CARPARK 6	2	
TOTAL	150	(6 CARPARKS DISPLACED)

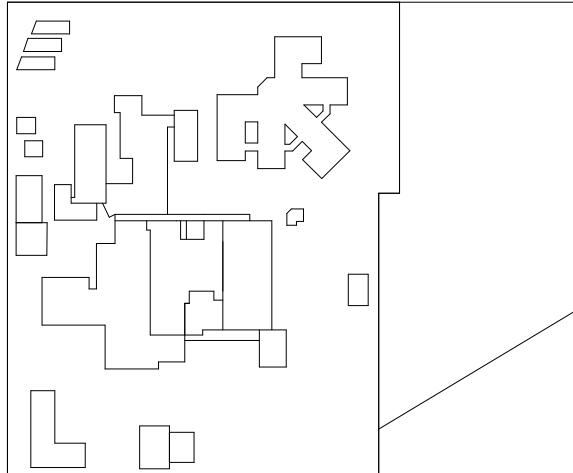
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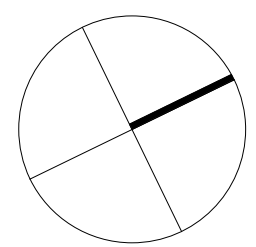
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- SITE LEGEND**
- TURFED AREA
 - MASS PLANTING OF NATIVE GRASSES
 - MASS PLANTING AREA
 - PAVING TYPE 1
 - PAVING TYPE 2
 - NEW ROADWAYS / PARKING
 - EXISTING ROADWAYS / PARKING



DESIGN DEVELOPMENT
NOT TO BE USED DURING CONSTRUCTION

F	FOR INFORMATION	14.06.2023	LS	DC
E	FOR REF SUBMISSION	05.06.2023	LS	DC
D	FOR INFORMATION	16.05.2023	LS	DC
C	FOR REF SUBMISSION	10.05.2023	LS	DC
B	FOR INFORMATION	03.05.2023	LS	DC
A	FOR INFORMATION	26.04.2023	LS	DC

Issue Description Date Chk Auth

Architect/ Designer
dwp
www.dwp.com

Client
NSW HEALTH INFRASTRUCTURE

Project
GUNNEDAH HOSPITAL REDEVELOPMENT

Location
MARQUIS STREET, GUNNEDAH, NSW 2380

Project Number
21-0218

Drawing
SITE COMPLETE
WORKS - LANDSCAPING

Scale (A1)
As indicated

Date Printed
14/06/2023 2:08:54 PM

Drawing Number
AR-00-0012

Issue
F
























Appendix B










Database Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) Entities in selected area [North: -30.93 West: 150.20 East: 150.30 South: -31.03] returned a total of 448 records of 19 species.

Report generated on 18/01/2023 4:11 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Reptilia	Pygopodidae	2144	<i>Aprasia parapulchella</i>		Pink-tailed Legless Lizard	V,P	V	1	
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>		Little Eagle	V,P		4	
Animalia	Aves	Accipitridae	0230	<i>Lophoictinia isura</i>		Square-tailed Kite	V,P,3		2	
Animalia	Aves	Cacatuidae	0265	<i>^Calyptorhynchus lathami</i>		Glossy Black-Cockatoo	V,P,2	V	1	
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>		Little Lorikeet	V,P		9	
Animalia	Aves	Psittacidae	0309	<i>Lathamus discolor</i>		Swift Parrot	E1,P	CE	4	
Animalia	Aves	Climacteridae	8127	<i>Climacteris picumnus victoriae</i>		Brown Treecreeper (eastern subspecies)	V,P		1	
Animalia	Aves	Acanthizidae	0504	<i>Chthonicola sagittata</i>		Speckled Warbler	V,P		6	
Animalia	Aves	Pomatostomidae	8388	<i>Pomatostomus temporalis temporalis</i>		Grey-crowned Babbler (eastern subspecies)	V,P		3	
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>		Varied Sittella	V,P		1	
Animalia	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>		Dusky Woodswallow	V,P		2	
Animalia	Aves	Estrildidae	0652	<i>Stagonopleura guttata</i>		Diamond Firetail	V,P		1	
Animalia	Mammalia	Dasyuridae	1008	<i>Dasyurus maculatus</i>		Spotted-tailed Quoll	V,P	E	7	
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>		Koala	E1,P	E	368	
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>		Grey-headed Flying-fox	V,P	V	5	
Animalia	Mammalia	Emballonuridae	1321	<i>Saccolaimus flaviventris</i>		Yellow-bellied Sheath-tail-bat	V,P		1	
Animalia	Mammalia	Vespertilionidae	T315	<i>Nyctophilus corbeni</i>		Corben's Long-eared Bat	V,P	V	1	
Animalia	Mammalia	Vespertilionidae	1025	<i>Vespertilio troughtoni</i>		Eastern Cave Bat	V,P		29	
Plantae	Flora	Surianaceae	6161	<i>Cadellia pentastylis</i>		Ooline	V	V	2	

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Licensed Report of all Valid Records of Threatened (listed on BC Act 2016) Communities in selected area [North: -30.93 West: 150.20 East: 150.30 South: -31.03] returned 0 records for 9 entities. Report generated on 18/01/2023 4:14 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Community				<i>Artesian Springs Ecological Community in the Great Artesian Basin</i>		Artesian Springs Ecological Community in the Great Artesian Basin	E4B		P	
Community				<i>Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions</i>		Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3		K	
Community				<i>Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions</i>		Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K	
Community				<i>Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions</i>		Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3		K	
Community				<i>Mount Kaputar high elevation and dry rainforest land snail and slug community in the Nandewar and Brigalow Belt South Bioregions</i>		Mount Kaputar high elevation and dry rainforest land snail and slug community in the Nandewar and Brigalow Belt South Bioregions	E3		K	
Community				<i>Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions</i>		Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3		K	
Community				<i>Native Vegetation on Cracking Clay Soils of the Liverpool Plains</i>		Native Vegetation on Cracking Clay Soils of the Liverpool Plains	E3		K	
Community				<i>Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions</i>		Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	E3		K	
Community				<i>White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and</i>		White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B		K	



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Jan-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	29
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	900 - 1000km upstream from Ramsar site	In feature area
Riverland	900 - 1000km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1100 - 1200km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur	In feature area within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur	In feature area within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur	In feature area within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur	In feature area within area
Weeping Myall Woodlands	Endangered	Community may occur	In feature area within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur	In feature area within area

