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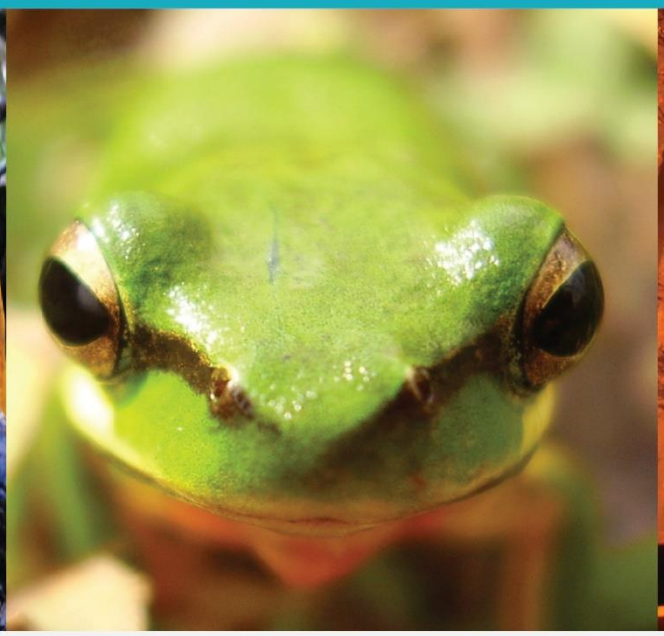

BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

Proposed rezoning for residential development

Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273 DP 750158

School Road

Forbes

28 September 2023

(REF: 21ALLE07)

BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

Proposed Rezoning for Residential Development
Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273 DP 750158,
School Road, Forbes

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Version:	DRAFT
Date:	28/09/23
File:	21ALLE07

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Disclaimer:

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The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features is to be confirmed by a registered surveyor.

EXECUTIVE SUMMARY

Travers bushfire & ecology (TBE) was engaged to prepare a Biodiversity Development Assessment Report (BDAR) for a proposed residential subdivision at School Road in Forbes. The entire area bounded by Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273, DP 750158 was subject to detailed survey effort and will hereafter be referred to as the 'study area'.

The area of direct impact from the development will hereafter be referred to as the 'development footprint.'

TBE notes that targeted seasonal survey is not yet fully completed for the site and for the purposes of this BDAR we have assumed presence of relevant species candidate species.

Planning proposal

This document will support a Planning Proposal submission to Forbes Shire Council for the rezoning of a 92.39 ha parcel of land currently zoned RU1 – Primary Production, R5 – Large Lot Residential, and RE1 – Public Recreation.

EPBC Act, Fisheries Management Act Assessment outcomes

In respect of matters required to be considered under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, no threatened fauna species, no threatened flora species, and one TECs listed under this Act was recorded within the study area.

The proposal was not considered to have a significant impact on or be constrained by Matters of National Environmental Significance (MNES). As such a referral to Department of Climate Change, Energy, the Environment and Water (DCCEEW), is not required.

In respect of matters relative to the *Fisheries Management Act 1994 (FM Act)*, no suitable habitat for threatened marine or aquatic species was observed within the development footprint and there are no matters requiring further consideration under this Act.

Recorded biodiversity

An Ecological Survey was undertaken in accordance with the *Biodiversity Assessment Methodology* 2020 (BAM) as well as relevant legislation including the *Environmental Planning and Assessment Act 1979* (*EP&A Act*), the *Biodiversity Conservation Act 2016* (*BC Act*), the *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) and the *Fisheries Management Act 1994* (*FM Act*). Compliant and non-compliant survey and limitations for candidate species are explained in Section 2.5, Section 4.1 (Flora) and Section 4.2 (Fauna).

In respect of matters required to be considered under the *EP&A Act* and relating to the species / provisions of the *BC Act*, one (1) threatened fauna species, Grey-crowned Babbler (*Pomatostomus temporalis*), no threatened flora species, and one (1) threatened ecological community (TEC), Inland Grey Box Woodland in the Riverina, NSW South-Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions, was recorded within the development footprint.

In respect of matters required to be considered under the *EPBC Act*, no threatened fauna species, no threatened flora species and one (1) threatened ecological community, Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia, listed under this Act was recorded within the development footprint.

In respect of matters relative to the *FM Act*, no suitable habitat for threatened marine or aquatic species was observed within the development footprint.

Avoidance and minimisation actions

The following strategies and actions have been undertaken to either avoid or minimise impacts on biodiversity values:

Direct and indirect impact avoidance & minimisation

Based on the observed ecological constraints and habitat present an environmental protection area has been identified. This environmental protection area avoids development within the remnant native vegetation. This specifically avoids six remnant *Eucalyptus microcarpa* trees which include hollow-bearing trees and habitat for the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*). There will be an exception where a potential water reservoir is to be located at a high point for gravity distribution. This water reservoir is subject to separate DA application by Council.

The primary avoidance actions may be described as the following:

- The subdivision has been designed to utilise the lower biodiversity value areas of the site based on the extent of existing cleared landscape.
- PCT 76 is a threatened ecological community. A large avoidance action has been undertaken to retain the areas of higher vegetation integrity, i.e., areas containing remnant trees and shrubs (although there is still an impact on the derived native grassland with low vegetation integrity scores).
- Avoiding six (6) of the habitat (*Eucalyptus microcarpa)* trees.
- Avoidance of prescribed impacts.
- Utilisation of cleared paddocks that have been pasture improved and no longer considered derived native grassland area.
- Avoidance of the Grey-crowned Babbler habitat area.

It should be reiterated that the vegetation integrity score was low to the remnant vegetation area, and below the threshold for offsetting in the derived native grassland area. Also, remnants of native vegetation that are fully structured are very fragmented locally and isolated, therefore subject to natural attrition due to agricultural land management, and edge effects.

The proposal seeks to consolidate the small remnant to help with its longevity by providing some long-term conservation measures, but also allowing some degree of passive recreational pursuits.

The proposed development layout has considered the main ecological features of importance within the site and provided an avoidance measure over most of the features, generally meeting the requirements of Stage 2 of BAM 2020.

Impact assessment

Avoidance actions are outlined in Section 5.2. The resultant direct, indirect, and cumulative ecological impacts of the proposal have been carefully considered in Section 5. Further recommended mitigation measures to minimise/offset these impacts, to address threatening

processes and to create a more positive ecological outcome for threatened biodiversity have been outlined within Section 5.3.

Table A – Vegetation and impact measures

	Total (ha)	Impacted (ha)
Total area of site	92.39	
PCT76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern slopes and Riverina bioregions – derived native grassland (PCT76 – DNG)	4.17	4.17
PCT76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern slopes and Riverina bioregions. (PCT76)	7.74	3.8
Total verified native vegetation on site and total impacted native vegetation	**11.9**	**7.97**
PCT76 - Proposed Environmental Protection area	4.07	

The planning proposal has been calculated to impact 7.97 ha (Table A) of native vegetation mapped as the Plant Community Type (PCT) 76.

- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions – 11.9 ha - equivalent to the *BC Act* EEC Inland Grey Box Woodland in the Riverina, NSW Southwestern Slopes, Cobar Peneplain, Nandewar, and Brigalow Belt South Bioregions.

However, an environmental area has been incorporated into the design to directly avoid key areas of habitat / environmental significance. This environmental protection area is 4.07 ha which reduces the overall impacted area to 3.9ha.

The Assessment of Serious and Irreversible Impacts (SAII) are set out under Section 6.7.2 of the *BC Reg 2017* to guide the determining authority on this decision. These principles have been reviewed and assessed in Appendix 1 and Appendix 2. No SAII entities were recorded during survey and no SAII entities have the potential to occur. Therefore, the proposal will not cause any serious and irreversible impacts on threatened biodiversity.

There will be no significant impact on matters listed under the *FM Act*.

The proposal was not considered to have a significant impact on matters of national environmental significance. As such a referral to Department of Agriculture, Fisheries and Forestry (DAFF) should not be required.

Biodiversity Offsets Scheme (BOS) – Threshold Assessment

The proposed development exceeds the nominated threshold triggers of the Area clearing Threshold as assessed in Section 5.1.2. Therefore, biodiversity offsets are required under the Biodiversity Offsets Scheme (BOS).

LIST OF ABBREVIATIONS

APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method (2020)
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act (2016)*
BC Reg	*Biodiversity Conservation Regulation (2017)*
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BPA	Bushfire Protection Assessment
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically endangered ecological community
CM Act	*Coastal Management Act 2016*
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water, and the Environment (superceded by DAFF 2022)
DCCEEW	Department of Climate Change, Energy, the Environment and Water.
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation (superseded by DECC from April 2007)
DECC	NSW Department of Environment and Climate Change (superseded by DECCW from October 2009)
DECCW	NSW Department of Environment, Climate Change and Water (superseded by OEH from April 2011)
DEWHA	Commonwealth Department of Environment, Water, Heritage & the Arts (superseded by SEWPAC)
DOEE	Commonwealth Department of Environment & Energy (superseded by DAWE)
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment (superseded by DPE Dec 2021)
EEC	Endangered Ecological Community
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act (1979)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)*
FM Act	Fisheries Management Act
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Local Environmental Plan
LGA	Local Government Area
LLS Act	*Local Land Services Act (2013)*
MNES	Matters of National Environmental Significance
NPW Act	*National Parks and Wildlife Act (1974)*
NRAR	Natural Resources Access Regulator (NSW)
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage (superseded by DPIE from August 2019)
PCT	Plant Community Type
PFC	Projected foliage cover
RFS	NSW Rural Fire Service
ROTAP	Rare or threatened Australian plants
SAII	Serious And Irreversible Impacts
SEPP	State Environmental Planning Policy
SEWPAC	Commonwealth Dept. of Sustainability, Environment, Water, Population & Communities (superseded by DOEE)
SULE	Safe useful life expectancy
TEC	Threatened ecological community
TPZ	Tree preservation zone
TSC Act	*Threatened Species Conservation Act (1995)* – superseded by the *Biodiversity Conservation Act (2016)*
VMP	Vegetation management plan

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1. INTRODUCTION

Travers bushfire & ecology (TBE) was engaged to undertake a biodiversity development / assessment within Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273 DP 750158, at School Road, Forbes within the Forbes Shire Council local government area (LGA). The extent of this entire lot is shown in Figure 1-1. It is the intention of this proposal to follow Forbes Local Housing Strategy (2023) by providing opportunities for residential area with active recreation and environmental protection. This lot is subject to proposed rezoning and will hereafter be referred to as the 'study area.'

The area containing the proposed development, APZs and all associated impact on habitat features is hereafter referred to as the 'development footprint' (refer to Figure 1-3).

The proposal shall be assessed under the *Biodiversity Conservation Act 2016* (*BC Act*).

Figure 1-1 – Study area shaded yellow and outlined in red

1.1 Purpose

The purpose of this Biodiversity Development Assessment Report (BDAR) is to assess the potential impact on biodiversity, including threatened species, populations, and ecological communities by the rezoning of land from RU1 – Primary Production, RE1 – Public recreation, and R5 – Large Lot residential, to support a residential area with active public recreation.

Consequently, the following tasks have been completed:

- Botanical survey to describe the vegetation communities and their condition.
- Fauna habitat survey to detect and assess fauna and their potential habitats.
- Preparation of a BDAR in accordance with the requirements of the:
    a) *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act),*
    b) *Biodiversity Conservation Act 2016 (BC Act),*
    c) *Biodiversity Conservation Regulation 2017 (BC Reg.),*
    d) *Fisheries Management Act 1994 (FM Act)*, and
- Preparation of a BDAR in accordance with the Biodiversity Assessment Methodology (BAM) 2020.

Please note that the targeted surveys for threatened species will be completed in optimal season (September to October) and BDAR will be updated accordingly.

1.1.1 Certification of BAM compliance

Section 6.15 of the *BC Act* regarding the currency of a BDAR requires:

(1) A biodiversity assessment report cannot be submitted in connection with a relevant application unless the accredited person certifies in the report that the report has been prepared based on the requirements of (and information provided under) the biodiversity assessment method as at a specified date and that date is within 14 days of the date the report is so submitted.
(2) A relevant application is an application for planning approval, for vegetation clearing approval, for biodiversity certification or in respect of a biodiversity stewardship agreement.

Diane Warman (BAAS 22026) is an accredited person under the *BC Act.* I, Diane Warman, certify here that the report has been prepared based on the requirements of (and information provided under) the BAM as 27 September 2023, and that date is within 14 days of the date the report is so submitted.

1.1.2 Terminology

Throughout this report the terms development footprint and study area are used. It is important to have a thorough understanding of these terms as they apply to the assessment.

Development footprint means the area directly affected by the proposal. It has the same meaning as “subject land” defined below.

Study area is the portion of land that encompasses all surveys undertaken and is usually all land contained within the designated property boundary. The study area extends as far as is necessary to assess all important biodiversity values known and likely to occur within the subject land and includes the development footprint and any additional areas which are likely to be affected by the proposal, either directly or indirectly.

Subject land is land to which the BAM is applied in Stage 1 to assess the biodiversity values. It includes land that may be a development site, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement. In this case, it refers to the area designated as the development footprint and has the same meaning for the purposes of this report. The terms “subject land” and “development footprint” are interchangeable in this regard.

Direct impacts are those that directly affect the habitat and individuals. They include, but are not limited to, death through clearing, predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all the likely direct impacts of the proposed activity or development.

Indirect impacts occur when project-related activities affect species, populations, or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all the likely indirect impacts of the proposed activity or development.

1.2 Site description

1.2.1 Site overview

Table 1-1 provides an overview the planning, cadastral and topographical details of the study area and an overview of the site and surrounds is shown on Figure 1-5 and Figure 1-6.

Table 1-1 – Site features

Location	Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272 and 1273 in DP 750158, School Road, Forbes
Location description	The site is located approximately 4.1 km northwest of Forbes railway station. The site is surrounded on the eastern side by existing urban development and by rural farmland to the south, north and west.
Area	92.39 ha
Local government area	Forbes Shire
Zoning	RU1 – Primary Production, RE1 – Public recreation, and R5 – Large Lot residential
Grid reference MGA-56	55 H 593264E; 6308899N
Elevation	Approximately 250 – 275 m AHD
Topography	The site is generally flat with a central low point at the southern end. There is a slight elevation at the north-western portion of the site.
Catchment and drainage	There is no catchment on the site, however there is an unnamed first order stream located south of the site, that is likely drained into. This tributary eventually flows into the Lachlan River.
Existing land use	Cropped pasture.

1.2.2 Landscape features

Table 1-2 describes the landscape features of the proposed development site, in accordance with the BAM.

Table 1-2 – Landscape features

Patch size	5 - <25 ha.
IBRA bioregions and subregions	NSW Southwestern Slopes – Lower slopes (Figure 1-5 and Figure 1-6).
NSW landscape region and area (ha)	Calarie Plains.
Native vegetation extent in the buffer area (1500 m)	50.45 ha. Cover class 0–10% (3.51%).
Cleared areas	Approximately 90% of the study area is cleared.
Evidence to support differences between mapped vegetation extent and aerial imagery	Mapped vegetation closely matches aerial imagery. Unmapped vegetation is exotic.
Rivers and streams classified according to stream order	As shown in Figure 4-2, the southern portion of the study area contains the head of a primary tributary of Lake Forbes.
Wetlands within, adjacent to and downstream of the site, including important wetlands	As shown in Figure 4-2, there are three (3) man-made farm dams across the study area.
Connectivity features	There is very poor connectivity to the development footprint. There is an existing residential development to the east, while there are large areas of cleared grassy pasture to the south, west, and north with sparsely scattered trees. Figure 1-6 shows the extent of native vegetation in the locality.
Geology and soils	Geology: Sandstones are the dominant lithology with minor shales, mudstones, limestones and volcanics (King 1998). Quaternary colluvial deposits - Lithology: Colluvial deposits are unconsolidated sediments that are found downslope from hills. They form by erosion of hills and by creep or sheetwash. Silurian-Devonian sedimentary rocks - Lithology; Sedimentary rocks including sandstone, siltstone, mudstone, and basal conglomerate units. May be fossiliferous. Soil: Predominantly Bald Hill (bh) soil landscape. Narrow crests and ridges with gentle sideslopes made of red earths and red podzolic soils. Parkes (pa) soil landscape is at top right-hand corner of lot. This is also of narrow crests with red earths and red podzolic soils overlying siltstones and sedimentary sequences with volcanic sandstones.
Identification of method applied (i.e., linear, or site-based)	Site based assessment.

1.2.3 Zoning

The site is currently zoned RU1 Primary Production, RE1 Public Recreation, and R5 Large Lot Residential, under the Forbes Shire Council LEP 2013 (Figure 1-2). To comply with the LEP, a planning proposal is required to rezone the site to facilitate future residential development.

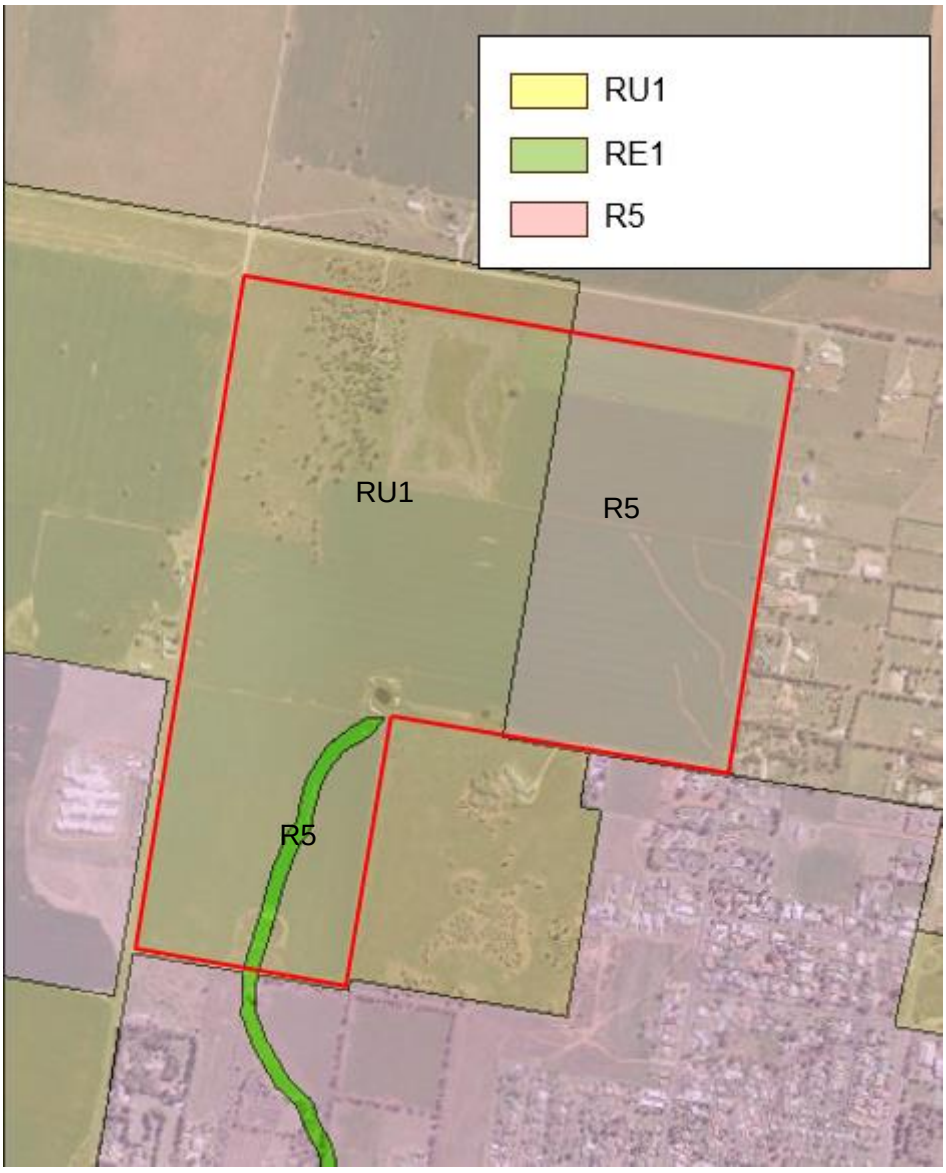

Figure 1-2 – Zoning
(Source: Planning Portal, 2023)

1.3 Proposed development

Allera, on behalf of ForbesView, is preparing a Planning Proposal to rezone a 92.39 ha parcel of land within the Forbes Shire Council local government area, referred to as School Road, Forbes ('the Site'). The site is legally identified as Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273 in DP 750158. Road access to the lots as well as services will be along the existing clearance off School Road. The proposed layout is shown on Figure 1-3.

The immediate surrounding context exhibits a rural and large lot residential zoning. Other land uses in the vicinity of the site include Catholic Healthcare, Jemalong Residential Village, Jenny Murphy Park, Forbes High School, and Goldridge Estate – being developed by Forbes Shire Council (comprising of 221 lots ranging in size from 55 m^2 to over 5,000 m^2).

Under the Forbes Local Environmental Plan 2013, the land is currently zoned RU1 - Primary Production, R5 - Large Lot Residential, and RE1 - Public Recreation. A Planning Proposal is required to rezone the site to facilitate future residential development.

1.3.1 Identification of development site footprint

The entire site covers 92.39 ha. As shown in Table 1-3, the amount of native vegetation is estimated at 11.9 ha with approximately 87% of the site being associated with agricultural production in the form of cultivated pasture and includes a residential home and exotic pasture. Council designed Precinct 4 and Precinct 5 at this location (Figure 1-3) under its proposed Forbes Housing Strategy (Currajong 2023). Figure 1-4 provides a revised concept design Masterplan in support of Council's Strategy and remnant native vegetation across the site.

This revised concept design Masterplan provides for an avoidance area including environmental protection for remnant native vegetation. This environmental protection area is proposed to protect an estimated 4.07 ha of native vegetation (Table 1-3).

Table 1-3 – Vegetation and Impact measures

	Total (ha)	Impacted
Total area of site	92.39	
PCT76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern slopes and Riverina bioregions – derived native grassland (PCT76 – DNG)	4.17	4.17
PCT76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern slopes and Riverina bioregions. (PCT76)	7.74	3.8
Total verified native vegetation on site and total impacted native vegetation	**11.9**	**7.97**
PCT76 - Proposed Environmental Protection area	4.07	-
Total area of planted pasture	71.76	71.75
Total area of residential, exotic pasture, farm dam and gardens.	7.42	7.33

Figure 1-3 – Precinct No. 4 and No. Edwards Street (North and East) Release Area
(Source: Forbes Housing Strategy, Currajong Pty Ltd 2023)

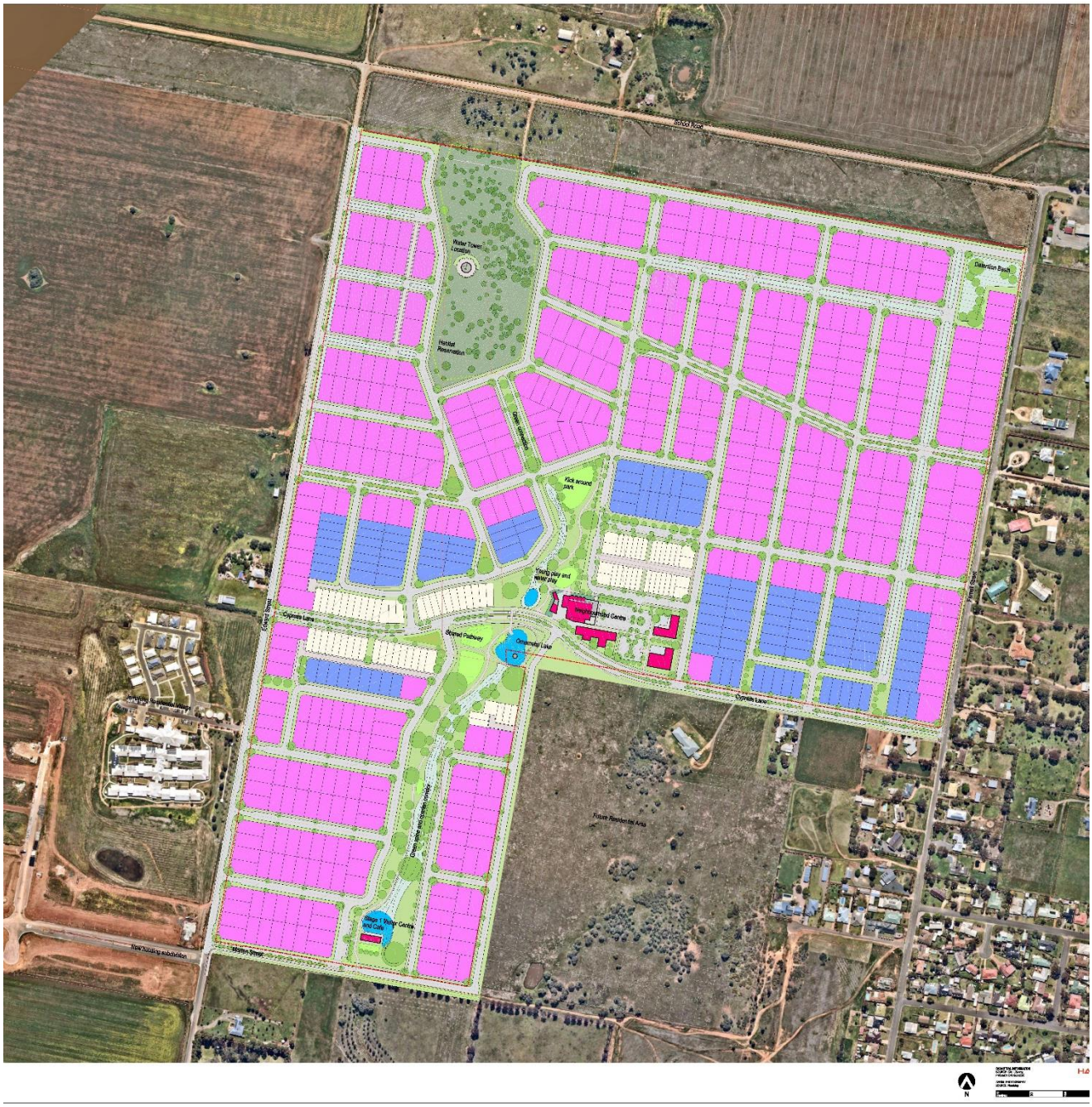

Figure 1-4 – Concept Design Masterplan (23 September 2023)
(Source: Hatch 2023)

1.4 Statutory assessment requirements

The following outlines the statutory assessment requirements and procedures involved in assessing development in New South Wales (NSW).

1.4.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

Prior to any development taking place in NSW a formal assessment needs to be made of the proposed work to ensure it complies with relevant planning controls and, according to its nature and scale, confirm that it is environmentally and socially sustainable. State, regional, and local planning legislation indicates the level of assessment required, and outlines who is responsible for assessing the development. The development assessment and consent

system are outlined in Part 4 and the infrastructure and environmental impact assessment system is outlined in Part 5 of the *EP&A Act*.

1.4.2 Biodiversity Conservation Act 2016 (BC Act)

The *BC Act* repealed the *Threatened Species Conservation Act 1995*, the *Nature Conservation Trust Act 2001* and the animal and plant provisions of the *National Parks and Wildlife Act 1974*.

The *BC Act* and the *BC Reg* establishes a regulatory framework for assessing and offsetting impacts on biodiversity values due to proposed developments and clearing. It establishes a framework to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offsets Scheme (BOS). Where development consent is granted, the authority may impose as a condition of consent an obligation to retire a number and type of biodiversity credits determined under the new Biodiversity Assessment Method 2020 (BAM).

The BOS applies to:

- local development (assessed under Part 4 of the *EP&A Act*) that triggers a BOS threshold or is likely to significantly affect threatened species based on the test of significance in section 7.3 of the *BC Act*.
- state significant development and state significant infrastructure projects, unless the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact.
- biodiversity certification proposals.
- clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds a BOS threshold and does not require development consent.
- clearing of native vegetation that requires approval by the Native Vegetation Panel (NVP) under the *Local Land Services Act 2013*, and
- activities assessed and determined under Part 5 of the *EP&A Act* (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

Proponents will need to supply evidence relating to the triggers for the BOS thresholds and the test of significance (where relevant) when submitting their application to the consent authority.

Development consent cannot be granted for non-state significant development under Part 4 of the *EP&A Act* if the consent authority is of the opinion that it is likely to have serious and irreversible impacts (SAII) on biodiversity values. The determination of SAII is to be made in accordance with principles prescribed under Section 6.7 of the *BC Regulation 2017*. The principles have been designed to capture those impacts which are likely to contribute significantly to the risk of extinction of a threatened species or ecological community in New South Wales.

The threatened species test of significance is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. It is applied as part of the BOS entry requirements and for Part 5 activities under the *EP&A Act.*

The test of significance is set out in s.7.3 of the *BC Act.* If the activity is likely to have a significant impact or will be carried out in a declared area of outstanding biodiversity value, the proponent must either apply the BOS or prepare a species impact statement (SIS).

The environmental impact of activities that will not have a significant impact on threatened species will continue to be assessed under s.111 of the *EP&A Act.*

1.4.3 Fisheries Management Act 1994 (FM Act)

The *FM Act* provides a list of threatened aquatic species that require consideration when addressing the potential impacts of a proposed development. Where a proposed activity is located in an area identified as critical habitat, or such that it is likely to significantly affect threatened species, populations, ecological communities, or their habitats, an SIS is required to be prepared.

1.4.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The *EPBC Act* requires that Commonwealth approval be obtained for certain actions. It provides an assessment and approvals system for actions that have a significant impact on Matters of National Environmental Significance (MNES). These may include:

- World Heritage Properties and National Heritage Places.
- Wetlands of International Importance protected by international treaty.
- Nationally listed threatened species and ecological communities.
- Nationally listed migratory species, and
- Commonwealth marine environment.

Actions are projects, developments, undertakings, activities, and series of activities or alteration of any of these. An action that needs Commonwealth approval is known as a controlled action. A controlled action needs approval where the Commonwealth decides the action would have a significant effect on an MNES matter.

Where a proposed activity is in an area identified to be of MNES, or such that it is likely to significantly affect threatened species, ecological communities, migratory species, or their habitats, then the matter needs to be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for assessment. In the case where no listed federal species are located on site then no referral is required. The onus is on the proponent to make the application and not the Council to make any referral.

A threshold criterion applies to specific MNES which may determine whether a referral is or is not required, such as for the *EPBC*-listed ecological community Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia. Consultation with DCCEEW may be required to determine whether a referral is or is not required. If there is any doubt as to the significance of impact or whether a referral is required, a referral is generally recommended to provide a definite decision under the *EPBC Act* thereby removing any further obligations in the case of 'not controlled' actions.

A significant impact is regarded as being:

> *important, notable, or of consequence, having regard to its context or intensity and depends upon the sensitivity, value, and quality of the environment which is impacted and upon the duration, magnitude, and geographical extent of the impacts. A significant impact is likely when it is a real or not a remote chance or possibility.*

Source: EPBC Policy Statement

Guidelines on the correct interpretation of the actions and assessment of significance are located on the department's web site http://www.environment.gov.au/epbc/publications.

1.4.5 State Environmental Planning Policy (Resilience and Hazards) 2021 – Division 1 Coastal wetlands and littoral rainforests area

The *Coastal Management Act 2016* (*CM Act*) established the framework and overarching objects for coastal management in New South Wales. The Act commenced on 29 June 2018 and replaced the previous *Coastal Protection Act 1979*. This was replaced by the Resilience and Hazards SEPP.

The purpose of the SEPP is to protect and manage coastal areas of NSW. A planning proposal must not rezone land which would enable increased development or more intensive land-use on land within a coastal wetlands and littoral rainforests area identified by Chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021.

1.4.6 Licences

Individual staff members of *TBE* are licensed under Clause 20 of the *National Parks and Wildlife (Land Management) Regulation 1995* and Sections 120 and 131 of the *National Parks and Wildlife Act 1974* to conduct flora and fauna surveys within service and non-service areas. NPWS Scientific Licence Numbers: SL100848.

TBE staff are licensed under an Animal Research Authority issued by the NSW Department of Primary Industries. This authority allows *TBE* staff to conduct various fauna surveys of native and introduced fauna for the purposes of environmental consulting throughout New South Wales.

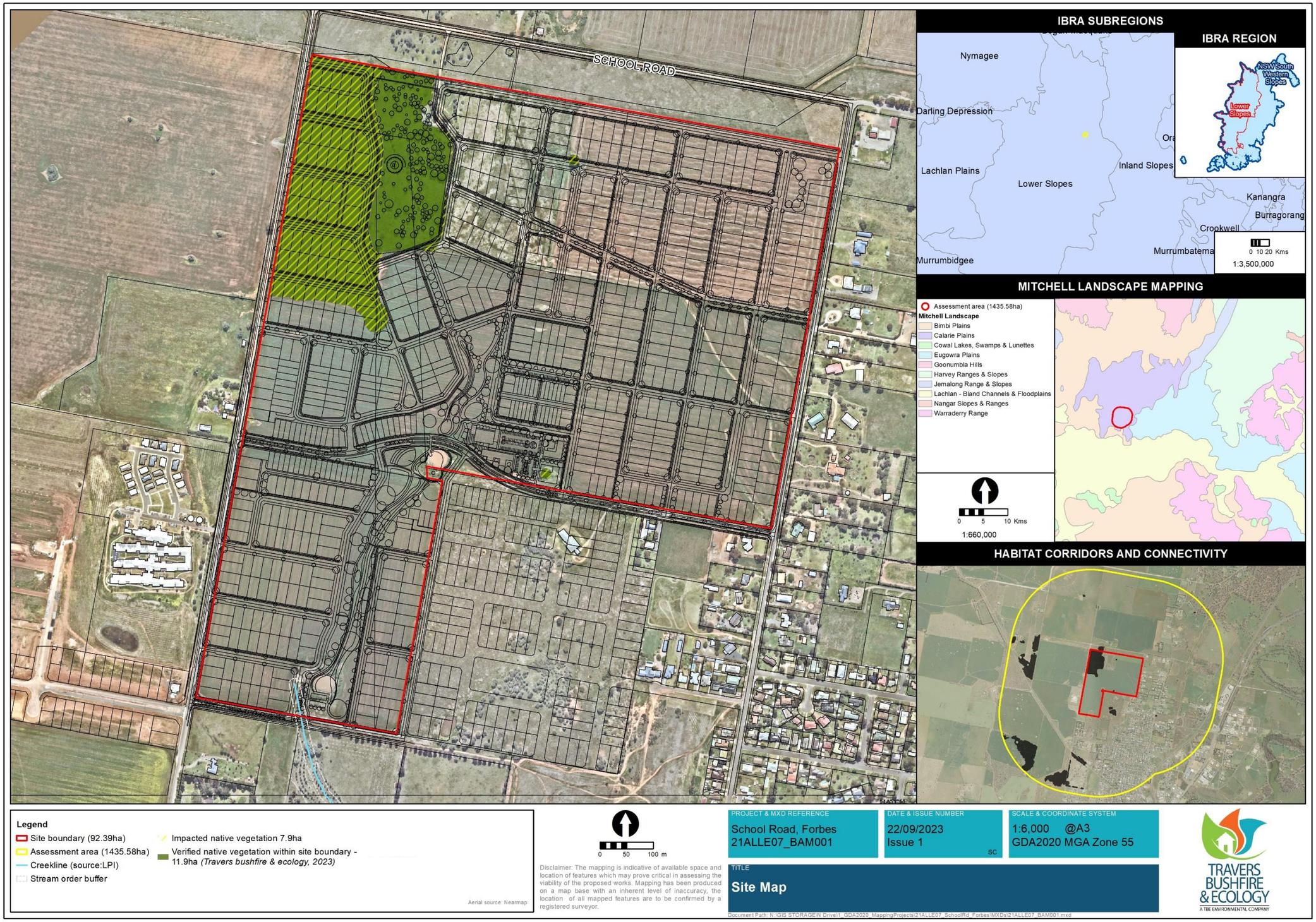

Figure 1-5 – Site Map

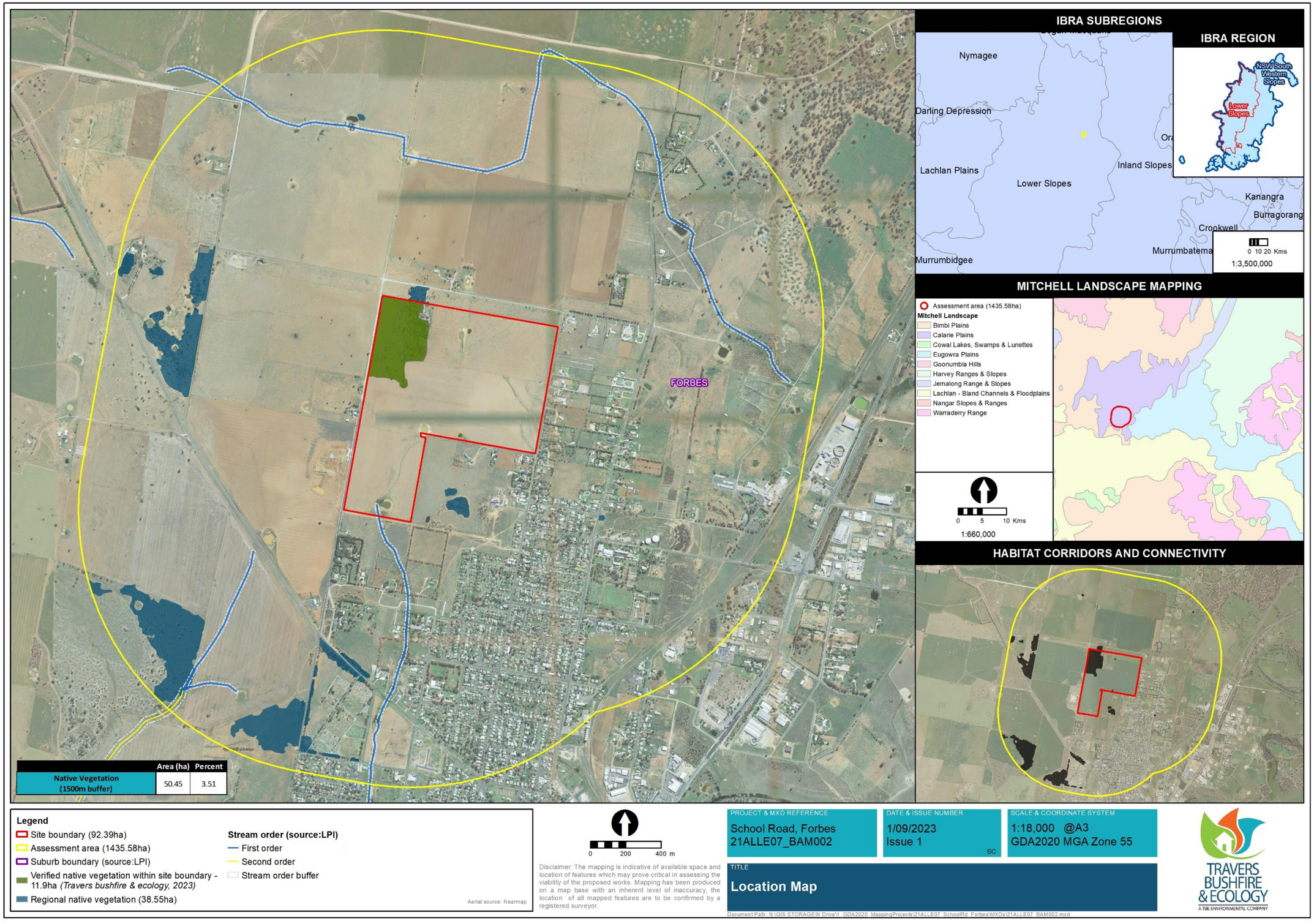

Figure 1-6 – Location map

2. SURVEY METHODOLOGY

2.1 Presurvey information collation and resources

Documents reviewed:

The following documents, reports and information sources were utilised in the preparation of this report:

- Forbes Housing Strategy 2021-2041 (2023).
- Forbes Local Environmental Plan (2013), and
- Masterplans provided by Hatch (2023)

Technical resources utilised:

Legislation

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*
- *Biodiversity Conservation Act 2016 (BC Act).*
- *Biodiversity Conservation Regulation 2017 (BC Reg.), and*
- *Fisheries Management Act 1994 (FM Act).*
- *State Environmental Planning Policy (Biodiversity and Conservation) 2021, and*
- *State Environmental Planning Policy (Resilience and Hazards) 2021.*

Survey guidelines

- Survey guidelines for Australia's threatened birds (DEWHA 2010).
- Survey guidelines for Australia's threatened frogs (DEWHA 2010).
- Matters of National Environmental Significance (Commonwealth of Australia 2013).
- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities 2004 (working draft), Department of Environment and Conservation (DEC).
- Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians (DECC April 2009a).
- Hygiene Protocol for the Control of Diseases in Frogs (DECC 2008).
- Region based guide to the echolocation calls of Microchiropteran bats (DEC 2004)
- Field survey methods: Best practice field survey methods for environmental consultants and surveyors when assessing proposed development sites or other activities on sites containing threatened species, populations, or ecological communities (OEH 2004).
- Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method (DPE 2020).