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area

FISH

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
Androcalva procumbens [87153]	Vulnerable	Species or species habitat may occur within area	In feature area
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium monoplacoides Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area

REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area	In feature area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat known to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[Resource Information]
<p>The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.</p>	
Commonwealth Land Name	State
Commonwealth Bank of Australia	

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Commonwealth Bank of Australia [13299]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [13304]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13298]	NSW	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals		[Resource Information]		
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Queensland Hunter Gas Pipeline, approximately 825 km in length	2008/4483	Controlled Action	Completed	In buffer area only
Reconstruction of the Blackjack Creek Riparian Corridor/Channel	2013/6732	Controlled Action	Post-Approval	In feature area
Not controlled action				
Dubbo - Tamworth Natural Gas Pipeline	2000/32	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Queensland Hunter Gas Pipeline, approximately 833 km in length	2008/4620	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Vickery Coal Project	2012/6263	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Namoi	Northern Inland Catchments	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix C

Arboricultural Impact Assessment



Appendix D

Tree Data

Tree number	Scientific Name	Common Name	Endemic	Latitude	Longitude	Age Class	DBH (m)	Height (m)	Development Impact	Tree removal plan	GIS label	Koala Feed Tree (Western Slopes and Plains)	SEPP Koala use tree	Hollow-bearing Tree
2	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9834026	150.250479	Dead	0.47	7	Remove	Clear - not numbered on tree removal plan	Tree to be removed	No	No	No
17	<i>Escallonia</i> species	Escallonia	Exotic	-30.9833626	150.250835	Mature	0.15	2.5	Remove	Clear - not identified on tree removal plan	Tree to be removed	No	No	No
18	<i>Magnolia</i> species	Magnolia	Exotic	-30.9831183	150.250974	Over Mature	0.12	3.5	Other	Retain	Tree to be retained	No	No	No
22	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9825266	150.251527	Semi Mature	0.26	6	unlikely	Retain	Tree to be retained	No	No	No
23	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9825793	150.251652	Mature	0.3	6	Retain - impacts unlikely	Retain	Tree to be retained	No	No	No
32	<i>Fraxinus angustifolia</i> subsp. <i>angustifolia</i>	Desert Ash	Exotic	-30.9832343	150.252146	Over Mature	0.2	5	Remove	Retain	Tree to be retained	No	No	No
33	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9833189	150.252303	Over Mature	0.17	4	Remove	Retain	Tree to be retained	No	No	No
34	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9833998	150.252284	Dead	0.075	2.5	Remove	Retain	Tree to be retained	No	No	No
35	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9834771	150.252236	Mature	0.21	6	Retain - Impacts to manage	Retain	Tree to be retained	No	No	No
37	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9833938	150.252081	Mature	0.2	5	Retain - Impacts to manage	Retain	Tree to be retained	No	No	No
41	<i>Plumeria</i> species	Frangipani	Exotic	-30.983231	150.251329	Mature	0.26	3	Remove	Clear	Tree to be removed	No	No	No
44	<i>Citrus</i> species	Orange	Exotic	-30.9833338	150.251434	Mature	0.1	2	Remove	Clear	Tree to be removed	No	No	No
45	<i>Ulmus glabra</i> 'Lutescens'	Golden Elm	Exotic	-30.9834386	150.251501	Mature	0.15	4	Remove	Clear	Tree to be removed	No	No	No
46	<i>Ulmus glabra</i> 'Lutescens'	Golden Elm	Exotic	-30.9834785	150.251478	Mature	0.15	4	Remove	Clear	Tree to be removed	No	No	No
47	<i>Ulmus glabra</i> 'Lutescens'	Golden Elm	Exotic	-30.9835671	150.251436	Mature	0.15	4	Remove	Clear	Tree to be removed	No	No	No
48	<i>Ulmus glabra</i> 'Lutescens'	Golden Elm	Exotic	-30.9836339	150.251374	Mature	0.15	4	Remove	Clear	Tree to be removed	No	No	No
49	<i>Ulmus glabra</i> 'Lutescens'	Golden Elm	Exotic	-30.9834627	150.251092	Mature	0.15	4	Remove	Clear	Tree to be removed	No	No	No
50	<i>Fraxinus angustifolia</i> subsp. <i>angustifolia</i>	Desert Ash	Exotic	-30.9835544	150.251217	Semi Mature	0.35	7	Remove	Clear	Tree to be removed	No	No	No
51	<i>Fraxinus</i> species	"Raywood" Claret Ash	Exotic	-30.9836162	150.251212	Over Mature	0.25	4	Remove	Clear	Tree to be removed	No	No	No
52	<i>Pyrus calleryana</i> 'Capital'	Callery pear	Exotic	-30.9836589	150.25117	Mature	0.125	8	Remove	Clear	Tree to be removed	No	No	No
53	<i>Pyrus calleryana</i> 'Capital'	Callery pear	Exotic	-30.983714	150.251282	Mature	0.13	8	Remove	Clear	Tree to be removed	No	No	No
54	<i>Pyrus calleryana</i> 'Capital'	Callery pear	Exotic	-30.9838297	150.25128	Mature	0.075	3	Remove	Clear	Tree to be removed	No	No	No
57	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9839352	150.251491	Mature	0.87	15	Remove	Clear	Tree to be removed	No	No	No
58	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9842258	150.251825	Mature	0.74	13	Retain - impacts unlikely	Retain	Tree to be retained	No	No	No
59	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9841908	150.251756	Mature	0.8	13	Retain - impacts unlikely	Retain	Tree to be retained	No	No	No
60	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9841513	150.251682	Mature	0.6	9	Retain - impacts unlikely	Retain	Tree to be retained	No	No	No
61	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9841193	150.251569	Mature	0.78	12	Retain - impacts unlikely	Retain	Tree to be retained	No	No	No
62	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9840656	150.251449	Mature	0.55	11	Retain - Impacts to Manage	Retain	Tree to be retained	No	No	No
64	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9840432	150.251372	Mature	0.7	12	Remove	Clear	Tree to be removed	No	No	Yes - 1 small limb hollow
66	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9839738	150.251272	Mature	0.8	10	Retain - Impacts to Manage	Retain	Tree to be retained	No	No	Yes - 1 medium trunk hollow
67	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9839266	150.251144	Over Mature	0.8	10	Retain - Impacts to Manage	Retain	Tree to be retained	No	No	Yes - 2 small limb hollows, 1 basal hollow
68	<i>Jacaranda mimosifolia</i>	Jacaranda	Exotic	-30.9838903	150.251043	Mature	0.61	10	Retain - Impacts to Manage	Retain	Tree to be retained	No	No	No



Appendix E

Threatened Fauna Potential Occurrence Assessment

Potential of Occurrence Assessment

A potential of occurrence assessment was completed to assess the likelihood of occurrence of each threatened fauna species within the subject site. All threatened biodiversity identified in background research were considered. The assessment is based on the habitat profile for the species and other habitat information in the Threatened Species Profile Database (Environment Energy and Science Group). The assessment also takes into consideration the dates and locations of nearby records and information about species populations in the locality.