Mapping resources

- Aerial photographs (Google Earth Pro / Spatial Information Exchange / NearMap).
- Topographical maps (scale 1:25,000).
- LiDAR data for contours (Land and Property Information, est. 2015 estimated), and
- ESpade – DPE tool for checking soil types.

Threatened species records.

- BioNet database which holds data from several custodians (7/09/23 to 10 km).
- Birdata (Birdlife Australia 2017), and
- EPBC Protected Matters Search Tool - DCCEEW (2023 to 10 km).

Vegetation mapping / resources

- BioNet Vegetation Classification System (DPE 2023).
- State Vegetation Type Map (DPE 2022), and
- Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method (DPIE 2020).

Vegetation mapping

The State Vegetation Type Map (DPE 2022) mapped the following vegetation community within the site shown in Figure 2-1:

- PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions.

Field verification of the study area found the following vegetation communities:

- PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (7.74 ha).
- PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions – DNG (4.17 ha)
- Exotic Planted Vegetation (7.42 ha), and
- Planted pasture (71.76 ha).

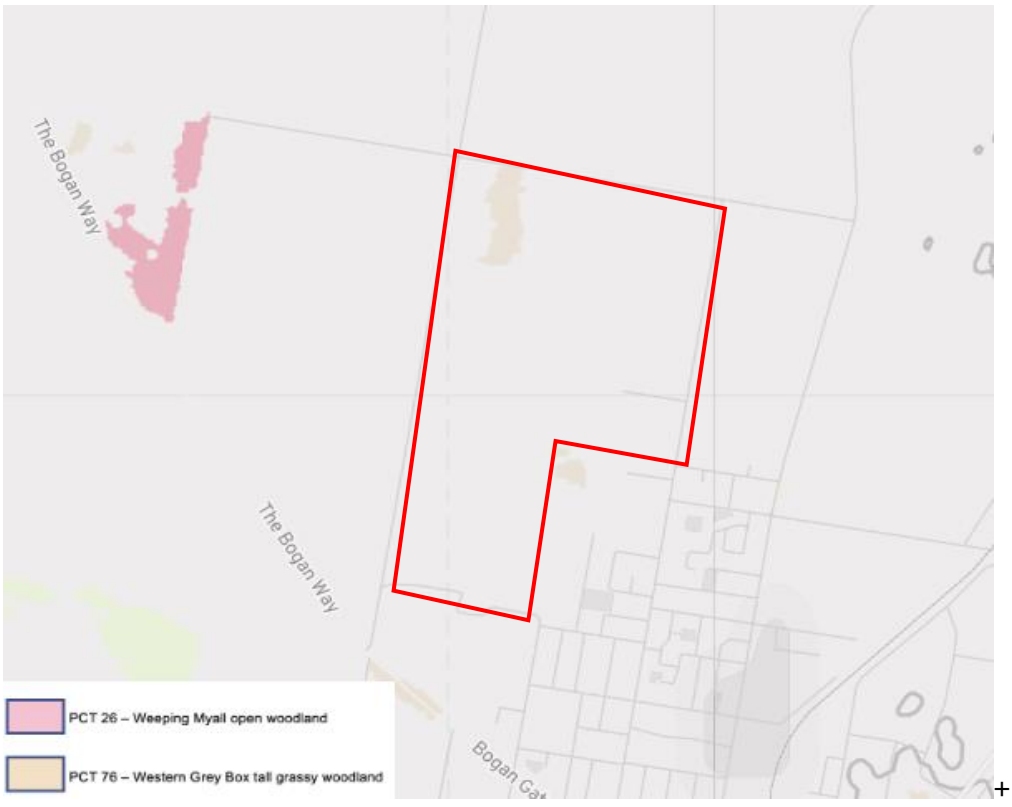

Figure 2-1 – The State Vegetation Type Map(Study area identified by red outline)
(Source: SVTM, DPE 2022)

2.2 Flora survey methodology

The flora survey was undertaken on 9 and 10 August 2023. A review of the *BioNet Atlas of NSW Wildlife* (DPE 2023) was undertaken prior to the site visit to determine threatened species previously recorded within 10 km of the subject site, and a random meander was undertaken. Targeted flora surveys will be undertaken across the native vegetation remnant, in September/October, to align with optimal seasonality for native flora. The BDAR will be updated accordingly.

The following information was collected at each of three (3) Biodiversity Assessment Method (BAM) plots. The surveys were stratified using the BAM.

- Native canopy, mid-storey and ground cover was recorded for all observed species and an estimate of stems (20 m x 20 m, 10 m x 50 m).
- Stratum (and layer): stratum and layer in which each species occurs (20 m x 20 m).
- Growth form: growth form for each recorded species (20 m x 20 m).
- Species name: scientific name and common name (20 m x 20 m).
- Percent projected foliage cover of the understorey strata and exotic vegetation (20 m x 20 m).
- Number of trees with hollows visible from the ground (20 m x 50 m).
- The total length of fallen logs >10 cm in diameter (20 m x 50 m).
- The proportion of regenerating canopy species (20 m x 50 m).
- Number of large trees (20 m x 50 m), and
- Estimates of leaf litter cover, bare ground, cryptograms, and rocks in 1 m x 1 m subplots at five (5) locations along the central transect (20 m x 50 m).

Based on the mapped PCTs, Protected Matter Search Tool (PMST 2023) information for the area and *BioNet Atlas of NSW Wildlife* (2023) records, the following species (full nomenclature given) were considered for survey. This was undertaken across the native vegetation remnant (Figure 2-2). Seasonally optimal times for targeted survey of these species is recommended (Table 2-4), i.e., September-October. A random meander was used in the meantime.

- *Austrostipa wakoolica* S.W.L.Jacobs & J.Everett (Family: Poaceae)
- *Diuris tricolor* Fitzg. (Family: Orchidaceae)
- *Eleocharis obicis* L.A.S.Johnson & O.D.Evans (Family: Cyperaceae)
- *Lepidium aschersonii* Thell. (Family: Brassicaceae)
- *Swainsona murrayana* Wawra. (Family: Fabaceae Subfamily Faboideae)
- *Swainsona recta* A.T.Lee (Family: Fabaceae Subfamily Faboideae)
- *Swainsona sericea* J.M.Black ex H.Eichler. (Family: Fabaceae Subfamily Faboideae)

Completed plot sheets utilised for the BAM calculator are provided in Appendix 3.

2.3 Fauna survey methodology

Site survey effort accounting for techniques deployed, duration, and weather conditions are outlined in Table 2-1 and are depicted on Figure 2-2.

Diurnal birds

Three (3) diurnal bird census points were undertaken within the development footprint. A minimum of 15 minutes of survey was undertaken at each census point in an area radiating

out to between 30-50 m. Bird census points were selected to give an even spread and representation across the site and its communities (Figure 2-2). Census points were also commenced in locations where bird activity was apparent, as often different small bird species are found foraging together. Opportunistic diurnal bird survey was conducted between census points and whilst undertaking other diurnal surveys.

Raptor nest search

Raptor nest and roost searches were utilised to observe eyries within the foreshore region of study site and extending into the surrounding habitat. Areas considered to be suitable nesting and roosting habitat were searched with binoculars and inspected for whitewash and feathers at ground level.

Nocturnal birds

Given the local records of Barking Owl (*Ninox connivens*), and Australian Bittern (*Botaurus poiciloptilus*) were targeted by call-playback techniques.

Diurnal survey included searches for any signs of Owl roosting activity. This was undertaken where dense mid-storey foliage was present, typically in the dense vegetation on site. Search areas are shown on Figure 2-2.

Arboreal and terrestrial mammals

Diurnal survey included opportunistic searches involving identification of scats, bones, diggings and scratching in the soil synonymous with mammal species.

Nocturnal survey involved spotlighting and opportunistic survey to identify terrestrial and arboreal mammal species.

Bats

Micro-chiropteran bats are surveyed by echolocation using ultrasonic recording detectors. Passive recording was undertaken through the deployment of ultrasonic recorders over one night that were positioned to target species preferred roosting and foraging habitat.

Diurnal searches investigating potential micro-chiropteran bat roosting sites were undertaken on 8-9 August 2023. Searches included the inspection of trees exhibiting small hollows and large basal trunk hollows were searches for evidence of guano.

Amphibians

Potential frog habitat searches included scoping the study area and surrounds for favourable features known for threatened frogs' species with the potential to occur within the area and associated plant community types. These searches were undertaken for one (1) hour during a diurnal survey period. Habitat searches included scoping suitable within range waterbodies, the presence of perennial and ephemeral pools and drainage lines and analysing habitat and vegetation types that may be suitable for threatened frog species known to occur within the locality. Given the disturbed nature of the study site, these searches were focus within the existing dams and surrounding vegetation.

Target surveys involved spotlighting along the drainage channel for calling frogs over one session. The survey efforts utilised habitat searches, call-playback, and call identification.

A song meter was also deployed overnight to record species present within the dam that had contained the most frogs calling during the diurnal habitat searches.

Amphibian survey was undertaken in accordance with the *Hygiene Protocol for the Control of Diseases in Frogs* (DECC 2008).

Habitat trees

Hollow-bearing trees were identified and recorded within the development footprint on a *Trimble* handheld GPS unit during surveys. All data such as hollow types, hollow size, tree species, diameter at breast height, canopy spread, and overall height were collected and a metal tag with the tree number placed on the trunk for field relocation purposes. Other habitat features such as nests and significant sized mistletoe for foraging were also noted.

A summary of hollow-bearing tree results is provided in Table 3-9.

Significant habitat trees

Significant habitat trees are defined as trees containing large hollows suitable for use by owls and/or containing several good quality hollows typically consisting of more than one medium (10 – 30 cm) sized hollow. A tree may also be considered significant where evidence of use by select fauna is found such as Yellow-bellied Glider sap feed tree, raptor nest, or owl roost.

Data such as the number of hollows present in each size category (or other reason for selection), tree species, diameter at breast height, canopy spread, and overall height were collected. A summary of significant habitat tree results is provided in Table 3-9.

2.4 Field survey effort

Table 2-1 and Table 2-2 below detail the flora and fauna survey effort undertaken for the development footprint.

Table 2-1 – Fauna survey effort

Fauna group	Date	Weather conditions	Survey technique(s)	Time effort (24hr)
Diurnal birds	8/8/23	2/8 cloud, 17 km/hr wind, no rain, temp 0.6-18.2ºC	Diurnal census x1	Commenced @ 16:30
	9/8/23	1/8 cloud, 31 km/hr wind, no rain, temp 0.6—20.6 ºC	Diurnal census x2	Commenced @ 9:40
			Raptor nest searches	Commenced @ 10:00
Nocturnal birds	8/8/23	2/8 cloud, 17 km/hr wind, no rain, temp 0.6-18.2 ºC	Opportunistic habitat searches	Commenced @ 16:45
	9/8/23	1/8 cloud, 31 km/hr wind, no rain, temp 0.6—20.6 ºC	Spotlighting	Commenced @ ~17:30
Arboreal & terrestrial mammals	8/8/23	2/8 cloud, 17 km/hr wind, no rain, temp 0.6-18.2 ºC	Opportunistic habitat searches	Commenced @ 15:00
			Spotlighting	Commenced @ ~17:30
	9/8/23	1/8 cloud, 31 km/hr wind, no rain, temp 0.6—20.6 ºC	Opportunistic habitat searches	Commenced @ 8:40
Bats	8/8/23	2/8 cloud, 17 km/hr wind, no rain, temp 0.6-18.2 ºC	Passive ultrasonic recording	Overnight
Amphibians	8/8/23	2/8 cloud, 17 km/hr wind, no rain, temp 0.6-18.2 ºC	Opportunistic habitat searches	Commenced @ 15:00
			Spotlighting / call identification	Commenced @ ~17:30
			Songmeter recording	Overnight

Table 2-2 – Flora survey effort

Flora survey	Survey technique(s)	Dates
Vegetation communities	Survey of the boundaries of all communities – field verification, plotting vegetation boundaries on aerial photographs.	9 and 10 August 2023
Stratified sampling	Three (3) 20 m x 50 m BAM plots spaced throughout the development footprint in areas of native vegetation. Opportunistic observations of flora species during all on-foot traverses of the development footprint.	9 and 10 August 2023
Targeted searches	Opportunistic searches during all on-foot traverses across the site due to off season of most species identified with potential.	9 and 10 August 2023

Table 2-3 – Plot and transect survey effort – development footprint

Veg zone no.	PCT	Condition	Area (Ha)	Minimum plots required	Plot sampled	Plot identifier	Plot size	Easting at 0 m	Northing at 0 m	Bearing
2	76	Poor-Moderate	3.8	2	2	Q1 Q3	20 m x 50 m	592938E 592926E	6309345N 6309172N	150 70
DNG	76	Derived Native Grassland (DNG)	4.17	2	1	Q2	20 m x 50 m	592792E	6309236N	0

2.5 Survey limitations

It is important to note that field survey data collected during the survey period is representative of species occurring within the development footprint on that occasion. Due to effects of fire, breeding cycles, migratory patterns, camouflage, weather conditions, time of day, visibility, predatory and / or feeding patterns, increased species frequency or richness may be observed within the development footprint outside the nominated survey period. Habitat assessments based on the identification of micro-habitat features for various species of interest, including regionally significant and threatened species, have been used to minimise the implications of this survey limitation.

Flora survey limitations

The species list does not include all household or exotic garden / landscaping species and those species which could not be identified at the time of the survey past genus level. Cryptic species not flowering at the time of the survey may not be observed during survey outside of peak flowering periods. Likewise cryptic orchid species are generally only recognisable when flowering.

Burrows (2004) highlights those surveys in winter result in less than 50% of plant species present, in plots across western NSW and the Southwestern Slopes (SWS). Due to the flowering season being less than optimal for native grass, herb and forbs, native species are unlikely to be adequately represented. Over summer, native herbaceous perennials die back to their rootstock, and to corms and tubers. These are not likely to re-emerge until late spring (Burrows 2004). It is recommended that a follow-up survey be conducted in September – October, as per Table 2-4, when native species are more likely to be present. A minimum of four plots is required for the survey area.

Table 2-4 – Survey adequacy for species credit species (flora)

Common name	*BC Act*	Potential to occur (presence status) / Habitat	Preferred survey period (DPE)	Actual survey period	Survey sufficient to rule out presence
Austrostipa wakoolica	E	✓	Oct-Dec	August 2023	x
Diuris tricolor	V	✓	Sept-Oct	August 2023	x
Eleocharis obicis	V	✓	Oct-Nov	August 2023	x
Lepidium aschersonii	V	✓	Nov-Dec	August 2023	x
Swainsona murrayana	V	✓	Sept	August 2023	x
Swainsona recta	E	✓	Sept-Nov	August 2023	x
Swainsona sericea	V	✓	Sept-Nov	August 2023	x

Fauna survey limitations

Microbat survey was undertaken during winter when activity is typically low. Two detectors were left out for one night. It is recognised that both activity and species diversity, possibly including threatened species may occur in warmer month's conditions.

Assumed presence of species

The BAM-C has identified a list of threatened fauna credit species with potential habitat associated with the recorded PCTs in the development footprint (Table 2-5). Species credit species require survey to rule out presence on site otherwise these species must be assumed to be present and will generate subsequent credits for offsetting.

It is important to note that where species credits cannot be ruled on vagrancy, geographic limitations or specific habitat features being absent, the species were assumed to be present given that adequate and / or compliant surveys have not been undertaken across the full extent of the site.

Following a habitat assessment of the site and surrounding study area, as well as the elimination of select species where breeding habitat is absent, the species listed in Table 2-5 require seasonal survey.

Table 2-5 – Survey adequacy for species credit species (fauna)

Common name	*BC Act*	Potential to occur (presence status) / Habitat	Preferred survey period (DPE)	Actual survey period	Survey sufficient to rule out presence
Sloane's Froglet	V	✓ (low)	Oct-Dec	Aug	x
Major Mitchell's Cockatoo	V	✓ (low)	Sep-Dec	Aug	x
Squirrel Glider	V	✓ (low)	All months	Aug	x
Koala	E	✓ (low)	All months	Aug	x
Superb Parrot	V	✓ (moderate)	Sep-Nov	Aug	x

2.6 Accuracy of identification

Plant specimens were identified to species level, where possible, though due to most species not exhibiting floral material due to suboptimal period for surveying native flora during winter, most were identified to genera where possible. PlantNET (The NSW Plant Information Network System). Royal Botanic Gardens and Domain Trust, Sydney. https://plantnet.rbgsyd.nsw.gov.au was used to identify plants.

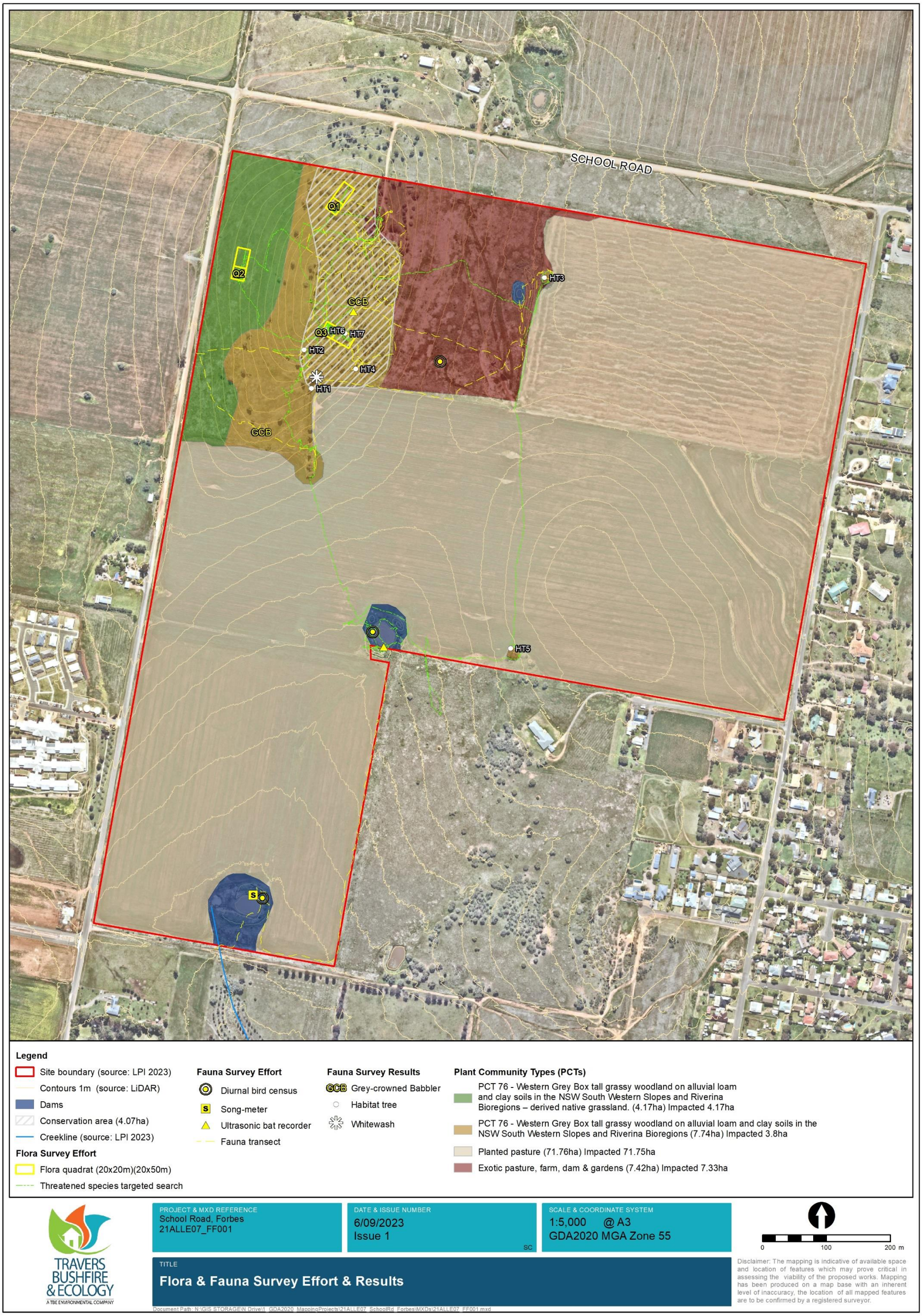

Figure 2-2 – Flora and fauna survey effort and results.

3. SURVEY RESULTS

3.1 Flora results

3.1.1 Native vegetation extent

The extent of native vegetation within the study area was assessed. The amount of native vegetation totalled an estimated 11.9 ha. An environmental protection area (4.07 ha) is planned to be integrated into the design.

3.1.2 Native flora

Native flora observed across the study area are listed in Table 3-1 below.

Table 3-1 – Native flora observations within the study area

Family	Scientific name	Common name
TREES		
Cupressaceae	*Callitris glaucophylla*	White Cypress Pine
Myrtaceae	*Eucalyptus microcarpa*	Western Grey Box
SHRUBS		
Scrophulariaceae	*Myoporum montanum*	Western Boobialla
GROUNDCOVERS		
Poaceae	*Austrostipa* sp.	Spear-grass
Asteraceae	*Calotis* sp.	Burr-Daisy
Convolvulaceae	*Convolvulus erubescens*	Blushing Bindweed
Convolvulaceae	*Dichondra repens*	Kidney Weed
Poaceae	*Cynodon dactylon*	Native Couch
Chenopodiaceae	*Einadia nutans* subsp. *nutans*	Climbing Saltbush
Poaceae	*Enteropogon acicularis*	Windmill Grass
Juncaceae	*Juncus* sp.	Juncus
Brassicaceae	*Lepidium pseudohyssopifolium*	Peppercress
Campanulaceae	*Lobelia concolor*	Poison Pratia
Lomandraceae	*Lomandra filiformis*	Wattle Mat-rush
Poaceae	*Rytidosperma caespitosum*	Ringed Wallaby Grass
Chenopodiaceae	*Sclerolaena bicornis*	Goathead Burr
Chenopodiaceae	*Sclerolaena birchii*	Galvanized Burr
Other		
Loranthaceae	*Muellerina* sp.	Mistletoe
**** denotes exotic species***		
TS denotes threatened species		

3.1.3 Plant community types (PCTs)

Evidence used to identify a PCT

The entire list of PCTs was exported from the online *BioNet Vegetation Classification* tool. Dominant canopy species, mid-stratum species, ground cover species, and Interim Biogeographic Regionalisation for Australia (IBRA) region and sub-region information were utilised to produce a short list of potential PCTs (Table 3-2). Final PCTs were then chosen based on species composition and presence, and similarity to descriptive attributes and distributional information provided in the *BioNet Vegetation Classification* tool. The PCT chosen is provided in Table 3-2.

Table 3-3 identifies the PCT occurring within the development site, including vegetation formation, percent cleared within and extent within the development site.

All plot sheets utilised for the BAM calculator are in Appendix 3.

Table 3-2 – PCT shortlist and justification

Zone	Shortlisted PCTs	PCT name	Match	Justification
1	76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions	Yes	Correct species composition and landscape position.
2	76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions – derived native grassland.	Yes	Correct species composition and landscape position.

Zone 1:

The identification of the most suitable PCTs was based upon comparing the similarity with BAM plot data against the recently mapped NSW State Vegetation Type Mapping (2023).

Table 3-3 – Plant Community Types within study area

PCT code	PCT name	Species relied upon	Vegetation formation	Vegetation class	% Cleared	Area within development site (ha)	TEC status
76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South-western Slopes and Riverina Bioregions.	*Eucalyptus microcarpa* and *Callitris glaucophylla*	Grassy Woodlands	Floodplain Transition Woodlands	92	11.9 ha	Inland Grey Box Woodland in the Riverina, NSW Southwestern Slopes, Cobar Peneplain, Nandewar, and Brigalow Belt South Bioregions *BC Act* Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia *EPBC Act*

PCT76 Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions

IBRA Subregion: Occurs within the NSW Southwestern Slopes IBRA region and Lower Slopes IBRA subregion.

Vegetation formation/class: Grassy Woodlands / Floodplain transition Woodlands.

Landscape position: Occurs on texture contrasting red or brown earths or grey clay soils on undulating alluvial plains.

The vegetation community contained several species listed in the Final Determinations for Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia including *Callitris glaucophylla, Enteropogon acicularis, Eucalyptus microcarpa, Einadia nutans* subsp. *nutans* and *Lomandra filiformis*. PCT76 is the equivalent recognised plant community type for this EEC.

PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions

Photo 3-1 – Good quality and more intact remnant vegetation in the western portion of the study area (Photo: D. Warman).

Photo 3-2 – Eucalyptus microcarpa *(Grey Box) canopy among a mid-storey dominated by high threat weed, African Boxthorn (Lycium ferocissimum) with native and exotic groundcover (Photo: D. Warman).*

Photo 3-3 – Mistletoe on Callitris glaucophylla (White Cypress Pine) (Photo: D. Warman).

Description

PCT76 is described (BioNet Vegetation 2023) as a tall woodland dominated by Grey Box (*Eucalyptus microcarpa*) to the exclusion of other tree species except where White Cypress Pine (*Callitris glaucophylla*) forms part of the canopy, as it does within the study area. The mid-storey is often absent except for a low diversity of native flora, including *Acacia* sp. Burrows (2004) highlights that shrubs and trees generally constitute less than 8% of species recorded in plots across the southwestern slopes. This was the case within the study area. The only shrub species observed was the high threat weed, African Boxthorn (*Lycium ferocissimum*) justifying the condition as poor to moderate. Typically, the ground cover is dense with grasses, herbs, and forbs and the climbing scrambler, *Einadia nutans* subsp. *nutans*. This was the case across the study area with this species, along with the grasses, *Enteropogon acicularis* and *Austrostipa* sp., among others. At the time of the survey native grasses, herbs and forbs were less likely to be present. There is likely to be more native species present within the seedbank which are likely to emerge late in September to October.

The following describes the species identified during the winter survey (9 and 10 August 2023).

Canopy – Sparsely scattered individual or clumps of trees 5 to 20 m high with less than 1% cover across the study area. The dominant species was *Callitris glaucophylla* followed by *Eucalyptus microcarpa.*

Mid-storey – There was no native shrub layer beyond the fence line dividing the residential area from the native vegetation on the western boundary. Within the native vegetation area, the high threat weed, African Boxthorn (*Lycium ferocissimum*), dominated.

Ground layer – The ground cover was dominated by a mixture of native and exotic grasses, herbs and forbs including *Dichondra repens* and *Calotis* sp. Native grasses included *Cynodon dactylon*, *Enteropogon acicularis, Rytidosperma* sp. Exotic grasses within this community included *Avena sativa* and *Lolium perenne.*

Zone 2 - PCT76 - Derived Native Grassland

Photo 3-4 – Grassy vegetation beyond the grassy woodland

Description:

This describes the predominantly grassed vegetation within the area mapped as PCT76.

Canopy – There was no canopy in this area.

Mid-storey – There was no mid-storey in this area.

Ground layer – Dominated by a mixture of native and exotic grasses, herbs, and forbs. Native tussock grasses and *Austrostipa* sp. were scattered across the site, however, no floral material was available to key these native grasses to species level. A diversity of forbs was present; however, no floral material was available to identify the species. Low perennial shrubs were, however, available, with dried plant material such as burrs to enable identification to species level. These included *Einadia nutans* subsp. *nutans, Lepidium pseudohyssopifolium, Sclerolaena bicornis* and *S. birchii.*

Area surrounding dams

Photo 3-5 – Vegetation surrounding three dams on property

Description:

This describes the vegetation around the three dams.

Canopy – There was no canopy in this area.

Mid-storey – There was no native shrublayer in this area. However, the high threat weed African Boxthorn (*Lycium ferocissimum*) was extensive around the dam edges.

Ground layer – The ground layer was often bare due to grazers using the dams for hydration. Where there was vegetation, it was dominated by exotic grasses, herbs and forbs, as well as extensive tussocks of *Juncus* sp.

Cropped paddocks

Photo 3-6 – Cropped pasture land

Description:

Most of the site is cropped pastureland.

Canopy – There was no canopy across this area.

Mid-storey – There was no shrub layer across this area.

Ground layer – The ground layer was dominated by exotic Oats (*Avena sativa*).

3.1.4 Vegetation integrity assessment

A vegetation integrity assessment is an assessment on the site's condition. Vegetation patches are broken into zones of roughly equal quality and then surveyed by transect plots. The number of required transect plots is dependent upon the size of the zone.

Table 3-4 – Number of plots required per area of zone.

Vegetation zone area (ha)	Minimum number of plots/transects
<2	1 plot/transect
>2–5	2 plots/transects
>5–20	3 plots /transects
>20–50	4 plots/transects
>50–100	5 plots/transects
>100–250	6 plots/transects
>250–1000	7 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone
>1000	8 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone

Once data from the transect plot has been collected, the composition of native plant species per growth form is assessed, along with numbers of stems, percentages of exotic or high threat exotic species present, number and sizes of eucalypt and non-eucalypt tree stems, litter cover, rock cover, cryptogram cover, hollows and fallen logs. Therefore, the vegetation integrity assessment is a measure of composition, structure, and function. The breakdown of PCTs is shown in Figure 2-1. Impacted areas (the development footprint) are shown cross-hatched. Figure 2-2 shows the location of the plots in relation to the impacted areas.

The vegetation integrity score is obtained using equations and weightings based upon several entities to calculate scores for composition, structure, and function, for an overall current vegetation integrity score.

Table 3-5 shows the current vegetation integrity score. PCT76_DNG which is a grassland, scores poorly for structure (39.6) and function (0.1) compared with PCT76_poor_moderate which scores comparatively high for structure (80.7) and function (38.2).

Table 3-5 – Current vegetation integrity score

Vegetation zone name	Area (ha)	Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
76_poor_moderate	3.8	18.1	80.7	38.2	38.3
76_DNG	4.17	30.3	39.6	0.1	5.3

The vegetation integrity score is measured assuming there will be no vegetation retained across the building sites, including area for APZs, access roads and fence lines.

For PCT 76_poor_moderate, the impact area of 3.8 ha (Table 3-5) includes building lots and associated infrastructure. It is expected that almost all trees will be removed from this area. Preliminary BAM calculations assume all will be removed and the future vegetation integrity score will be 0, as indicated in Table 3-6. Please note that this is post the environmental protection area being excluded.

For PCT76_DerivedNativeGrassland, the impact area is 4.17 ha (Table 3-5). Impacts include building lots and associated infrastructure. It has been assumed all shrubs and groundcover will be removed. Preliminary BAM calculations assume all will be removed and the future vegetation integrity score will be 0, as indicated in Table 3-6.

Table 3-6 – Future vegetation integrity score

Vegetation zone name	Area (ha)	Composition condition score	Structure condition score	Function condition score	Future vegetation integrity score
Zone 1 76_poor_moderate	3.8	0	0	0	0
Zone 2 76_DerivedNativeGrassland	4.17	0	0	0	0

3.2 Fauna results

Fauna species observed throughout the duration of fauna surveys are listed below.

Table 3-7 – Fauna recorded within the study area

Common name	Scientific name	Method observed	
Birds		8 Aug	9 Aug
Australian Hobby	*Falco longipennis*	-	O
Australian Magpie	*Gymnorhina tibicen*	OW	OW
Australian Raven	*Corvus coronoides*	OW	OW
Australian Wood Duck	*Chenonetta jubata*	OW	-
Bar-Shouldered Dove	*Geopelia humeralis*	O	-
Black-shouldered Kite	*Elanus axillaris*	O	-
Brown Goshawk	*Accipiter fasciatus*	-	O
Common Starling *	*Sturnus vulgaris*	OW	OW
Crested Pigeon	*Ocyphaps lophotes*	OW	OW
Crimson Rosella	*Platycercus elegans*	OW	OW
Eastern Rosella	*Platycercus eximius*	OW	OW
Eurasian Coot	*Fulica atra*	OW	-
Galah	*Eolophus roseicapillus*	OW	OW
Grey-crowned Babbler	*Pomatostomus temporalis*	OW	-
Greater Bluebonnet	*Northiella haematogaste*	OW	OW
Hoary-headed Grebe	*Poliocephalus poliocephalus*	OW	O
Inland Thornbill	*Acanthiza apicalis*	OW	-
Long-billed Corella	*Cacatua tenuirostris*	-	OW
Magpie-lark	*Grallina cyanoleuca*	OW	OW
Nankeen Kestrel	*Falco cenchroides*	O	O
Noisy Friarbird	*Philemon corniculatus*	-	OW
Noisy Miner	*Manorina melanocephala*	OW	OW
Pacific Black Duck	*Anas superciliosa*	-	OW
Pied Butcherbird	*Cracticus nigrogularis*	OW	OW
Pied Currawong	*Strepera graculina*	OW	OW
Red-rumped Parrot	*Psephotus haematonotus*	OW	-
Rock Dove *	*Columba livia*	O	O
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*	-	OW
Straw-necked Ibis	*Threskiornis spinicollis*	-	O
Superb Fairy-wren	*Malurus cyaneus*	OW	OW
Tawny Frogmouth	*Podargus strigoides*	O	-
Weebill	*Smicrormis brevirostris*	OW	-
Welcome Swallow	*Hirundo neoxena*	O	O
White-browed Babbler	*Pomatostomus superciliosus*	OW	OW
White-eared Honeyeater	*Lichenostomus leucotis thomasi*	-	OW

Common name	Scientific name	Method observed	
Willie Wagtail	*Rhipidura leucophrys*	OW	OW
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	OW	OW
Yellow-throated Miner	*Manorina flavigula*	OW	OW
Zebra Finch	*Taeniopygia guttata castanotis*		OW
Mammals			
Brown Hare *	*Lepus capensis*	O	O
Bush Rat	*Rattus fuscipes*	T	-
Chocolate Wattled Bat	*Chalinolobus morio*	U	-
Alpaca	*Camelidae* sp	O	O
Domesticated Dog *	*Canis lupus familiaris*	OW	OW
Domesticated Sheep	*Ovis aries*	HK	H
Eastern Coastal Free-tailed Bat[TS]	*Micronomus norfolkensis*	U	-
Eastern Grey Kangaroo	*Macropus giganteus*	O	-
European Red Fox *	*Vulpes vulpes*	P	P
Unknown Forest Bat	*Vespadelus* sp	U	-
Amphibians			
Smooth Toadlet	*Uperoleia laevigata*	WAR	W

*Note: * indicates introduced species*

TS indicates threatened species

MS indicates Migratory species

All species listed are identified to a high level of certainty unless otherwise noted as:

PR indicates species identified to a 'probable' level of certainty – more likely than not

PO indicates species identified to a 'possible' level of certainty – low-moderate level of confidence

AR - Acoustic Recording	*H - Hair/feathers/skin*	*P - Scat*	*W - Heard call*
E - Nest/roost	*K- Dead*	*Q- Camera*	*X- In scat*
F- Tracks/scratchings	*O - Observed*	*T - Trapped/netted*	*Y - Bone/teeth/shell*
FB - Burrow	*OW- Obs & heard call*	*U- Anabat/ultrasound*	*Z- In raptor/owl pellet*
G - Crushed cones			

3.3 Habitat results

3.3.1 Fauna habitat observations

The fauna habitats present within the site are identified within the following table.