Threatened Fauna Potential Occurrence Assessment


For this proposed Activity, the likelihood of occurrence of threatened and migratory fauna species and populations was determined based on the criteria shown in **Table D1**. Threatened fauna potential occurrence assessment is detailed in **Table D2**.

Table D1 Potential of occurrence criteria for threatened species and populations of fauna


Potential of occurrence	Criteria
Known	The species was observed in the subject site either during the current survey or during another survey less than one year prior.
High	A species has a high likelihood of occurrence if: the subject site contains or forms part of a large area of high-quality suitable habitat important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are abundant within the subject site the species has been recorded recently in similar habitat in the locality the subject site is likely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration.
Moderate	A species has a moderate likelihood of occurrence if: the subject site contains or forms part of a small area of high-quality suitable habitat the subject site contains or forms part of a large area of marginal habitat important habitat elements (i.e. for breeding or important life cycle periods such as winter foraging periods) are sparse or absent within the subject site the subject site is unlikely to support resident populations or to contain habitat that is visited by the species during regular seasonal movements or migration but is likely to be used occasionally during seasonal movements and/or dispersal.
Low	A species has a low likelihood of occurrence if: potentially suitable habitat exists but the species has not been recorded recently (previous 10 years) in the locality despite intensive survey (i.e. the species is considered to be locally extinct) the species is considered to be a rare vagrant, likely only to visit the subject site very rarely, e.g. during juvenile dispersal or exceptional climatic conditions (e.g. extreme drought conditions in typical habitat of inland birds).
None	Suitable habitat is absent from the subject site.

Table D2 Threatened Fauna Potential Occurrence Assessment

Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
AVIFAUNA						
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	Dry open forest and woodland with an abundance of nectar-producing eucalypts, particularly box-ironbark woodland, swamp mahogany forests, and riverine sheoak woodlands.	Low No BioNet records within the locality. No key Eucalypt species are present on site that contribute to the nectar diet of Regent Honeyeater.	Lack of suitable habitat on site. The site does not occur within mapped important areas as defined by DPE. These areas are considered essential to support critical life stages of the species, e.g. breeding areas or locations important for foraging/ over-wintering for migratory species. AoS not undertaken.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	-	Woodlands and dry open sclerophyll forests, usually dominated by eucalypts; also recorded in shrublands, heathlands and various modified habitats.	Low Two historical BioNet records (most recent being 2010) within the locality.	Marginal foraging habitat on site associated with Eucalyptus sp. AoS not undertaken given no records within the locality within last 10 years.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	None No BioNet records within the locality.	Suitable habitat is absent from the subject site. AoS not undertaken.
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE	Tidal mudflats, sandy ocean shores and occasionally inland freshwater or salt-lakes.	None No BioNet records within the locality.	Suitable habitat is absent from the subject site. AoS not undertaken.
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V	V	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1,000 m.	Low	Lack of suitable habitat on site. Allocasuarina and Casuarina are not present on site. AoS not undertaken.



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-	<p>The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.</p> <p>Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy.</p> <p>Large, relatively undisturbed remnants are required for the species to persist in an area.</p>	<p>Moderate</p> <p>Bionet records within the last 10 years within the locality.</p>	<p>Marginal foraging habitat on site associated with Eucalyptus trees.</p> <p>Unlikely to support resident populations.</p> <p>AoS undertaken.</p>
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	V	-	<p>Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.</p>	<p>Low</p> <p>One historical BioNet record (2006) within the locality.</p>	<p>Marginal foraging habitat on site associated with stands of <i>Eucalyptus camaldulensis</i> however <i>Eucalyptus camaldulensis</i> on site are isolated and do not form a forest and do not border any wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses.</p> <p>AoS not undertaken.given no records within the locality within last 10 years.</p>
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	<p>Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.</p>	<p>Low</p> <p>One historical BioNet record (2006) within the locality.</p>	<p>Marginal foraging habitat on site associated with stands of <i>Eucalyptus</i> sp. however the development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species.</p>



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						AoS not undertaken given no records within the locality within last 10 years.
<i>Falco hypoleucos</i>	Grey Falcon	E	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	Low No BioNet records within the locality.	Lack of suitable habitat on site. AoS not undertaken.
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	Forages in open Eucalyptus forest and woodland; also feeds on Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	Moderate Bionet records within the last 10 years within the locality.	Marginal foraging habitat on site associated with Eucalyptus stands. Unlikely to support resident populations. AoS undertaken.
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> .	Low No BioNet records within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken.
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Low 2 x Bionet records (roadkill) within the last 10 years within the locality.	Marginal nesting habitat on site associated with isolated Eucalyptus stands, however not considered large enough to form a remnant patch.



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						No stick nests observed in site assessment. Unlikely to support resident populations and the site does not provide forging habitat. AoS not undertaken.
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	V	Most often recorded aerial foraging above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. Breeding does not occur in Australia.	Low No BioNet records within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken.
<i>Lathamus discolor</i>	Swift Parrot	E	CE	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Forest Red Gum <i>E. tereticornis</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> , Blackbutt <i>E. pilularis</i> , and Yellow Box <i>E. melliodora</i> .	Low 4 x Bionet records within the last 10 years within the locality however no favoured feed trees or commonly used lerp infested trees are present on site that contribute to the nectar diet of Swift Parrot.	The site does not occur within mapped important areas as defined by DPIE. These areas are considered essential to support critical life stages of the species, e.g. breeding areas or locations important for foraging/ over-wintering for migratory species. AoS not undertaken.