Table 3-8 – Observed fauna habitat

Topography				
Flat ✓	Gentle ✓	Moderate	Steep	Drop-offs
Vegetation structure				
Closed Forest	Open Forest	Woodland ✓	Heath	Grassland ✓
Disturbance history				
Fire	Under-scrubbing ✓	Cut and fill works		
Tree clearing ✓	Grazing ✓			
Soil landscape				
DEPTH:	Deep	Moderate ✓	Shallow ✓	Skeletal
TYPE:	Clay ✓	Loam ✓	Sand	Organic
VALUE:	Surface foraging ✓	Sub-surface foraging ✓	Denning/burrowing ✓	
WATER RETENTION:	Well Drained ✓	Damp / Moist	Water logged	Swamp / Soak ✓
Rock habitat				
CAVES:	Large	Small	Deep	Shallow
CREVICES:	Large	Small	Deep	Shallow

ESCARPMENTS:	Winter / late sunny aspects			Shaded winter / late aspects			
OUTCROPS:	High Surface Area Hides		Med. Surface Area Hides		Low Surface Area Hides		
SCATTERED / ISOLATED:	High Surface Area Hides		Med. Surface Area Hides		Low Surface Area Hides		
Feed resources							
FLOWERING TREES:	Eucalypts ✓		Corymbias		Melaleucas		
	Banksias		Acacias				
SEEDING TREES:	Allocasuarinas		Conifers ✓				
WINTER FLOWERING EUCALYPTS:	*C. maculata*	*E. crebra*	*E. globoidea*	*E. sideroxylon*			
	E. squamosa	*E. grandis*	*E. multicaulis*	*E. scias*			
	E. robusta	*E. tereticornis*	*E. agglomerata*	*E. siderophloia*			
FLOWERING PERIODS:	Autumn ✓	Winter ✓	Spring	Summer ✓			
OTHER:	Mistletoe ✓	Figs / Fruit	Sap / Manna ✓	Termites			
Foliage protection							
UPPER STRATA:	Dense		Moderate		Sparse ✓		
MID STRATA:	Dense		Moderate		Sparse ✓		
PLANT / SHRUB LAYER:	Dense		Moderate		Sparse ✓		
GROUNDCOVERS:	Dense		Moderate		Sparse ✓		
Hollows / logs							
TREE HOLLOWS:	Large		Medium ✓		Small ✓		
TREE HOLLOW TYPES	Spouts / branch ✓	Trunk ✓	Broken Trunk ✓	Basal Cavities ✓	Stags ✓		
GROUND HOLLOWS:	Large		Medium		Small		
Vegetation debris							
FALLEN TREES:	Large		Medium		Small ✓		
FALLEN BRANCHES:	Large		Medium		Small ✓		
LITTER:	Deep		Moderate		Shallow ✓		
HUMUS:	Deep		Moderate		Shallow ✓		
Drainage catchment							
WATER BODIES	Wetland(s)	Soak(s)	Dam(s) ✓	Drainage line(s) ✓	Creek(s)	River(s)	
RATE OF FLOW:	Still ✓		Slow		Rapid		
CONSISTENCY:	Permanent ✓		Perennial		Ephemeral ✓		
RUNOFF SOURCE:	Urban / Industrial ✓	Parkland	Grazing ✓	Natural			
RIPARIAN HABITAT:	High quality	Moderate quality	Low quality ✓	Poor quality			
Artificial habitat							
STRUCTURES:	Sheds ✓		Infrastructure		Equipment ✓		
SUB-SURFACE	Pipe / culvert(s)		Tunnel(s)		Shaft(s)		
FOREIGN MATERIALS:	Sheet		Pile / refuse ✓				

3.3.2 Habitat tree data

Hollow-bearing trees and significant habitat trees observed within the study area are tabled below. Significant habitat trees are defined as trees containing large hollows suitable for use by owls and/or containing several good quality hollows typically consisting of more than one medium (10-30 cm) sized hollow. A tree may also be considered significant where evidence of use by select fauna is found such as Yellow-bellied Glider sap feed tree, raptor nest, or owl roost.

Table 3-9 – Habitat tree data

Tree No	Scientific Name	Common Name	DBH (cm)	Height (m)	Spread (m)	Vigour (%)	Hollows & Other Habitat Features Recorded
T001	E. microcarpa	Grey Box	83	18	6	85	1 x 20 cm trunk @ 3m, 6 x stick nests, native beehive in basal cavity
T002	E. microcarpa	Grey Box	90	15	6	75	1 x 20cm broken branch @ 3m
T003	E. microcarpa	Grey Box	115	22	13	95	>8 stick nests, Magpie Lark mud nests
T004	-	Stag	-	-	-	-	4x 15cm broken branch, 5 x 0-5 cm broken branch, Red-rumped Parrot nest

4. BIODIVERSITY ASSESSMENT

4.1 Flora

No threatened flora species were observed during the survey periods (9 and 10 August 2023). Native flora species observed are listed in Table 3-1.

4.1.1 State legislative flora matters

(a) Endangered flora populations (NSW)

There are no known endangered populations within the Forbes local government area.

(b) Threatened ecological communities (NSW)

One (1) threatened ecological community (TEC) – Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia was observed within the development footprint.

(c) Species credit species

Based upon the BAM calculator and field surveys to date, predicted threatened species were considered as candidate species for species credit calculation as per Table 4-1 below.

Table 4-1 – Species credit species (flora)

Scientific name	Associated PCTs	Geographic limitations	Habitat constraint (Bionet - Aug 2023)	Habitat degraded or micro habitats absent	Confirmed candidate species	Survey Adequacy			Presence / absence Notes
						Required survey effort and period	Actual survey effort and period	Survey Compliant (yes / no)	
Austrostipa wakoolica	76	No. Grows on floodplains of the Murray River tributaries. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No	No	Yes	Oct – December (mainly in response to rain).	9-10 August	No	Present (assumed) based on associated species (*Eucalyptus microcarpa* and *Callitris glaucophylla)*. PCT76 listed as a likely vegetation type in the TBDC.
Diuris tricolor	76	No. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No	No	Yes	Sept-Oct	9-10 August	No	Present (assumed) based on associated species (*Callitris glaucophylla)*. PCT76 listed as a likely vegetation type in the TBDC.
Eleocharis obicis	76	No. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No. Periodically waterlogged areas including farm dams.	No	Yes	Oct-Nov	9-10 August	No. Survey after soaking rains.	Present (assumed) based on presence on Lachlan River floodplain. PCT76 listed as a likely vegetation type in the TBDC.
Lepidium aschersonii	76	No. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No	No	Yes	Nov-Apr	9-10 August	No. Survey in warmer weather. Use fruit for id.	Present (assumed). Has been found in disturbed locations and growing on ridges with *Eucalyptus microcarpa.* PCT76 listed as a likely vegetation type in the TBDC.
Swainsona murrayana	76	No. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No	No	No	September	9-10 August	No	Present (assumed). Grows in grazed paddocks with disturbance. Dies back after flowering. PCT76 listed as a likely vegetation type in the TBDC.
Swainsona recta	76	No. Known to occur on Lower Slopes in the NSW Southwestern slopes subregion	No	No	No	Sept – Nov	9-10 August	No	Present (assumed). Dies back after flowering. PCT76 listed as a likely vegetation type in the TBDC.
Swainsona sericea	76	No. Known to occur on Lower	No	No	No	Sept – Nov	9-10 August	No	Present (assumed). Sometimes found in association with cypress-

Scientific name	Associated PCTs	Geographic limitations	Habitat constraint (Bionet - Aug 2023)	Habitat degraded or micro habitats absent	Confirmed candidate species	Survey Adequacy			Presence / absence Notes
						Required survey effort and period	Actual survey effort and period	Survey Compliant (yes / no)	
		Slopes in the NSW Southwestern slopes subregion							pines *Callitris* sp. PCT76 listed as a likely vegetation type in the TBDC.

Exclusions based on habitat features and distributional constraints:

Exclusion of species from consideration as candidate species follows Section 5.1 of the BAM. Candidate species can be excluded from further consideration if:

- the distribution of the species does not include the IBRA subregion within which the subject land is located.
- the subject land is outside any geographic limitations of the species distribution based on information from the threatened biodiversity profile search webpage. If no geographic limitations are listed for the species, then this step is not applicable.
- none of the habitat constraints for the species as provided in the TBDC are present in a vegetation zone or subject land, and
- the species is a vagrant in the IBRA subregion.

After carrying out a field assessment, a candidate species can also be excluded if:

- the microhabitats required by a species are absent from the subject land (or specific vegetation zone).
- the habitat constraints or microhabitats are degraded to the point that the species is unlikely to use the subject land (or specific vegetation zones).

If a candidate species cannot be excluded based on the above criteria, targeted survey must be undertaken, the species assumed present, or an expert report obtained that states that the species is unlikely to be present on the subject land or specific vegetation zones.

Exclusions based on geographic or distributional constraints.

No species were eliminated based on geographic or distributional constraints.

Exclusion due to taxonomic reasons

No species were eliminated based on taxonomic reasons.

(d) Local data

Local data has not been used in this case.

(e) Expert reports

Expert reports have not been utilised for flora on this project.

4.1.2 Matters of National Environmental Significance - flora

(a) Threatened flora species (national)

EPBC Act – A search of the EPBC Search Tool provided a list of nationally threatened flora species considered with potential habitat over a 20 km radius of the development footprint. One threatened species, *Austrostipa wakoolica* was considered 'likely' to occur recorded within a 20 km radius of the site. Five other species were considered 'may' occur, including *Lepidium aschersonii, L. monoplocoides, Swainsona murrayana, Tylophora linearis* and *Thesium australe*. This acknowledges potential habitat for the species within a 20 km radius but not necessarily within the development footprint.

(a) Threatened ecological communities (national)

PCT76 aligns with, and is potentially equivalent to, Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia, which is listed under

the *EPBC Act* as endangered. To be classified as part of this TEC, the vegetation in question must meet key diagnostic and conditional criteria.

Key Diagnostic characteristics

Key Diagnostic characteristics of the *EPBC Act* Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia, are listed and addressed, as follows, according to the Advice (2010): -

1. The ecological community occurs on low slopes and plains from central NSW, through northern and central Victoria into South Australia.
    - ***Yes, the study area is contained across low slopes, in central NSW.***
2. The vegetation structure of the ecological community is typically a woodland to open forest.
    - ***Yes, as shown in Figure 2-2, the northwest portion of the site is an open woodland. However, the grassland/open pasture to the west does not meet the diagnostic characteristics.***
3. The tree canopy is dominated (>/- 50% canopy crown cover) by *Eucalyptus microcarpa.* Other tree species co-dominant but never dominant on their own.
    a. *Eucalyptus microcarpa was the dominant eucalypt within the northwest portion of the site.*
4. Mid-storey comprises shrubs of variable composition and cover, from absent to moderately dense, with a canopy cover of less than 30% - 40%.
    a. The mid-storey is dominated by exotic shrubs.
5. Groundlayer – highly variable in development and composition, from absent to mostly grassy to forb-rich, including *Austrodanthonia, Austrostipa, Elymus, Enteropogon, Dianella* and *Lomandra* species. And at least one of the following chenopod species: - *Atriplex, Chenopodium, Einadia, Enchylaena, Maireana, Salsola* and *Sclerolaena.*
    a. During the survey period, *Einadia* sp., *Enteropogon* sp., *Lomandra* sp. and *Sclerolaena* sp. were observed. However, native grasses were not flowering during this time.
6. Derived grasslands are a special state of the ecological community, whereby the canopy and mid-layers have been mostly removed to <10% crown cover but the native ground layer remains largely intact, with 50% or more of the total vegetation cover being native.
    a. *Yes, the grassland to the northwest (Figure 2-2) is likely a derived native grassland as the groundlayer aligns with this community. Native grasses were not flowering during this period, although spent flower heads were observed. It is evident that the canopy has been removed as isolated Grey Box trees were in the vicinity.*

Condition Thresholds

Condition Thresholds of the EPBC Act Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia apply only once the key diagnostic characteristics above, have determined this TEC applies. The condition thresholds are listed, and addressed, as follows according to the Advice (2010):

Table 4-2 – Condition Thresholds of the EPBC Act for Grey Box Grassy Woodlands TEC

Category and Rationale	Thresholds
Criteria that are broadly applicable.	1a. The minimum patch size is 0.5 ha. **AND** 1b. The canopy layer contains *E. microcarpa* as the dominant or co-dominant tree species. **AND**

Category and Rationale	Thresholds
	1c. The vegetative cover of non-grass weed species in the groundlayer is < 30%.
Additional criteria that apply to smaller woodland patches (0.5 to <2 ha in area) with tree crown cover > 10%.	2a. At least 50% of the vegetative cover in the ground layer comprises perennial native species at any time of the year. **AND** 2b. Eight (8) or more perennial native species are present in the mid and ground layer.
Additional criteria that apply to larger woodland patches with a well-developed canopy (2 ha or more in area).	3a. At least 8 trees/ha are hollow-bearing or have a diameter at breast height (dbh) of 60 cm or more. **AND** 3b. At least 10% of the vegetative ground layer comprises perennial native grasses. **OR** 4a. At least 20 trees/ha have a dbh of 12 cm or more. **AND** 4b. At least 50% of the vegetative cover in the groundlayer comprises perennial native species.
Additional criteria that apply to patches where the canopy is less developed or absent (derived grassland) (>/- 0.5 ha in area).	5a. Woodland density does not meet criteria 3a or 4a or is a derived grassland with clear evidence that the site formerly was a woodland with a tree canopy dominated or co-dominated by *E. microcarpa.* **AND** 5b. At least 50% of the vegetative cover in the ground layer is perennial native species. **AND** 5c. 12 or more native species are present in the ground layer. This number is unknown as the survey was outside the ideal survey period.
Adapted from Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of southeastern Australia – Listing Advice (2010).	

Across the northwestern portion of the site (PCT76, Figure 2-2), the perennial native understorey typically was low for a winter survey period. However, the number could be much higher during the appropriate survey period, i.e., late spring/summer. Based on this assessment and the data collected, vegetation within PCT76 is commensurate with the *EPBC*-listed TEC but a survey during spring/summer is required to adequately survey native vegetation. Vegetation around Plot 1 in the western parts of the site is borderline and would likely achieve greater than 30% perennial native groundcover during an optimal survey period. Vegetation further east contains canopy species for this TEC and indicates that PCT was more extensive prior to clearing for agricultural activity. Given this, it is reasonable to treat all PCT76, as the TEC.

As these conclusions are not absolute, the Listing Advice (2010) is noted. This highlights the following assessment conditions for a true indication of the likelihood of assessment being appropriate. Assessment should:

- Occur more than two months after a disturbance, e.g., fire or slashing.
- Occur when a minimum of 10% is covered with vegetation (either dead or alive).
- Coincide with species flowering or fruiting, for higher likelihood of correct identification, and
- Consider that some species are visually more dominant at different times of the year. For example, June/ July surveys may appear exclusively exotic annual dominant, whereas the same site in late spring – early summer may show the native grasses such as *Austrostipa* sp. as dominant.

4.2 Fauna

All fauna species recorded during survey(s), key fauna habitat observations and habitat tree data are provided in Section 3.

4.2.1 Key fauna habitat

Most notable habitat features for threatened fauna species considered with most potential to occur include:

- Medium hollow (10-30cm) particularly those with use by Yellow-bellied Glider.
- Small hollows (<10cm).
- Ephemeral drainage lines.
- Winter flowering trees.
- Seed producing *Callitris* trees.
- Open water dams, and
- Fringing wetland vegetation.

A complete assessment of the location of habitat trees and the size of hollows within was undertaken as part of surveys.

Table 3-9 provides hollow-bearing tree data and other habitat features recorded. Figure 2-2 provides locations of habitat trees.

Other notable hollow-dependent fauna species recorded during surveys include, Crimson Rosella, Eastern Rosella, Red-rumped Parrot, Greater Bluebonnet, Long-billed Corella, Galah, Chocolate Wattled Bat, Eastern Freetail-bat, and an unknown Forest Bat,

No large hollows suitable for threatened owls were recorded present within the habitat tree survey. No hollow-dependent threatened fauna species were recorded present during survey. However, additional survey is required to determine if the threatened hollow dependant species Squirrel Glider is present. Hollows recorded present may be suitable for roosting and denning by this species.

A strict removal of hollows process is recommended in Section 5.3 to prevent impacts on hollow-dependent fauna should any documented hollows be removed. This includes the initial identification of all hollows, supervision of their removal to effectively recover fauna and the relocation of hollows (or replacement with nest boxes) within the conservation areas of the site.

4.2.2 State legislative fauna matters

(a) *FM Act*

No habitats suitable for threatened aquatic species were observed within the development footprint and as such the provisions of this act do not require any further consideration.

(b) Endangered fauna populations (NSW)

There are no endangered fauna populations within the Forbes Shire Council LGA.

(c) State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Koala Habitat Protection

Chapter 4 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Koala Habitat Protection) applies to land within LGAs listed under Schedule 2 of the Policy. As the study area falls under the Forbes shire LGA, it is considered that Koala SEPP 2021 applies to this development proposal.

Land to which this policy applies in accordance with Section 4.4 of the SEPP 2021 is as follows: -

(1) This Chapter applies to each local government area listed in Schedule 2.
(2) The whole of each local government area is—
- *(a) in the koala management area specified in Schedule 2 opposite the local government area, or*
- *(b) if more than 1 koala management area is specified, in each of those koala management areas.*

(3) Despite subsection (1), this Chapter does not apply to—
- *(a) land dedicated or reserved under the National Parks and Wildlife Act 1974, or acquired under Part 11 of that Act, or*
- *(b) land dedicated under the Forestry Act 2012 as a State forest or a flora reserve, or*
- *(c) land on which biodiversity certification has been conferred, and is in force, under Part 8 of the Biodiversity Conservation Act 2016, or*
- *(d) land in the following land use zones, or an equivalent land use zone, unless the zone is in a local government area marked with an * in Schedule 2—*
  - *(i) Zone RU1 Primary Production,*
  - *(ii) Zone RU2 Rural Landscape,*

(iii) Zone RU3 Forestry.

The land is listed in Schedule 2 Forbes LGA and is zoned Far west; therefore SEPP 2021 applies. Please Note that SEPP 2020 applies in lands zoned as RU1, RU2 and RU3 in accordance with SEPP 2020.

There is currently no approved Koala Plan of Management (KPoM) for the LGA that this site is located in. Therefore, before council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on Koalas or Koala habitat.

If the council is satisfied that the development is likely to have low or no impact on koalas or Koala habitat, the council may grant consent to the development application. If the council is satisfied that the development is likely to have a higher level of impact on Koalas or Koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the development.

As of July 2023, there are no Koala records within a 10 km radius of the study area. The nearest record dated in 1980 approximately 11 kms east of the site. Koala populations are surrounding the study area are limited and sporadic, with the largest population existing near the township of Newbridge approximately 152 km to the east.

Under Schedule 2 of SEPP 2021, Forbes falls within the Far West Koala Management Area. Two (2) tree species were recorded in the study area which are Koala use tree species within this Management Area under Schedule 3 of Koala SEPP 2021. These species are White Cypress Pine *(Callitris glaucophylla)*, Western Grey Box *(Eucalyptus microcarpa)*, No Spot Assessment Technique (SAT) or spotlighting transect survey was undertaken.

It is considered that this study area does not comprise Core Koala Habitat.

(d) Ecosystem credit species

Based upon the BAM calculator and field surveys to date, the following threatened fauna species were considered as predicted species for ecosystem credit calculation:

Table 4-3 – Ecosystem credit species (fauna)

Common name	*BC Act*	Potential to occur	Foraging habitat absent	Excluded (justified below)	Confirmed predicted species	Associated PCT
Black Falcon	V	Yes (low)			✓	76
Brown Treecreeper	V	Yes (moderate)		✓		76
Diamond Firetail	V	Yes (low)			✓	76
Dusky Woodswallow	V	Yes (low)			✓	76
Flame Robin	V	Yes (low)			✓	76
Grey Falcon	V	Yes (low)			✓	
Grey-crowned Babbler	V	Recorded			✓	76
Grey-headed Flying-fox (foraging)	V	Yes (low)			✓	76
Hooded Robin	V	Yes (low)			✓	76
Major Mitchell's Cockatoo	V	Yes (low)			✓	76
Masked Owl (foraging)	V	Yes (low)			✓	76
Scarlet Robin	V	Yes (low)			✓	76
South-eastern Glossy Black-Cockatoo (foraging)	V	Yes (low)		✓		76

Common name	*BC Act*	Potential to occur	Foraging habitat absent	Excluded (justified below)	Confirmed predicted species	Associated PCT
Speckled Warbler	V	Yes (low)				76
Superb Parrot	V	Yes (low)			✓	76
Swift Parrot (foraging)	E	Yes (low)			✓	76
White-bellied Sea Eagle (foraging)	V	Yes (low)			✓	76
White-throated Needletail	V	Yes (low)			✓	76

Excluded species justification (ecosystem credit species):

Brown Treecreeper (eastern subspecies)

This species has been removed from ecosystem credit obligations due to geographic limitations as the site is located west of the Newell Highway. However, it should be noted that there are 64 records of this species within a 10 km radius of the study site.

South-eastern Glossy Black-cockatoo

The single habitat constraint for this species when assessed for ecosystem credits (TBDC) is the presence of foraging habitat provided by *Allocasuarina* sp. or *Casuarina* sp. trees. These species were not observed within the study area during the survey period.

(e) Species credit species

Based upon the BAM calculator and field surveys to date, predicted threatened fauna species listed in Table 4-4 were considered as candidate species for species credit calculation.

Species polygons for all assumed candidate species, the extent of PCT 76, are mapped and shown on Figure 5-3.

Table 4-4 – Species credit species (fauna)

Common name	Associated PCTs	IBRA subregion / geographic restriction	Habitat constraint (Bionet - June 2022)	Habitat degraded or micro habitats absent	Confirmed candidate Species (yes / no)	Survey adequacy			Presence / absence
						Required survey effort and period	Actual survey effort and period	Survey compliant (yes / no)	
Sloane's Froglet	76	-	☑ Containing relatively shallow sections with submergent and emergent vegetation, or within 500 m of wet area ☑ Within 500 m of swamp ☑ Within 500 m of waterbody		Yes	4 x nights aural/visual survey & call identification (Jul-Aug)	1 x opportunistic habitat search during Aug	No	Present (assumed)
Grey-headed Flying-fox (breeding)	76	-	☐ Breeding camps ☐ Other		No	-	-	-	Absent (no breeding habitat)
Southeastern Glossy Black-Cockatoo (Breeding)	76	-	☐ Living or dead tree with hollows greater than 15cm diameter and greater than 8m above ground	No	No	-	-	-	Absent (no breeding habitat)
Major Mitchell's Cockatoo (breeding)	76	-	☑ Living or dead trees with hollows greater than 10 cm diameter	-	Yes	look for signs of breeding on site as follows. (a) begging birds of any age or sex; or (b) lone individuals of the species identified during the breeding season (Sep- Dec); or (c) an occupied nest.	1 x Survey included hollow searches, bird census and bird call identification (Aug)	yes	Present (assumed)
Squirrel Glider	76	-	No habitat constraint		Yes	5 x trapping nights, spotlighting & call-playback (All months)	1 x spotlighting survey Aug	No	Present (assumed)

Common name	Associated PCTs	IBRA subregion / geographic restriction	Habitat constraint (Bionet - June 2022)	Habitat degraded or micro habitats absent	Confirmed candidate Species (yes / no)	Survey adequacy			Presence / absence
						Required survey effort and period	Actual survey effort and period	Survey compliant (yes / no)	
Squirrel Glider in the Wagga Wagga Local Government Area	76		The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA.	-	No	-	-	-	Absent (outside distribution)
Superb Parrot (breeding)	76	–	☑ Hollow bearing trees: Living or dead *E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa, E. polyanthemos, E. mannifera, E. intertexta* with hollows greater than 5cm diameter; greater than 4m above ground or trees with a DBH of greater than 30cm.	-	Yes	Area searches or transect surveys of suitable habitat over 12 hrs (Sep-Nov)	1 x Survey included hollow searches, bird census and bird call identification (Aug)	-	Present (assumed)
Swift Parrot (breeding)	76	-	☐ as per mapped areas ☐ Other		No	-	-	-	Absent (area not mapped)
White-bellied Sea-Eagle (breeding)	76	-	☑ Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines ☐ Other		Yes	Raptor nest searches (Aug – Oct)	Raptor nest searches during Aug	Yes	Absent (survey)
Koala	76	-	☑ Presence of koala use trees - refer to Survey Comments field in TBDC		Yes	SAT assessment and spotlighting transects (All months)	1 x spotlighting survey during Aug	No	Present (assumed)

Exclusions based on habitat features and distributional constraints:

Exclusion of species from consideration as candidate species follows Section 5.1 of the BAM. Candidate species can be excluded from further consideration if:

- The distribution of the species does not include the IBRA subregion within which the subject land is located.
- The subject land is outside any geographic limitations of the species distribution based on information from the threatened biodiversity profile search webpage. If no geographic limitations are listed for the species, then this step is not applicable.
- None of the habitat constraints for the species as provided in the TBDC are present in a vegetation zone or subject land, and
- The species is a vagrant in the IBRA subregion.

After carrying out a field assessment, a candidate species can also be excluded if:

- The microhabitats required by a species are absent from the subject land (or specific vegetation zone).
- The habitat constraints or microhabitats are degraded to the point that the species is unlikely to use the subject land (or specific vegetation zones).

If a candidate species cannot be excluded based on the above criteria, targeted survey must be undertaken, the species assumed present, or an expert report obtained that states that the species is unlikely to be present on the subject land or specific vegetation zones.

Excluded species:

- *Squirrel Glider in the Wagga Wagga Local Government Area - The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA.* The study area is not located within the LGAs associated with this population.

Excluded species based on absence of habitat:

- *Southeastern Glossy Black-cockatoo* – The TBDC (*DPE* 2023) identifies the habitat constraints for this species as the presence of *Allocasuarina* sp. or *Casuarina* sp. trees. These species were not observed within the study area during the survey period.

Excluded species based on the absence of breeding habitat:

- *Grey-headed Flying fox* - The TBDC (*DPE* 2023) identifies the habitat constraints for this species as the presence of breeding camps. The study area does not contain any known breeding camps.

Inclusions based on inadequacy of survey.

- *Squirrel Glider* - Whilst considered to have a ‘low’ potential to occur, no trapping surveys have been undertaken to formally rule out presence and there are no identified constraints by the TBDC for this species to rule out presence. This species therefore requires targeted trapping efforts or arboreal cameras to effectively rule out presence.

- *Superb Parrot* – This species has a ‘moderate' potential to occur. As the site contains hollow bearing trees: living or dead *E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa, E. polyanthemos, E. mannifera, or E. intertexta* with hollows greater than 5cm diameter; greater than 4 m above ground or trees with a DBH of greater than 30cm, area searches or transect surveys of suitable habitat over 12 hrs (Sep-Nov) are required for this species to rule out presence. This species therefore requires targeted survey to effectively rule out presence.

- *Koala* - Whilst considered to have a ‘low’ potential to occur, the study site contains Koala use tree species which are identified as habitat constraints by the TBDC. No target surveys have been undertaken in accordance with Koala (Phascolarctos cinereus) Biodiversity Assessment Method Survey Guide (2022) to formally rule out presence. This species therefore requires targeted survey to effectively rule out presence.

- *Major Mitchell's Cockatoo* - The study site contains living or dead trees with hollows greater than 10 cm diameter which are identified as habitat constraints by the TBDC. No targeted surveys have been undertaken within the correct survey period of Sep-Dec including looking for signs of breeding on site as follows:
    - begging birds of any age or sex,
    - lone individuals of the species identified during the breeding season (Sep-Dec), or
    - an occupied nest.

  Survey was undertaken in August. This species therefore requires targeted survey within the correct survey months to effectively rule out presence.

Sloane’s Froglet - The study site contains the following features which are identified as habitat constraints by the TBDC:

- relatively shallow sections with submergent and emergent vegetation, or within 500 m of wet area.
- Within 500 m of swamp, and
- Within 500 m of waterbody.

No target surveys have been undertaken in accordance with NSW Survey Guide including for threatened frogs *(DPE 2020)* including 4 x nights aural/visual survey & call identification (Jul-Aug). Survey undertaken involved 1 x opportunistic habitat search during August.

Excluded species based on the absence of important mapped habitat:

- *Swift Parrot*

  The site is not mapped as containing important habitat for this species on the BAM - Important Areas (DPE) mapping.

(f) Local data

Local data has not been used in this case.

(g) Expert reports

Expert reports have not been utilised for fauna on this project.

4.2.3 Matters of national environmental significance - fauna

(a) Threatened fauna species (National)

EPBC Act – A search of the *BioNet Atlas of NSW Wildlife* (DPE 2023) and the EPBC Search Tool provided a list of nationally threatened fauna species previously recorded, or with considered potential habitat, within a 10km radius of the development footprint. These species have been listed and considered for habitat potential based on proximity and year of records in Table 4-5.

Based on this, it is considered that the development footprint provides varying levels of potential habitat for the following nationally listed threatened fauna species:

Table 4-5 – Nationally listed threatened fauna species with suitable habitat present

Common name	EPBC Act	Potential to occur
Superb Parrot	V	moderate
White-bellied Sea Eagle (migratory)	V	low
Australasian Bittern	E	low
Australian Painted Snipe	E	low
Spotted-tailed Quoll	E	low

No nationally listed threatened fauna species was recorded within the study site during surveys undertaken.

The Significant Impact Criteria for a vulnerable species listed under the *EPBC Act* (Appendix 2) was reviewed to assess the impacts on this species as a result of the planning proposal. As the development footprint does not contain any likely roosting or subsequent breeding habitat and foraging habitat for any *EPBC* listed species, it is concluded that there will not be any significant impact on any nationally listed threatened fauna species with potential to occur, as a result of the proposed rezoning.

(b) Protected migratory species (National)

The EPBC Act Protected Matters Report provides additionally listed terrestrial, wetland and marine migratory species of national significance likely to occur, or with habitat for these species likely to occur, within a 10 km radius of the development footprint. The habitat potential of migratory species that have not been considered in the threatened species habitat assessment are considered in Table 4-5.

No nationally protected migratory bird species were recorded present during the preliminary survey or are considered likely to constrain development within the study area.

As the development footprint does not contain any likely roosting, breeding, or other habitat of importance, and given that foraging habitat will remain well represented in the locality, there will not be any significant impact on any other nationally protected migratory bird species with potential to occur, as a result of the proposed rezoning.

4.3 Watercourses, GDEs & Wetlands

4.3.1 Endangered wetland communities

Several wetland communities have been listed as TECs under the *BC Act*. We note that 'wetlands' are included in the definition of 'waterfront lands' in accordance with the *Water Management Act 2000* (*WM Act*) due to their inclusion in the definition of a 'lake' under the same Act. TECs that are an endangered protected wetland are as follows:

- Artesian springs ecological community.
- Castlereagh Swamp Woodland Community.
- Coastal Saltmarsh in the NSW North Coast, Sydney Basin, and Southeast Corner bioregions.
- Coastal Upland Swamp in the Sydney Basin bioregion.
- Coolibah–Black Box woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands bioregions.
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and Southeast Corner bioregions.
- Kurri sand swamp woodland in the Sydney Basin Bioregion.
- Lagunaria swamp forest on Lord Howe Island.
- Maroota Sands swamp forest.
- Newnes Plateau Shrub Swamp in the Sydney Basin Bioregion.
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin, and Southeast Corner bioregions.
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin, and Southeast Corner bioregions.
- The shorebird community occurring on the relict tidal delta sands at Taren Point.
- Upland wetlands of the drainage divide of the New England Tableland Bioregion, and
- Wingecarribee Swamp.

No endangered wetland communities were present within the development footprint and therefore a referral to NRAR is not required for impacts on waterfront land.

4.3.2 Groundwater dependent ecosystems (GDEs)

Groundwater dependent ecosystems (GDEs) are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater. Some examples of ecosystems which depend on groundwater are:

- wetlands
- red gum forests, vegetation on coastal sand dunes and other terrestrial vegetation
- ecosystems in streams fed by groundwater
- limestone cave systems
- springs; and
- hanging valleys and swamps.

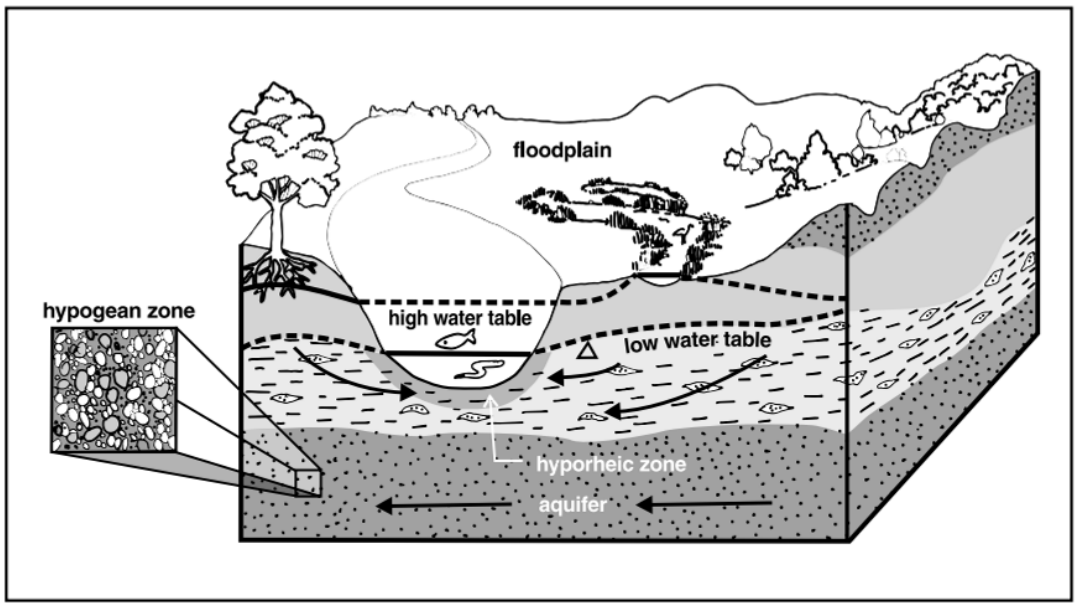

Figure 4-1 – Alluvial groundwater system discharging into a river

GDEs are therefore ecosystems which have their species composition and their natural ecological processes determined by groundwater (NSW State Groundwater Dependent Ecosystems Policy April 2002).

GDEs were not observed within the development footprint and therefore the policy does not require any further consideration. A referral to NRAR is not required for impacts on waterfront land.

4.3.3 Watercourses

There are currently three dams on the site associated with agricultural use of the land. The most southern dam is connected to an unnamed tributary, that feeds into Lake Forbes (Figure 4-2). It is proposed to dedicate a green corridor of land to active public recreation which will result in a linkage between the three dams, resulting in a 'chain of ponds.' This area will function for both public recreation and stormwater management, in line with Council's Housing Strategy (2023).

Figure 4-2 – Mapped hydroline spatial data (approximate study area in red)
(Source: geo.seed.nsw.gov.au)

4.3.4 State Environmental Planning Policy (Resilience and Hazards) 2021 – Division 1 Coastal wetlands and littoral rainforests area

There are no Coastal wetlands or Littoral rainforests within a 10 km radius of the subject land. Therefore, there will be no impact on those areas.

5. IMPACT ASSESSMENT

5.1 BOS thresholds

The BOS includes three (3) elements to the threshold test – an area trigger, a Biodiversity Values Land Map trigger, and the Test of Significance. If impacts exceed at least one of these triggers, the Biodiversity Offset Scheme (BOS) applies to the proposed clearing.

5.1.1 Biodiversity Values Land

The study area is not located on lands mapped as Biodiversity Values Land (Figure 5-1), therefore, an offset is not required as an outcome of this threshold test.

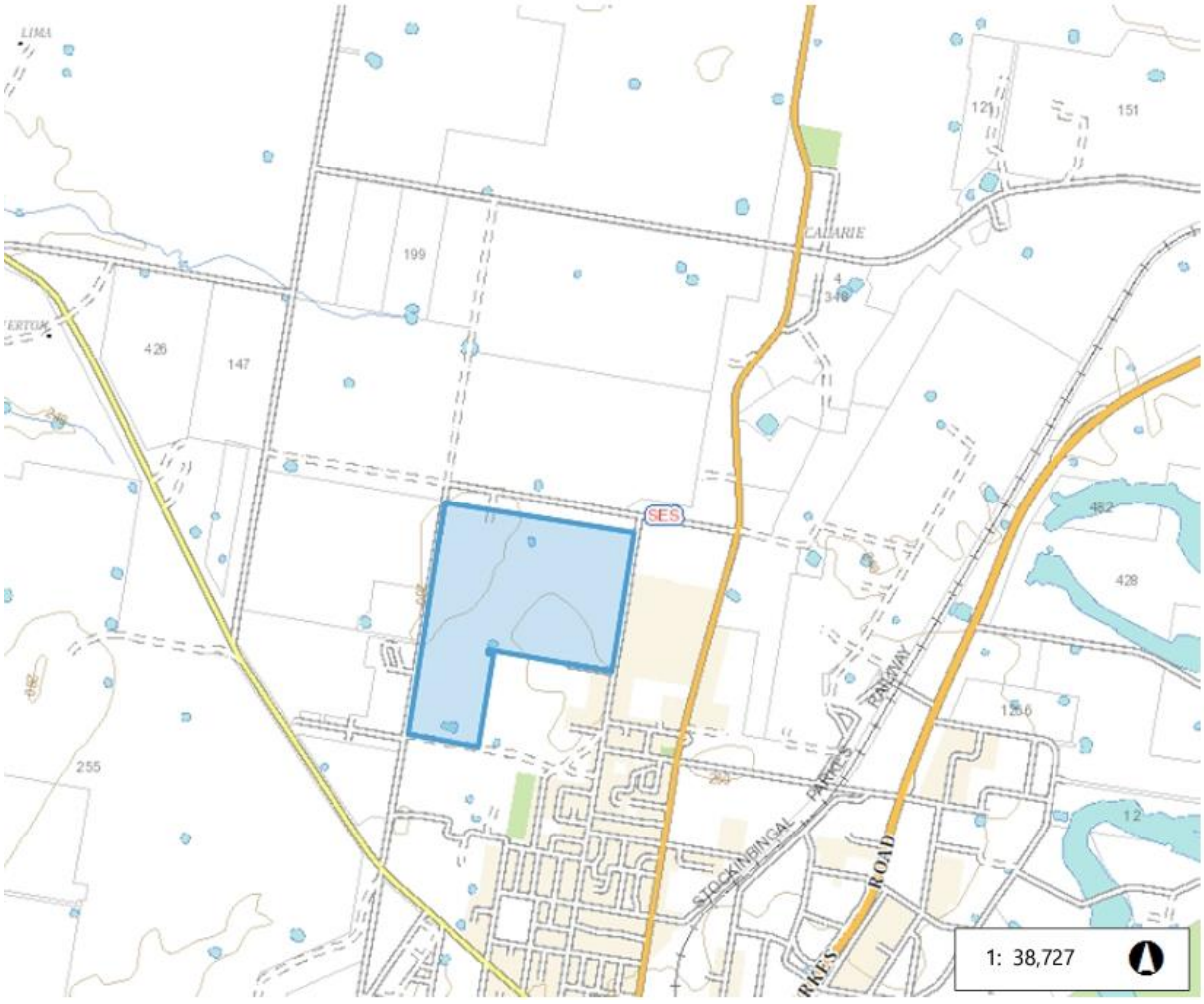

Figure 5-1 – Biodiversity Land Map (purple) relative to the study area (yellow)
(Source: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BosetMap)

5.1.2 Area clearing threshold

The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

The area threshold applies to all proposed native vegetation clearing associated with a development proposal – for example in the case of a subdivision; all future clearing across the lots subject to the subdivision, must be considered. Thresholds outlined under the BOS are outlined in the table below.