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	Low 2 x Bionet records within the last 10 years within the locality.	Marginal nesting habitat on site associated with isolated Eucalyptus stands, however not considered large enough to form a remnant patch. No stick nests observed in site assessment. Unlikely to support resident populations and the site does not provide forging habitat. AoS not undertaken.
<i>Polytelis swainsonii</i>	Superb Parrot	V	V	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.	Low No BioNet records within the locality, however isolated stands of River Red Gum on site.	Marginal foraging habitat on site associated with Eucalyptus trees. Unlikely to support resident populations. AoS undertaken.
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	V	-	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Flight is laborious so birds prefer to hop to the top of a tree and glide down to the next one. Birds are generally unable to cross large open areas.	Low 3 x Bionet records within the last 10 years within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	None No BioNet records within the locality.	Suitable habitat is absent from the subject site. AoS not undertaken.



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-	Grassy eucalypt woodlands, open forest, mallee, temperate grassland, and secondary grassland derived from other communities, riparian areas, and sometimes in lightly wooded farmland.	Low 1 x Bionet record within the last 10 years within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken
FISH						
<i>Maccullochella peelii</i>	Murray Cod	-	V	Warm water habitats that range from clear, rocky streams to slow flowing turbid rivers and billabongs.	None No BioNet records within the locality.	Suitable habitat is absent from the subject site. AoS not undertaken.
MAMMALS						
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Dry and moist eucalypt forests and rainforests, fallen hollow logs, large rocky outcrops.	Low No BioNet records within the locality within last 10 years.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V	V	Inhabits a variety of vegetation types, including mallee, bullock <i>Allocasuarina leuhmanni</i> and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	Low No BioNet records within the locality within last 10 years.	Marginal roosting habitat on site associated with tree hollows. Marginal foraging habitat on site. Given the subject species lack of detectability, Bionet records are not considered a reliable indicator of species presence.



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						AoS undertaken as a conservative measure.
<i>Phascolarctos cinereus</i>	Koala	V	E	Appropriate food trees in forests and woodlands, and treed urban areas.	Moderate. Multiple Bionet records in the locality. The main koala food tree for the Western Slopes and Plains Koala Management Area (DECC, 2008) River Red Gum (<i>E. camaldulensis</i>) is present on site.	AoS undertaken.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Moderate. <i>E. camaldulensis</i> , <i>C. tessellaris</i> , <i>Corymbia citriodora</i> are present on site and contribute nectar and pollen to the diet of Grey-headed flying foxes.	AoS undertaken.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-	Forages in a variety of habitats, roosts in tree hollows and buildings.	Low No BioNet records within the locality within last 10 years.	Marginal roosting habitat on site associated with tree hollows. Marginal foraging habitat on site. Given the subject species lack of detectability, Bionet records are not considered a



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						reliable indicator of species presence. AoS undertaken as a conservative measure.
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-	Cave roosting species found in dry open forest and woodland near cliffs and rocky overhangs.	Low	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken.

REPTILIA

<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 (<i>Themeda australis</i>).	Low	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken.
<i>Delma impar</i>	Striped Legless Lizard, Striped Snake-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.	Low No BioNet records within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable microhabitat for the subject species. AoS not undertaken.
<i>Uvidicolus sphyrurus</i>	Border Thick-tailed Gecko	V	V	Dry sclerophyll open forest and woodland associated with outcrops of granite, basalt, sandstone and metamorphic rocks.	Low No BioNet records within the locality.	Lack of suitable habitat on site. The development footprint is highly degraded, small in size and does not support suitable



Scientific Name	Common Name	Status		Habitat Requirement (EPBC Act SPRAT and/ or DPE Threatened Species Profiles)	Potential of occurrence	Outcome – Assessment of Significance (AoS)?
		BC Act	EPBC Act			
						microhabitat for the subject species. AoS not undertaken.

V = Vulnerable; E = Endangered; CE = Critically Endangered



Appendix F

BC Act Tests of Significance



Five-part Tests (BC Act listed species)

An *Assessment of Significance* has been undertaken for the following:

Threatened Fauna

Megachiropteran bats

- Grey-headed Flying-fox (*Pteropus poliocephalus*)

Microbats

- Corben's Long-eared Bat (*Nyctophilus corbeni*)
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)

Woodland Birds

- Speckled Warbler (*Chthonicola sagittata*)

Hollow-obligate birds

- Little Lorikeet (*Glossopsitta pusilla*)
- Superb Parrot (*Polytelis swainsonii*)

Arboreal mammals

- Koala (*Phascolarctos cinereus*)

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,*

Grey-headed Flying-fox

The Activity is unlikely to have an adverse effect on the life cycle of the subject species such that a viable local population is likely to be placed at risk of extinction as:

- The subject vegetation comprises limited potential foraging habitat.
- The subject vegetation does not include any areas identified as being significant roosting habitat and comprises a comparatively minor amount of potential foraging habitat in the context of the site and adjacent areas of suitable foraging habitat.
- The local movement potential of the subject species would not be impacted by the Activity.

Microbats

Threatened microbat species have been grouped for assessment owing to family similarities and overlap in ecology and habitat preferences, and potential impacts as result of the Activity. Threatened microbat species for the impact assessment are:

- Corben's Long-eared Bat
- Yellow-bellied Sheath-tail-bat

The Activity is unlikely to have an adverse effect on the life cycle of the subject microbats such that a viable local population is likely to be placed at risk of extinction as:

- The site does not support significant foraging or roosting resources for any of the subject species.
- The local movement potential of the subject species would not be impacted by the Activity.
- Loss of hollows is marginal, limited to 1 small Jacaranda limb hollow which provides minor roosting opportunities (unlikely to be an important breeding roost).



Hollow-obligate Birds

Threatened hollow-obligate bird species have been grouped for assessment owing to family similarities and overlap in ecology and habitat preferences, and potential impacts as result of the Activity. Threatened hollow-obligate bird species for the impact assessment are:

- Little Lorikeet (*Glossopsitta pusilla*)
- Superb Parrot (*Polytelis swainsonii*)

The Activity is unlikely to have an adverse effect on the life cycle of the subject birds such that a viable local population is likely to be placed at risk of extinction as:

- The subject vegetation comprises a relatively minor amount of potential foraging and dispersal habitat for the subject avifauna in the context of the site and adjacent areas of suitable habitat.
- The subject vegetation comprises limited nesting habitat (limited to 3 medium hollows associated with two Sugar Gums (dwarf) for these mobile birds in a local context.
- Given the occurrence of forested habitat within the locality, the Activity represents a minor reduction of foraging habitat which may be utilised by the subject species.
- Nesting habitat suitable for the subject hollow-obligate species is not directly impacted.