Table 5-1 – BOS entry threshold report. Table 5-1 identifies that the site has a minimum lot size of 1 ha, and the clearing area threshold for which the BOS applies is 0.5 ha. Based on the preliminary concept plans (Figure 1-3), the proposed development will remove greater than 0.5 ha of of native vegetation, therefore, offsetting under BOS applies.

Table 5-1 – BOS entry threshold report

Biodiversity Values Map and Threshold Report		
Date of Report Generation		07/07/2023 11:56 AM
Biodiversity Values (BV) Map Threshold - Results Summary		
1	**Does the development Footprint intersect with BV mapping?**	no
2	**Was ALL of the BV Mapping within the development footprinted added in the last 90 days?** (dark purple mapping only, no light purple mapping present)	no
3	**Date of expiry of dark purple 90 day mapping***	N/A
4	**Is the Biodiversity Values Map threshold exceeded?**	no
Area Clearing Threshold - Results Summary		
5	**Size of the development or clearing footprint**	921,299.9 sqm
6	**Native Vegetation Area Clearing Estimate (NVACE)**	55,384.6 sqm
7	**Method for determining Minimum Lot Size**	LEP
8	**Minimum Lot Size** (10,000sqm = 1ha)	10,000 sqm
9	**Area Clearing Threshold** (10,000sqm = 1ha)	5,000 sqm
10	**Is the Area Clearing Threshold exceeded?**	yes
Is the proposed development assessed above the Biodiversity Offsets Schema (BOS) threshold? Exceeding the BOS threshold will require completion of a Biodiversity Development Assessment Report (BDAR). More details provided on page 2.		**yes**

5.1.3 Test of Significance

As the BOS clearing threshold is triggered, and the BOS applies, a Test of significance is not required.

5.2 Avoidance and minimisation actions

Avoidance and minimisation actions

The following strategies and actions have been undertaken to either avoid or minimise impacts on biodiversity values:

Direct and indirect impact avoidance & minimisation

Based on the observed ecological constraints and habitat present an environmental protection area has been identified. This environmental protection area avoids development within the remnant native vegetation. This specifically avoids six remnant Eucalyptus macrocarpa trees which include hollow-bearing trees and habitat for the Grey-crowned Babbler (Pomatostomus temporalis temporalis). There will be an exception where the water tower is located, as this water tower needs to be located at a high point for gravity distribution.

The primary avoidance actions may be described as the following:

- The subdivision has been designed to utilise the lower biodiversity value areas of the site based on the extent of existing cleared landscape.
- PCT 76 is a threatened ecological community. A large avoidance action has been undertaken to retain the areas of higher vegetation integrity, i.e., areas containing remnant trees and shrubs (although there is still an impact on the derived native grassland with low vegetation integrity scores).
- Avoiding six (6) of the habitat (*Eucalyptus microcarpa*) trees.
- Avoidance of prescribed impacts.
- Utilisation of cleared paddocks that have been pasture improved and no longer considered derived native grassland area.
- Avoidance of the Grey-crowned Babbler habitat area.

It should be reiterated that the vegetation integrity score was low to the remnant vegetation area, and below the threshold for offsetting in the derived native grassland area. Also, remnants of native vegetation that are fully structured are very fragmented locally and isolated, therefore subject to natural attrition due to agricultural land management, and edge effects.

The proposal seeks to consolidate the small remnant to help with its longevity by providing some long-term environmental protection measures, but also allowing some degree of passive recreational pursuits.

The proposed development layout has considered the main ecological features of importance within the site and provided an avoidance measure over most of the features, generally meeting the requirements of Stage 2 of BAM 2020.

Further minimisation actions may include:

- Avoid clearing the existing canopy in particular on steeped sloped areas,
- Retain areas of derived native grassland within the environmental protection area for increased habitat diversity.

Mitigation measures

The following mitigation measures are recommended for the subdivision design:

Landscaping and connective linkages

- Utilise 50% of the locally occurring native species in landscaping and creating arboreal and on ground steppingstones, and
- Avoidance of connective roads across the Arboreal links to the environmental protection area.

Protection and restoration of Grey Box Grassy Woodlands

Protection and conservation of Grey Box Grassy Woodlands to the northwest of the development footprint.

- Restoration of Inland Grey Box Woodland in the Riverina within the environmental protection area.
- Enrichment of on ground and arboreal habitat via the restoration of high foraging value species.
- Limit access to remnant PCT76 vegetation by placement of permanent fencing.
- Targeted weed control to minimise the spread of invasive weed species and eradicate where possible, and
- Standard *Phytophthora cinnamomi* protocol applies to the cleaning of all plant, equipment, hand tools and work boots prior to delivery onsite to ensure that there is no loose soil or vegetation material caught under or on the equipment and within the tread of vehicle tyres. Any equipment onsite found to contain soil or vegetation material is to be cleaned in a quarantined work area or wash station and treated with fungicides.

Sediment and erosion control measures

- Sediment and erosion control measures in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) to minimise impact of possible sedimentation to local drainage lines, and
- Undertake water quality testing within retained waterbodies to monitor for any increase in nutrient or sediment.

Fencing

- Temporary fencing – Where they adjoin the development areas, the boundaries of the conservation areas containing remanent vegetation shall be clearly marked out on-site to ensure their protection. All areas of natural vegetation retention shall be protected by fencing, prior to construction, to ensure that these areas are not damaged during the construction phase.
- Protection of core habitats – a core conservation area is to be identified within the environmental protection area excluding all access for the provision of secluded breeding and foraging habitat for the local fauna. Access into this area is to be restricted.

Ecological supervision

- Construction activities are to be intermittently supervised on-site and monitored. All staff involved with the development shall undergo an induction and training program to reinforce the ecological and environmental objectives of the development.
- Prior to any habitat removal, a comprehensive search for fauna and habitat is to be undertaken to relocate any terrestrial individuals and identify any important nesting to be protected until fledging.

Management of hollows and hollow-dependent fauna:

- The felling of hollow-bearing trees is to be conducted under the supervision of a fauna ecologist to ensure appropriate animal welfare procedures are taken, particularly for threatened species. Hollows of high quality or with fauna recorded residing within should be dismantled for relocation and all hollows should be inspected for occupation, signs of previous activity and potential for reuse.
- Subsequent hollows of retention value are to be relocated to nearby conservation areas. If these are placed as on ground habitat and are not reattached to a new recipient tree then they are to be replaced with appropriately sized nest boxes affixed to a retained tree. All hollow sections considered suitable for Squirrel Glider should where possible be recovered and prepared for placement into an appropriate retained tree.
- Constructed nest boxes should as priority target recorded hollow-dependent threatened species (and their prey species). Boxes should be constructed in weatherproof timber (marine ply), fasteners and external paint and appropriately affixed to a recipient tree under the guidance of a fauna ecologist.
- If a threatened species is found to be occupying the hollow at the time of removal, then this hollow section is to be reattached to a recipient tree within the nearby conservation areas as selected and directed by the fauna ecologist. The welfare and temporary holding of the residing animal(s) is at the discretion of the fauna ecologist.
- The relocated hollow section and nest boxes should be well secured in the recipient tree in a manner that will not compromise the current or future health of that tree, and
- Monitoring of nest boxes and relocated hollows.

Management of any other displaced fauna

- If any fauna species, a nest, or roost is located during development works, then works should cease until safe relocation can be advised by a contact fauna ecologist.

Dam dewatering management

- Where required, dam dewatering is to be undertaken in accordance with appropriate protocols to ensure consideration is given to all potentially impacted aquatic fauna within the dam (e.g., eels / turtles) and breeding water birds as well as species potentially indirectly impacted elsewhere. Protocols are to include frog hygiene, relocating aquatic fauna to recipient sites and appropriate euthanasia of Gambusia.

Pest control and grazing management

- Appropriate feral / pest terrestrial species management e.g., fox and rabbit is to be undertaken to maximise the regeneration of the native vegetation.

5.3 Mitigation measures

The following mitigation measures are recommended to avoid, minimise or ameliorate the above potential ecological impacts, address threatening processes and to guide a more positive ecological outcome for threatened species and their associated habitats.

Table 5-2 – Measures to mitigate and manage impacts

Action / Technique	Outcome	Timing / Frequency	Responsibility
(a) Protection and restoration of Grey Box Grassy Woodlands to the northwest of the development footprint. • **Restoration of Inland Grey Box Woodland in the Riverina within the environmental protection area.** • **Enrichment of on ground and arboreal habitat via the restoration of high foraging value species.** • **Limit access to remnant PCT76 vegetation by placement of permanent fencing.** • **Targeted weed control to minimise the spread of invasive weed species and eradicate where possible, and** • **Standard *Phytophthora cinnamomi* protocol applies to the cleaning of all plant, equipment, hand tools and work boots prior to delivery onsite to ensure that there is no loose soil or vegetation material caught under or on the equipment and within the tread of vehicle tyres. Any equipment onsite found to contain soil or vegetation material is to be cleaned in a quarantined work area or wash station and treated with fungicides.**	Prevent indirect impacts on PCT 76 conserved habitats	Prior to any clearing works. Ongoing	Project Ecologist as guided by the VMP

Action / Technique	Outcome	Timing / Frequency	Responsibility
(b) Sediment and erosion control measures in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004) to minimise impact of possible sedimentation to local drainage lines. **(c) Undertake water quality testing within retained waterbodies to monitor for any increase in nutrient or sediment.**	Maintain integrity of PCT 76 habitat and natural topsoil soil by preventing deposition	Prior to any clearing works. Ongoing during all exposed soil stages until landscaping is completed	Project Ecologist / Contractors
(d) Temporary fencing - Where they adjoin the development areas, the boundaries of the conservation areas containing remanent vegetation shall be clearly marked out on-site to ensure their protection. All areas of natural vegetation retention shall be protected by fencing, prior to construction, to ensure that these areas are not damaged during the construction phase. **(e) Protection of core habitats – a core conservation area is to be identified within the environmental protection area excluding all access for the provision of secluded breeding and foraging habitat for the local fauna. Access into this area is to be restricted.**	Maintain integrity of Remanent vegetation	Prior to construction / habitat clearance	Project Ecologist / Contractors
(f) Ecological Supervision during construction activities is to be intermittently supervised on-site and monitored. All staff involved with the development shall undergo an induction and training program to reinforce the ecological and environmental objectives of the development. **(g) Prior to any habitat removal, a comprehensive search for fauna and habitat is to be undertaken to relocate any terrestrial individuals and identify any important nesting to be protected until fledging.**	Ensure that the recommendations of the BDAR are implemented.	Prior to and during habitat clearance and construction of services	Project Ecologist
(h) Undertake water quality testing within retained waterbodies to monitor for any increase in nutrient or sediment.	Ensure no indirect impacts on adjacent water quality or quantity	Prior to and during habitat clearance and construction	Project Ecologist

Action / Technique	Outcome	Timing / Frequency	Responsibility
(i) Prior to any habitat removal, a comprehensive search for fauna and habitat is to be undertaken to relocate any terrestrial individuals and identify any important nesting to be protected until fledging.	Reduce potential for impact on native species	Immediately prior to land clearance	Project Ecologist
(j) Management of hollows and hollow-dependent fauna: • **The felling of hollow-bearing trees is to be conducted under the supervision of a fauna ecologist to ensure appropriate animal welfare procedures are taken, particularly for threatened species. Hollows of high quality or with fauna recorded residing within should be dismantled for relocation and all hollows should be inspected for occupation, signs of previous activity and potential for reuse.**	Protection of hollow-dependent wildlife	At time of removal	Project Ecologist
• **Subsequent hollows of retention value are to be relocated to nearby conservation areas. If these are placed as on ground habitat and are not reattached to a new recipient tree then they are to be replaced with appropriately sized nest boxes affixed to a retained tree. All hollow sections considered suitable for Squirrel Glider should where possible be recovered and prepared for placement into an appropriate retained tree.**	Maintain quality denning / hollow shelter opportunities	At time of removal	Project Ecologist
• **Constructed nest boxes should as priority target recorded hollow-dependent threatened species (and their prey species). Boxes should be constructed of weatherproof timber (marine ply), fasteners and external paint and appropriately affixed to a recipient tree under the guidance of a fauna ecologist.**	Protection of hollow-dependent wildlife	Prior to hollow removal	Project Ecologist

Action / Technique	Outcome	Timing / Frequency	Responsibility
• **If a threatened species is found to be occupying the hollow at the time of removal, then this hollow section is to be reattached to a recipient tree within the nearby conservation areas as selected and directed by the fauna ecologist. The welfare and temporary holding of the residing animal(s) is at the discretion of the fauna ecologist.**	Priority protection of hollow-dependent threatened species	At time of removal	Project Ecologist
• **The relocated hollow section and nest boxes should be well secured in the recipient tree in a manner that will not compromise the current or future health of that tree.**	Ensure hollow integrity is maintained	Time of installation	Project Ecologist
• **Monitoring of nest boxes and relocated hollows.**	Ensure hollow integrity is maintained	Each year for 5 years	Project Ecologist
(k) Management of any other displaced fauna. If any fauna species, a nest, or roost is located during development works, then works should cease until safe relocation can be advised by a contact fauna ecologist.	Prevent direct impacts on nesting and terrestrial native fauna species	Prior to and during habitat removal / Adaptive management required	Project Ecologist
(l) If any fauna species, a nest, or roost is located during development works, then works should cease until safe relocation can be advised by a contact fauna ecologist.	Prevent direct impacts on nesting and terrestrial native fauna species	At time of removal / Adaptive management required	Project Ecologist / Contractors
• **Dam dewatering is to be undertaken in accordance with appropriate protocols to ensure consideration is given to all potentially impacted aquatic fauna within the dam (e.g., eels / turtles) and breeding water birds as well as species potentially indirectly impacted elsewhere. Protocols are to include frog hygiene, relocating aquatic fauna to recipient sites and appropriate euthanasia of Gambusia.**	Reduce potential for direct impact on aquatic species present and indirect impacts on aquatic species elsewhere	Prior to land clearance	Project Ecologist

Action / Technique	Outcome	Timing / Frequency	Responsibility
• **Appropriate feral / pest terrestrial species management. e.g., fox and rabbit is to be undertaken to maximise the regeneration of the native vegetation.**	Reduce potential for impact on native species	Prior to land clearance	Project Ecologist

5.4 Potential ecological impacts

5.4.1 Prescribed impacts

Table 5-3 – Prescribed impacts

Feature	Present (yes / no)	Description of feature characteristics and location	Threatened species or community using or dependent on feature	Potential impact	Predicted consequences and justification
Karst, caves, crevices, cliffs, rocks or other geological features of significance	No	N/A	N/A	N/A	N/A
Human-made structures or non-native vegetation	Yes	Planted non-native trees		Removal of potential foraging, roosting and nesting habitat	Threatened species recorded that are known to utilise non-native vegetation including Grey-crowned Babbler. The Grey-crowned Babbler was observed utilising planted vegetation for foraging resources. The removal of this vegetation may limit habitat resources for this species however given the proposed conservation areas containing PCT 76, with remediation measures including restricted access and the preparation of a VMP it is expected that the enhancement of PCT 76 will provide adequate compensation for the loss of planted vegetation.

Feature	Present (yes / no)	Description of feature characteristics and location	Threatened species or community using or dependent on feature	Potential impact	Predicted consequences and justification
Habitat connectivity	no	n/a	n/a	n/a	n/a
Waterbodies, water quality and hydrological processes	yes	dams	Threatened species with potential to occur including Blue-billed Duck and Freckled Duck	Degradation and or removal of aquatic habitat	3 dams within the study site provide suitable foraging pools >3 m wide. The dams on site may provide potential habitat for Sloane's Froglet which is considered to have the potential to occur. Given that adequate seasonal survey has not been undertaken to confirm the presence/absence of this species, it is recommended that survey be undertaken prior to the removal of dams within the site in order to assess potential impacts on this species.
Wind farm development	no	n/a	n/a	n/a	n/a
Vehicle strikes	yes	internal roads	Terrestrial mammals and frogs as well as birds in flight.	Collision leading to injury or death	The proposal will increase internal vehicle traffic, which could potentially lead to an increase in vehicle collisions with native fauna. All internal roads will have a low-speed limit and as such collisions are very unlikely for most species.

5.4.2 Direct impacts

Table 5-4 – Direct impact assessment

Direct impact	*BC Act* status	SAII entity	Project phase/timing of impact	Extent (ha, number of individuals)
Removal of PCT76 / Grey Box Grassy woodlands EEC (proposed environmental protection area reduces this impact to 3.83 ha.)	EEC	No	Demolition / clearing	3.8 ha
Removal of one significant habitat tree (HT3) providing potential roosting and breeding habitat for fauna.	Various	No	Demolition / clearing	one habitat tree
Assumed direct impact on species credit species *Austrostipa wakoolica, Diuris tricolor, Eleocharis obicis, Lepidium aschersonii, Swainsona murrayana, Swainsona recta, Swainsona sericea,* Sloane's Froglet, Major Mitchell's Cockatoo, Superb Parrot, Squirrel Glider, and Koala.	Various	No	Demolition / clearing	3.8 ha
Removal of foraging resources for ecosystem species Black Falcon, Grey Falcon, Grey-crowned Babbler, Dusky Woodswallow, Speckled Warbler, White-bellied Sea-Eagle, White-throated Needletail, Superb Parrot, Swift Parrot, Hooded Robin (south-eastern form), Scarlet Robin, Flame Robin, Grey-headed Flying-fox and Diamond Firetail.	Various	No	Demolition / clearing	3.8 ha

5.4.3 Indirect impacts

Table 5-5 – Indirect impact assessment

Indirect impact description	Impacted entities (PCT, species, TEC)	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
Edge effects	All retained vegetation within c. 10 m of development	Constant	Lifetime of development	Clearing, construction and ongoing	• Increased soil nutrients from changes to runoff that may provide further opportunities for weeds. • Spill-over from noise, activity, scent and lighting effects • Inappropriate use of remaining native vegetation areas such as additional clearing, dumping of materials and waste
Concentrated stormwater runoff from solid surfaces and subsequent increased flows	All retained vegetation, watercourses and habitat downslope of the development	During rainfall events	Lifetime of development	Clearing, construction and ongoing	• Potential increased flow, nutrient and sediment loads that may provide further opportunities for weeds within retained vegetation. • Potential increased flow, nutrient and sediment loads within watercourses on site.
Reduced inter-site connectivity	Small bird species, arboreal mammals	Once	Lifetime of development	Clearing, construction	• Reduced cross-site movements by local and transient fauna

5.4.4 Serious & Irreversible Impacts (SAIIs)

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community most at risk of extinction. Threatened species and communities that are potential for serious and irreversible impacts are identified in the BioNet TBDC, and a list is provided on the DPE webpage: https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/local-government-and-other-decision-makers/serious-and-irreversible-impacts-of-development. The principles for determining serious and irreversible impacts are set out under Section 9.1 of the BAM.