Speckled Warbler

The Activity is unlikely to have an adverse effect on the life cycle of Speckled Warbler such that a viable local population is likely to be placed at risk of extinction as:

- The subject vegetation comprises limited foraging habitat (seeds and insects on the ground around tussocks and under bushes and trees) and nesting habitat (vegetated canopy) for these mobile birds in a local context.
- Given the occurrence of treed habitat within the locality, the Activity represents a minor reduction of foraging or nesting habitat (removal of isolated plantings within a highly disturbed environment) which may be utilised by the subject species.

Koala

The Activity is unlikely to have an adverse effect on the life cycle of the Koala such that a viable local population is likely to be placed at risk of extinction as:

- The works will result in the removal of three River Red Gum (preferred Koala feed tree). While Koala may forage on occasion in River Red Gum on site, these species are spread within the locality and provides sufficient alternative foraging resources.
- The local movement potential of the subject species would not be impacted by the Activity.

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***
- 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,***

No consideration under this part of the assessment is required.

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

- *Grey-headed Flying-fox*: minor contraction of foraging habitat. Retained areas of adjacent trees will continue to provide foraging, refuge and breeding resources.
- *Microbats*: minor contraction of foraging habitat. Retained areas of adjacent trees will continue to provide foraging, refuge, roosting and breeding resources.
- *Birds*: minor contraction of foraging habitat. Retained areas of adjacent trees will continue to provide foraging, refuge and nest resources.
- *Koala*: minor contraction of foraging (associated with feed tree removal) and refuge habitat. Retained areas of adjacent trees will continue to provide foraging, refuge and breeding resources.

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

No significant fragmentation of habitat would occur; the works (both in construction and operational phases) are unlikely to result in significant barriers to dispersal to any of the subject species listed.

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.

The Activity would require removal of 22 trees (comprising three native trees endemic to the North Western Slopes Botanical Region, three native non-endemic trees and 16 exotic species) and relocation of one exotic tree, collectively constituting potential habitat for the subject species. Habitat of equivalent quality for the subject species is widespread (although similarly fragmented) in the broader locality.

Considering this and that the Activity is considered unlikely to have an adverse effect on the life cycle of any of the subject species such that a viable local population is likely to be placed at risk of extinction (refer to response to (a)); the habitat affected by the Activity is not considered significant to the long-term survival of the subject species in the locality.

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),

No areas of outstanding biodiversity value have been declared in Gunnedah Local Government Area.

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.

A threatening process is a process that threatens, or that may threaten, the survival or evolutionary development of species or ecological communities. The current list of key threatening processes under the BC Act, and whether the Activity is recognised as a threatening process is shown in **Table F.1**.


Table F.1 Key Threatening Processes (KTP)

Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or Activity proposed of a class of development or Activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Alteration of habitat following subsidence due to longwall mining			✓
Aggressive exclusion of birds by noisy miners			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change	✓		
Bush rock removal			✓

Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or Activity proposed of a class of development or Activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Clearing of native vegetation	✓		
Competition and grazing by the feral European Rabbit			✓
Competition and habitat degradation by feral goats			✓
Competition from feral honeybees			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners			✓
Habitat degradation by Feral horses, <i>Equus caballus</i>			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants			✓
Infection by <i>Psittacine circoviral</i> (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by <i>Phytophthora cinnamomi</i>			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch broom			✓
Invasion and establishment of the Cane Toad			✓
Invasion, establishment and spread of <i>Lantana camara</i>			✓
Invasion of native plant communities by African Olive			✓
Invasion of native plant communities by <i>Chrysanthemoides monillifera</i> (bitou bush and boneseed)			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the yellow crazy ant into NSW			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees			✓
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓
Predation and hybridisation of feral dogs			✓
Predation by the European red fox			✓
Predation by the feral cat			✓
Predation by <i>Gambusia holbrooki</i>			✓
Predation by the Ship Rat on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs			✓
Removal of dead wood and dead trees			✓

The Activity may be characteristic of two KTPs:

- Anthropogenic climate change.
- Clearing of native vegetation.



The Activity would incrementally contribute to anthropogenic climate change, through the generation of carbon dioxide during operation of machinery and vehicles and associated fuel consumption however the impact is not considered significant.


Clearing of native vegetation proposed is unlikely to be considered significant considering the modified habitat of impacted vegetation and the extent of similar habitat surrounding the Activity.

On this basis the degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species or communities at significant risk of extinction.



Appendix G

EPBC Act Assessment



An assessment in accordance with the *Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (DoE, 2013) has been undertaken for EPBC Act listed threatened species known to occur on the site and whose habitat would be directly impacted by the proposed action, specifically, the:

- Koala (*Phascolarctos cinereus*) – Endangered.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable.

The purpose of the assessment is to determine the requirement to submit a referral to the Australian Government Department of Climate Change, Energy, the Environment and Water (the Department) for a decision by the Australian Government Environment Minister (the minister) on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Under the EPBC Act an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

Koala (*Phascolarctos cinereus*)

According to the DoE (2013) ‘significant impact criteria’ for endangered species, an action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

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

A ‘population of a species’ is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a. a geographically distinct regional population, or collection of local populations, or*
- b. a population, or collection of local populations, that occurs within a particular bioregion.*

The National Recovery Plan for the Koala (DAWE 2022) defines a population as ‘...a set of individuals that live in the same habitat patch and interact with one another, commonly forming a breeding unit within which the exchange of genetic material is more or less unrestricted...’.

For the purpose of this assessment, the Koala population has been defined as the Gunnedah Koala population meaning all Koalas within the Gunnedah Local Government Area (LGA).

The EPBC PMST report identified the Koala as ‘known to occur’ in the study area (within a 10km buffer of the site). A search of the BioNet Wildlife Atlas returned a total of 1,544 records of Koala within the Gunnedah LGA and 368 records of Koala within a 10 km x 10 km grid centred on the site.

The Gunnedah population is identified as an Area of Regional Koala Significance (DPE, 2023). The Gunnedah Koala Strategy (GKS) (Gunnedah Shire Council, 2015) estimated a koala population size ~ 12,700 koalas in the Gunnedah LGA.

The ecological investigations undertaken for the BAR identified the following:

- Eight River Red Gums (*Eucalyptus camaldulensis*) (primary koala feed tree).
- No Koala faecal pellets under preferred Koala use trees.
- GKS (GSC, 2015) does not identify the site or the immediate surrounding area as being Primary Koala Habitat, Secondary Koala Habitat, combination Koala habitat or part of a high Activity corridor (refer **Figure F.1**).

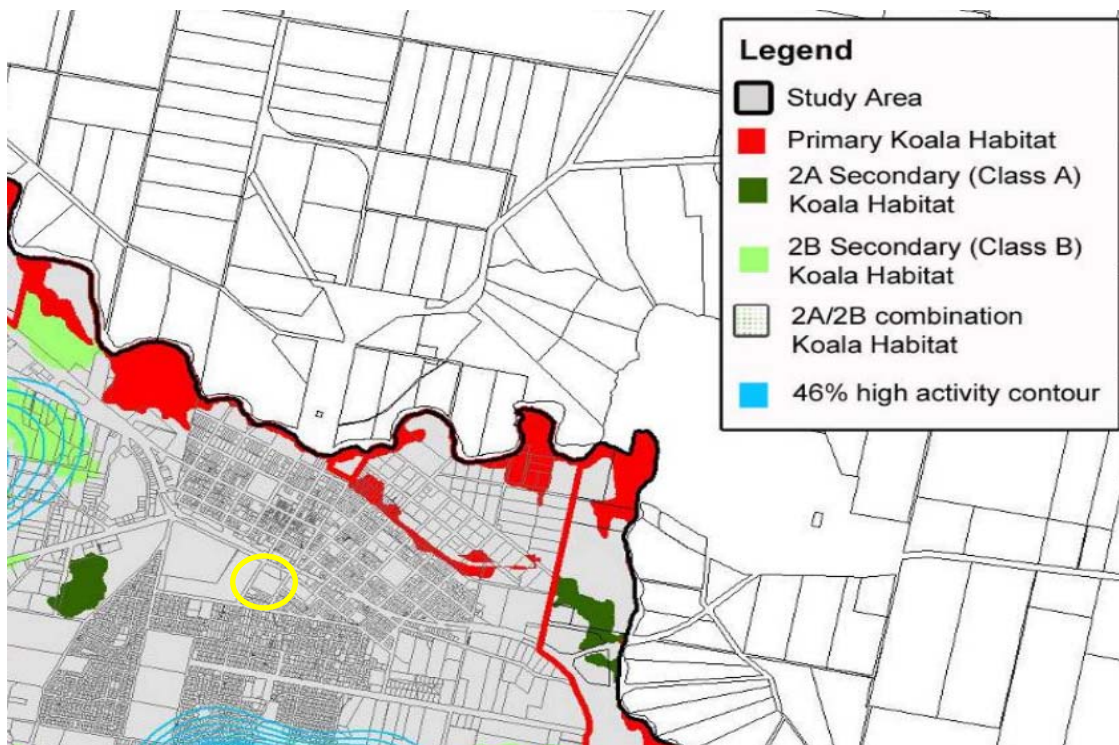


Figure F.1 Koala habitat proximate to site (indicated by yellow circle) (Source: GSC, 2015).

Site records in conjunction with previous known records from the study area and LGA indicate the local population of Koala extends beyond the site (refer **Figure F.2**) and although not mapped as Koala habitat (**Figure F.1**) evidently includes areas of highly fragmented urbanised Koala refuge and feed tree resources.

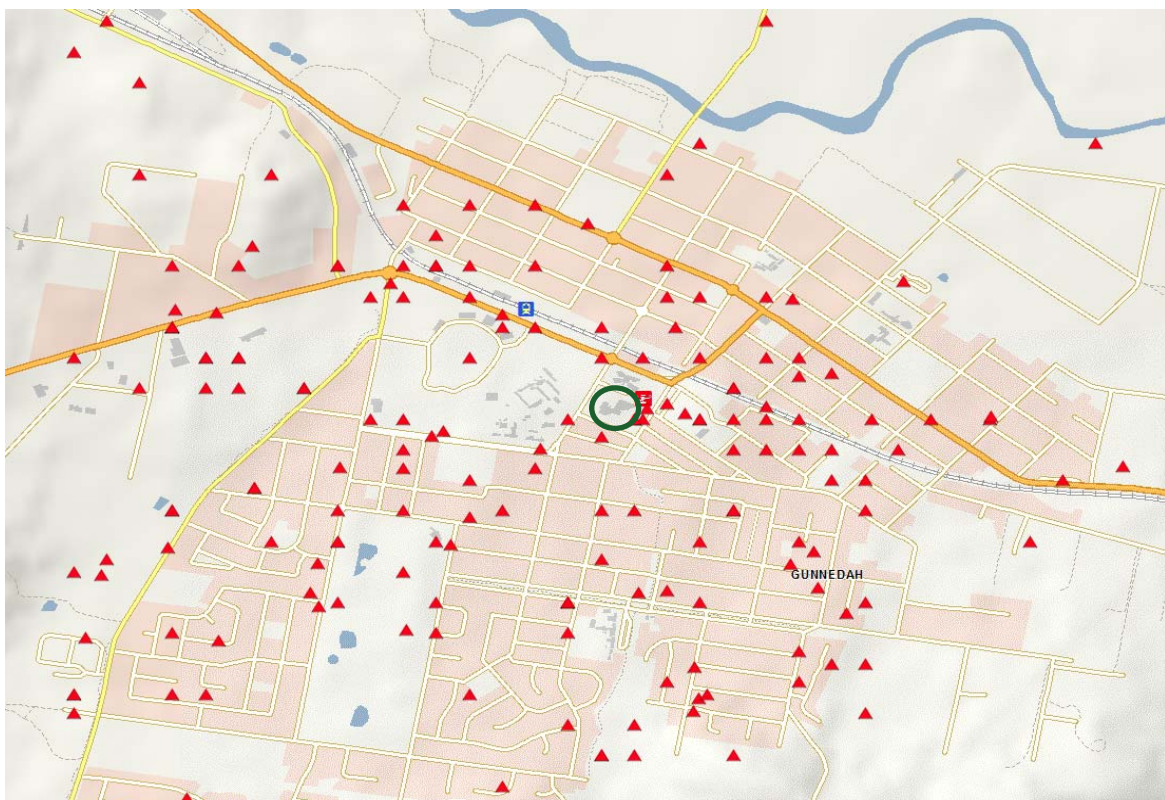



Figure F.2 Bionet Koala records proximate to site (indicated by green circle) (Bionet, 2023).



The GKS notes 'the draft LGA (Part) CKPoM (prepared by Greenloaning Biostudies) identified a total of 42,492 ha of Preferred Koala Habitat, based on Namoi CMA's RVC mapping' across the GKS study area.

The proposed action would incur the loss of 22 trees including three (out of eight) Koala feed trees (River Red Gum - *Eucalyptus camaldulensis*) on site. The trees represent a meaningful portion of (37.5 %) of Koala feed trees associated with site. When assessed in a broader context of Koala habitat in the locality, the three trees impacted by the proposed action account for a minor proportion of the 42,492ha of Preferred Koala Habitat available in the locality.

Removal of preferred Koala feed trees and associated habitat would also exacerbate existing indirect impacts such as potential vehicle strike and dog attacks, stressors which can lead to increased levels of disease, creating localised impacts for Koala (Lismore City Council, 2013), in turn negatively affecting the life cycle of Koala locally.

While a negative (incremental and cumulative) impact, the proposed impacts to three Koala feed trees and associated indirect impacts to Koala is unlikely to lead to a significant long term decrease in the size of the Koala population given:

- The proposed action would impact on a minor amount of Koala habitat (three trees) relative to that which occurs in the locality (42,492ha).
- Given the proportion of local habitat that would be impacted it is likely that only a small proportion of the subject population would be impacted by the proposed action.
- Rigorous mitigation measures have been implemented as part of the BAR to reduce potential impacts to Koala.
- Retained vegetation (while reduced) would continue to provide habitat for Koala and facilitate movement of the species.

Reduce the area of occupancy of the species

The proposed action would reduce the area of occupancy of the Koala population by 22 trees, including three Koala food trees, although ongoing Koala occupation of Preferred Koala Habitat available habitat in the locality is likely given the comparatively large area (~42,492ha).

Overall, when assessed through the lens of habitat available for Koala in a broader context (in relation to contiguous and fragmented mapped Koala habitat in the locality) the proposed action would not result in a significant reduction in the area of occupancy of the subject Koala population.

Fragment an existing population into two or more populations

Although not identified as core Koala habitat, the site contains primary Koala feed trees and refuge habitat and forms part of a broader urbanised home range occurring within and adjacent to the site.


Clearing of three River Red Gum represents a localised loss of Koala habitat. Retained vegetation on site and vegetation adjacent to site would continue to provide habitat for Koala and facilitate movement of the species.

Based on the above considerations, the proposed action would not fragment an existing population into two or more populations.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- For activities such as foraging, breeding, roosting, or dispersal,
- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators),

- 
- To maintain genetic diversity and long term evolutionary development, or
 - For the reintroduction of populations or recovery of the species or ecological community.

The site contains Koala feed trees which are important for foraging and other trees that may facilitate Koala movement across an urban landscape; similar to other trees in urban Gunnedah.

The impacts of the proposed action would adversely impact any Koalas that utilise the site as part of their core home range. However, based on the extent of habitat available for the local population in the Gunnedah LGA, the impacts of the proposed action on habitat critical to the survival of the local Gunnedah Koala population is not significant.

Disrupt the breeding cycle of a population

Koala home range size varies with quality of habitat, ranging from less than two hectares to several hundred hectares in size. Koalas live for between 10 and 20 years, and generally breed between September and February. Female koalas can breed from about 2 years of age, and have a gestation period of about two months, producing one koala a year. On rare occasions they may produce twins.

The area impacted by the proposed action represents a minor proportion of the core home range of the Koala population associated with the study area, including potential usage as breeding habitat. Koala feed trees on site would be retained and large areas of mapped primary and secondary habitat are available more broadly in the locality. The home range (and breeding cycle) of the majority of Koalas associated with the local population would not be impacted by the proposed action.

Based on these considerations the proposed action would be unlikely to significantly disrupt the breeding cycle of the local population.

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

The proposed action would impact three Koala feed trees and other trees that provide shade or movement opportunities.

This area represents a relatively small proportion of the estimated 42,492 ha of Preferred Koala Habitat for the population of this species that occurs in the locality.

The proposed action would not result in a significant fragmentation (resulting in isolation) of Koala habitat or reduce the availability of access to Koala habitat in the locality as connectivity would be maintained by surrounding urban trees.

Given the relatively small proportion of habitat that would be impacted it is unlikely that there will be an overall decline to the species.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat


Flora

Slight increases in the risk of weed incidence at the site would be expected as a result of vegetation clearing. Weed control measures would be implemented to mitigate this risk.

The introduction and/ or spread of weeds is unlikely to decrease the value of potential foraging habitat for this species. Koala feed trees occur within maintained hospital grounds where weeds area already managed.

Fauna

Pest animal (domestic cats/ dogs) is listed as a 3rd order threat to Koala.



The action is unlikely to increase the risk of domestic dog/ cat encounters with Koalas at the site to that which currently occurs.

The broader existing threat level for the local Gunnedah Koala population is unlikely to be significantly increased by the action.

Introduce disease that may cause the species to decline, or

The proposed action is not expected to significantly exacerbate either chlamydiosis or Koala Retrovirus (KoRV) in the Gunnedah Koala population, although marginal increased stress to Koalas in the study area as a result of the Action may increase the risk of disease for these animals.

The project is unlikely to introduce any new disease that may cause the species to decline.

Interfere with the recovery of the species.

The National Recovery Plan for the Koala (DAWE, 2022) notes:

‘...it is clear that in order to halt decline and promote the recovery of the listed Koala, the following should be avoided:

- *clearing of habitat used by Koalas for feeding and resting*
- *reducing connectivity between patches of habitat used by Koalas for feeding, resting, commuting and dispersing (either by clearing of vegetation or by the erection of barriers to passage)*
- *clearing of habitat used by Koalas during extreme events (heat waves, drought/fire refuge)*
- *avoiding activities that will expose Koalas to additional threats (e.g. dogs, cars) in places where Koalas must use the ground to move between resting and feeding trees’.*


The proposed action is consistent with the above due to Koala feed tree clearing, although not to the point of putting the local Gunnedah population at risk of extinction.

Section 8 of the Plan (DAWE, 2022) lists strategies and actions. The proposed action is unlikely to interfere with the implementation of these strategies and actions.

Conclusion of Assessment of Significance

The Action would have negative (incremental and cumulative) impacts on the site Koala habitat values, although the magnitude of these impacts is unlikely to result in a significant impact on the local Gunnedah Koala population.

Overall the Action is unlikely to result in a significant impact on the Koala.



Grey-headed Flying Fox (*Pteropus poliocephalus*)

According to the DoE (2013c) 'significant impact criteria' for vulnerable species, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

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

There are no roost camps located within the proposed action area, and none within the Gunnedah Local Government Area. The nearest listed camp sites for this species are located in Tamworth (Nationally Important Flying-fox Camps 257 and 530) approximately 65 km east of the proposed action. The proposed action would not directly impact these camps.

The Grey-headed Flying fox feeds on nectar and pollen from flowers of canopy trees and fleshy fruits from rainforest trees and vines. The species generally moves through the landscape feeding on suitable trees when they come into flower/ fruit. The proposed action would involve the removal of 22 trees including three River Red Gum (*E. camaldulensis*) that would provide food for this species at certain times of the year when in fruit/ flower which have been identified as significant feed species (Eby & Law 2008).

Given the high mobility of this species and the proximity of native vegetation containing foraging habitat in the locality, impacts to this species relatively small area are very unlikely to lead to a long-term decrease in the size of the population.

The proposed action would not isolate any areas of habitat or cause significant habitat fragmentation that would affect the breeding, foraging or dispersive movements of this highly mobile species.

Given that the proposed action would not impact on any roosting or breeding sites for this species and that areas of native vegetation in the locality would provide foraging habitat for this species, the removal of the small area of foraging habitat for the proposed action would be unlikely to lead to a long-term decrease in the size of the population.

Reduce the area of occupancy of an important population

The proposed action would not reduce the area of occupancy of this highly mobile species. The potential foraging habitat that would be impacted would constitute a negligible proportion of the available foraging habitat within the locality and would not create any barriers to movement or isolate any areas of habitat for this mobile species.

Fragment an existing important population into two or more populations


The proposed action would not isolate or fragment an existing important population of this highly mobile species.

At a local scale, the proposed action would fragment a negligible area of vegetation within the proposed action area which contains potential foraging habitat for this species. However the resulting gap in vegetation cover would be readily traversed by these highly mobile, aerial species. The proposed action would not impact on any camp/ roost sites for this species. The action would not prevent Grey-headed Flying-fox individuals from travelling between camps and foraging habitat.

On the basis of the above, the proposed action would not result in the fragmentation of the population of the Grey-headed Flying-fox into two or more populations.

Adversely affect habitat critical to the survival of the species

The Grey-headed Flying fox requires a temporal sequence of productive foraging habitats linked by migration corridors or stopover habitats combined with suitable roosting habitat in close proximity to foraging areas.



Habitats within the study area contain River Red Gum (*E. camaldulensis*) *C. tessellaris* and *Corymbia citriodora*. These species have been identified as significant food plants for Grey-headed Flying Fox (Eby and Law 2008).

The resources present in the study area, however, are minor in comparison to available similar foraging resources in the broader landscape. In this context the Action is unlikely to threaten the survival of local populations of this mobile species.

Disrupt the breeding cycle of an important population

The proposed action would not create a barrier to migratory or dispersal movements for this species that could interfere with breeding behaviours.

It would therefore be unlikely that the proposed action would, disrupt the breeding cycle of local populations.

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

The proposed action would remove 22 trees including three River Red Gum. Given the highly mobile nature of this species the habitat would not be isolated and it is likely it would continue to be utilised by the species.

There are areas of similar vegetation in adjoining areas and in the broader locality. It is therefore considered unlikely that the Action would result in the decline of the species.

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

Flora

Slight increases in the risk of weed incidence at the site would be expected as a result of vegetation clearing. Weed control measures would be implemented to mitigate this risk.

The introduction and/ or spread of weeds is unlikely to decrease the value of potential foraging habitat for this species. Foraging trees occur within maintained hospital grounds where weeds are already managed.


Fauna

No invasive species that are harmful to the Grey-headed Flying-fox are likely to become established as a result of the action.

Introduce disease that may cause the species to decline

Grey-headed Flying-foxes are reservoirs of a number of diseases including Australian bat lyssavirus, Hendra virus and Menangle virus. Although lyssavirus can cause clinical disease and mortality in Grey-headed Flying-foxes the incidence of disease in populations is generally low (<1%) and the virus is thought to be generally in equilibrium with the population. It has however been noted that when flying-foxes are exposed to significant ecological stress the incidence of lyssavirus can increase and the population can be impacted. There are no clinical disease or mortality in flying-foxes associated with Hendra or Menangle virus. The proposed action is unlikely to result in ecological stresses to any of the nearby flying-fox populations such that the instances of lyssavirus would significantly increase.

Construction activities have the potential to introduce or spread pathogens such as *Phytophthora* (*Phytophthora cinnamomi*) and Myrtle Rust (*Uredo rangeli*) into areas of adjacent foraging habitat for this species. These pathogens could result in a decline in health and/ or mortality of flying fox feed



trees. There is little available information about the distribution of these pathogens within the locality. . Mitigation measures, including strict hygiene protocols for plant and machinery, and restrictions on imported fill would be implemented to prevent the introduction of Phytophthora and/ or Myrtle Rust.

No diseases that may cause the species to decline are likely to become established in the study area as a result of the proposed action.

Interfere substantially with the recovery of the species

As discussed above, foraging habitat within the study area is consistent with the definition of habitat critical to the survival of the Grey-headed Flying-fox as it contains flowering feed trees. The proposed action is therefore inconsistent with recovery objective 1 of the National Recovery Plan for Grey-headed Flying-fox (DAWE, 2021) which is to 'Identify, protect and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox.

As discussed above, the 22 trees including three River Red Gum proposed to be removed represent a very small proportion of available foraging habitat for this highly mobile species within the locality. It is considered unlikely, therefore, that the proposed action would substantially interfere with the recovery of the species.

Conclusion of Assessment of Significance

The proposed action is unlikely to have a significant impact on the Grey-headed Flying-fox.

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Appendix H

Tree Removal Plan