No SAII entities were recorded or have potential to occur within the study area as prompted by the BAM calculator.

The site also does not likely support any breeding habitat or likely important roosting/foraging for other candidate SAII species with potential to occur including Swift Parrot.

Communities:

The SAII assessment provisions for TECs are outlined under Section 9.1.1 of the BAM (2020). No TEC listed SAII entities were recorded or have potential to occur.

5.5 Vegetation connectivity and habitat corridors

The development footprint is comprised of agricultural land with limited habitat connectivity as a result of areas of open pasture. This restricts the movement of various species between different habitats. There are, however, isolated, and fragmented patches of vegetation which may offer refuge to fauna species, most notably avian species, in particular, around the proposed environmental protection area in the northwest, the farm dams, roadside reserves and non-cropped land.

Due to the lack of connective values within the development footprint, the proposed rezoning is not expected to further restrict the movement of wildlife species, impede gene flow between populations, or hinder the natural migration patterns of animals. The proposed masterplan will retain significant trees as shown on Figure1-3 which will further enable roosting and foraging opportunities for a variety of bird species.

It is proposed to create a green corridor, in line with Council's Housing Strategy (2023), that will result in a chain of ponds within active public recreation areas. This proposed chain of ponds will provide further landscaping opportunities and provide stormwater management. This active recreation area will link dams and provide vegetative connectivity to the southernmost dam and enhance connectivity to Lake Forbes (Figure 5-2).

Figure 5-2 – Local connectivity (study area in red)
(Source: geo.seed.nsw.gov.au)

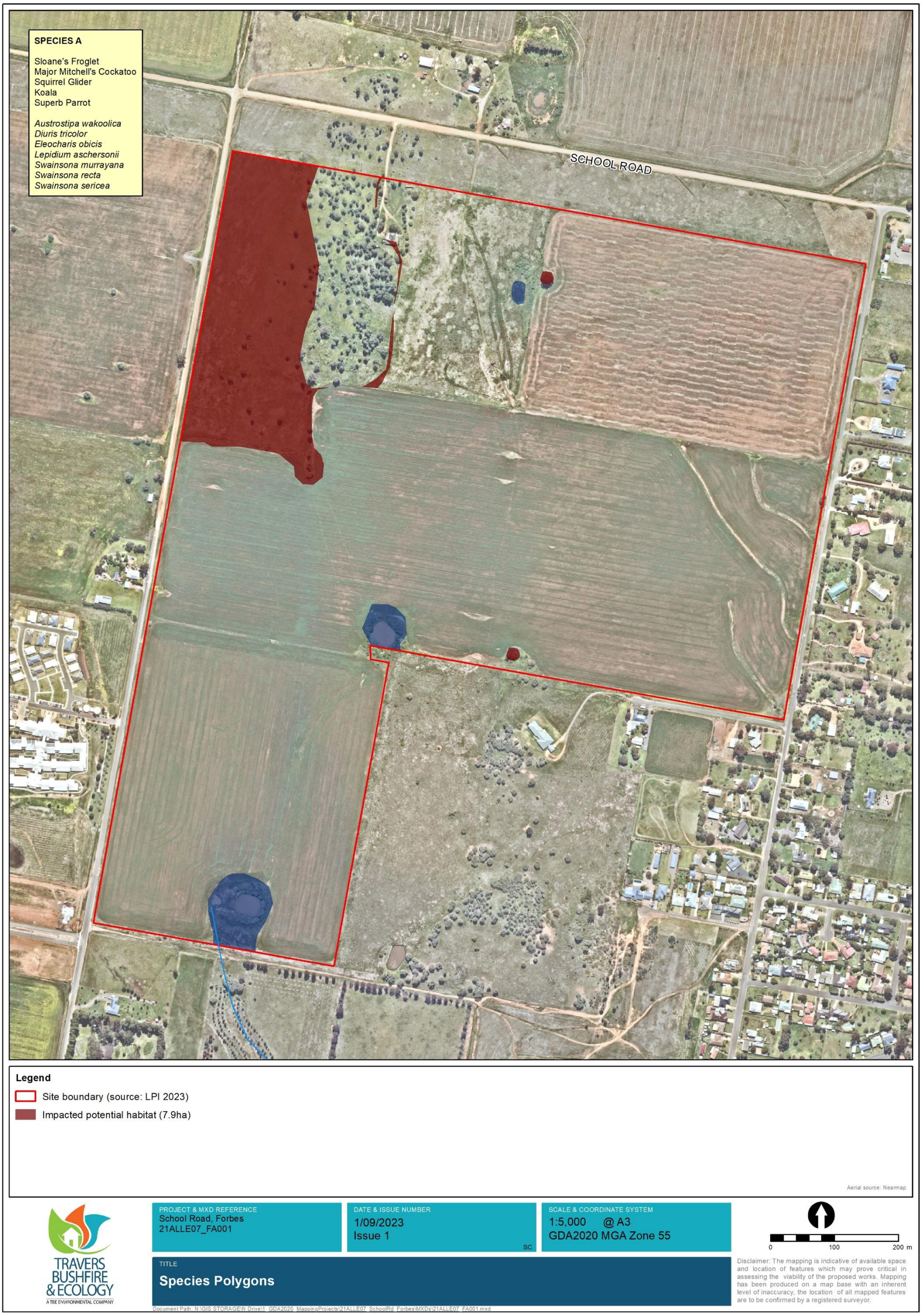

Figure 5-3 – Species credit species polygons

6. CONCLUSION

Travers bushfire & ecology was engaged to undertake a Biodiversity Assessment at Lots 375, 376, 386, 387, 388, 389, 830, 831, 1272, and 1273 in DP 750158 School Road, Forbes. The planning proposal is for a rezoning application to facilitate a subdivision. See Figure 1-4 for proposed subdivision layout.

An Ecological Survey and Assessment was undertaken in accordance with relevant legislation including the *Environmental Planning and Assessment Act 1979*, the *Biodiversity Conservation Act 2016*, the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the *Fisheries Management Act 1994*.

6.1 Legislative compliance

In respect of matters required to be considered under the *Environmental Planning and Assessment Act 1979* and relating to the species / provisions of the *Biodiversity Conservation Act 2016*, One (1) threatened fauna species Grey-crowned Babbler, no threatened flora species, and one (1) TEC, Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia was recorded within the study area.

Offsetting under the Biodiversity Offsets Scheme (BOS) is required for the proposal as:

- The proposed clearing of 3.8 ha of native vegetation exceeds the area clearing threshold of 0.5 ha.

The proposal will also not cause any Serious or Irreversible Impacts (SAII) on threatened biodiversity most at risk of extinction.

A biodiversity credit assessment has been prepared as part of this BDAR.

In respect of matters required to be considered under the *Environment Protection and Biodiversity Conservation Act 1999*, No threatened fauna species, no threatened flora species, and one TECs listed under this Act was recorded within the study area.

The proposal was not considered to have a significant impact on or be constrained by matters of national environmental significance. As such a referral to Department of Climate Change, Energy, the Environment and Water is not required.

In respect of matters relative to the *Fisheries Management Act 1994*, no suitable habitat for threatened marine or aquatic species was observed within the development footprint and there are no matters requiring further consideration under this Act.

6.2 Biodiversity credit requirements

6.2.1 Impacts requiring offset

The following impacts will require offsetting:

- 3.8 ha of PCT 76 (where the proposed environmental protection area is not included), and
- loss of habitat for threatened species, including species credits for Grey-crowned Babbler.

Locations of the abovementioned communities within the development footprint are shown on Figure 2-2.

**Note: the BAM calculator rounds impact requirements to the nearest 0.1 ha, hence the discrepancy with the values stated elsewhere in the BDAR.*

6.2.2 Impacts not requiring offset

The following impacts do not require offset:

- Impacts on non-native vegetation, and
- Indirect impacts on remaining native vegetation areas as outlined in Section 5.4.3.

All areas of native vegetation impact will require offsetting and have been accounted for in the BAM calculator. All the zones had a vegetation integrity score above the minimum requirements; however, it was suboptimal time for surveying native vegetation within the region.

6.2.3 Areas not requiring assessment

The proposal includes a large allotment over approximately 92.39 ha consisting of 11.9 ha of native vegetation with all remaining vegetation consisting of planted vegetation, exotic weeds, and pasture. The proposal is located within the cleared portions of the site and impacts upon native vegetation have been reduced by providing an environmental protection area (4.07 ha). All vegetation (and habitat) outside of these impact areas does not require assessment, but utilised for determining habitat values, connectivity, etc.

Indirect impacts are not anticipated to be large or permanent. The proposed management actions will assist in reducing these, so they are only temporary, potential only, or immeasurable. Based on the assessment, conducted by suitably qualified BAM assessor, the land is recommended suitable for rezoning.

7. BAM CREDIT RESULTS

7.1 Ecosystem credits and species credits

All impacted areas are assumed to be full impact and the future vegetation integrity score will be 0.

Habitat suitability for threatened species has been considered in Section 4. Some species are considered for species credits, particularly if potential breeding habitat is compromised or impacted.

Ecosystem credits for plant community types (PCTs), ecological communities and threatened species habitat is shown below in Table 7-1 Species credits for threatened species are shown in Table 7-2.

Table 7-1 – Requirement for ecosystem credits

Zone	Veg. zone name	Veg. integrity loss	Area (ha)	Sensitivity to loss	Sensitivity to loss justification	Sensitivity to gain	Biodiversity risk weighting	Potential SAII	Ecosystem credits
1	76_DNG	5.3	4.2	Moderate	EPBC Act listing status	High	2.0	no	0
2	76_poor_moderate	38.3	3.8	Moderate	EPBC Act listing status	High	2.0	no	73
									Total: 73

Table 7-2 – Requirement for species credits

Vegetation zone name	Habitat condition (vegetation integrity) loss	Area (ha)	Sensitivity to loss	Sensitivity to loss (Justification)	Sensitivity to gain	Sensitivity to gain (Justification)	Biodiversity risk weighting	Potential SAII	Species credits
Austrostipa wakoolica / A spear-grass (Flora)									
76_DNG	5.3	4.2	High Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	11
76_poor_moderate	38.3	3.8	High Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	73
									Subtotal:84
Crinia sloanei / Sloane's Froglet (Fauna)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Ability to colonise improved habitat	1.5	FALSE	8

Vegetation zone name	Habitat condition (vegetation integrity) loss	Area (ha)	Sensitivity to loss	Sensitivity to loss (Justification)	Sensitivity to gain	Sensitivity to gain (Justification)	Biodiversity risk weighting	Potential SAII	Species credits
76_poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Ability to colonise improved habitat	1.5	FALSE	55
									Subtotal:63
Diuris tricolor / Pine Donkey Orchid (Flora)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	1.5	FALSE	8
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	1.5	FALSE	55
									Subtotal:63
Eleocharis obicis / Spike-Rush (Flora)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ecology or response to management is poorly known	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ecology or response to management is poorly known	2	FALSE	73
									Subtotal:84
Lepidium aschersonii / Spiny Peppercress (Flora)									
76_DNG	5.3	4.2	High Sensitivity to Loss	Geographic Distribution	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	11
76_Poor_moderate	38.3	3.8	High Sensitivity to Loss	Geographic Distribution	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	73

Vegetation zone name	Habitat condition (vegetation integrity) loss	Area (ha)	Sensitivity to loss	Sensitivity to loss (Justification)	Sensitivity to gain	Sensitivity to gain (Justification)	Biodiversity risk weighting	Potential SAII	Species credits
									Subtotal:84
Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	73
									Subtotal:84
Petaurus norfolcensis / Squirrel Glider (Fauna)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	73
									Subtotal:84
Phascolarctos cinereus / Koala (Fauna)									
76_DNG	5.3	4.2	High Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	11
76_Poor_moderate	38.3	3.8	High Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	73
									Subtotal:84
Polytelis swainsonii / Superb Parrot (Fauna)									

Vegetation zone name	Habitat condition (vegetation integrity) loss	Area (ha)	Sensitivity to loss	Sensitivity to loss (Justification)	Sensitivity to gain	Sensitivity to gain (Justification)	Biodiversity risk weighting	Potential SAII	Species credits
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Species dependent on habitat attributes	2	FALSE	73
									Subtotal:84
Swainsona murrayana / Slender Darling Pea (Flora)									
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	73
									Subtotal:84
Swainsona recta / Small Purple-pea (Flora)									
76_DNG	5.3	4.2	High Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	11
76_Poor_moderate	38.3	3.8	High Sensitivity to Loss	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Effectiveness of management in controlling threats	2	FALSE	73
									Subtotal:84
Swainsona sericea / Silky Swainson-pea (Flora)									

Vegetation zone name	Habitat condition (vegetation integrity) loss	Area (ha)	Sensitivity to loss	Sensitivity to loss (Justification)	Sensitivity to gain	Sensitivity to gain (Justification)	Biodiversity risk weighting	Potential SAII	Species credits
76_DNG	5.3	4.2	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	11
76_Poor_moderate	38.3	3.8	Moderate Sensitivity to Loss	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Ability to colonise improved habitat	2	FALSE	73
									Subtotal:84

7.2 Ecosystem credit classes

Table 7-3 – Ecosystem credit summary

PCT	TEC	Area (ha)	Credits
76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW Southwestern Slopes and Riverina Bioregions	Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	7.9	73

Table 7-4 – Credit classes for PC76 - Like for like options

PCT	Vegetation Class	Trading group	TEC	Containing hollow-bearing trees?	Credits
76	Floodplain Transition Woodlands	Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia This includes PCT's: 76, 80, 81, 82, 110, 237, 248, 250, 267, 3405	No	No	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 km of the outer edge of the impacted site.
76	Floodplain Transition Woodlands	Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia This includes PCT's: 76, 80, 81, 82, 110, 237, 248, 250, 267, 3405	Yes	Yes	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 km of the outer edge of the impacted site.

7.3 Species credit classes

Table 7-5 – Species credit summary

Species	Area (ha)	Credits
Austrostipa wakoolica	8	84
Sloane's Froglet	8	63
Diuris tricolor	8	63
Eleocharis obicis	8	84
Lepidium aschersonii	8	84
Major Mitchell's Cockatoo	8	84
Squirrel Glider	8	84
Koala	8	84
Superb Parrot	8	84
Slender Darling Pea	8	84
Small Purple Pea	8	84
Silky Swainson Pea	8	84
	Total	**966**

All above-listed species need to be offset with the same species but anywhere in NSW.

As of October 2022, accredited assessors cannot access the BOP-C payment calculator to provide an estimation of costs for credits. For estimates on credit values, the proponent may need to speak with the Biodiversity Conservation Trust (BCT). The BCT will be providing a credit costing service in early 2023 for a nominal fee.

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Appendix 1. SAII impact assessment - species

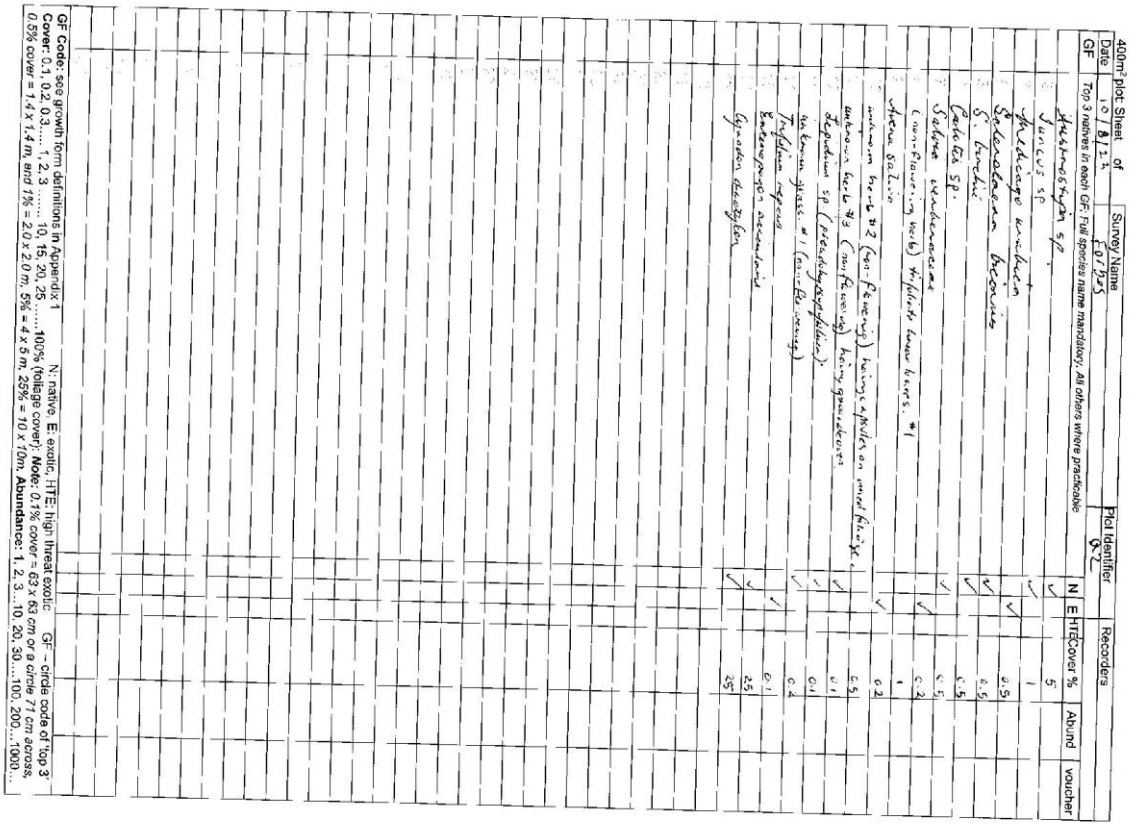
The additional impact assessment provisions for threatened species to determine a Serious and Irreversible Impact (SAII) are outlined under Section 9.2 of the BAM (2020). No flora or fauna listed SAII entities were recorded during survey. No flora or fauna listed SAII entities were prompted for assessment by the BAM calculator. The study area does not contribute to Important Mapped Areas for Swift Parrot and therefore SAII assessment provisions do not require further assessment.

Appendix 2. SAII impact assessment - communities

The additional impact assessment provisions for threatened ecological communities (TECs) to determine a Serious and Irreversible Impact (SAII) are outlined under Section 9.1.1 of the BAM (2020). One (1) TEC listed as an SAII entity was recorded during survey and, therefore, SAII assessment under this provision requires further assessment.

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia has no risk weighting aligned to it in the Threatened Biodiversity Calculator (www.environment.nsw.gov.au). **Therefore, this community is removed from further assessment under the SAII guidelines.**

Appendix 3. Plot data sheets

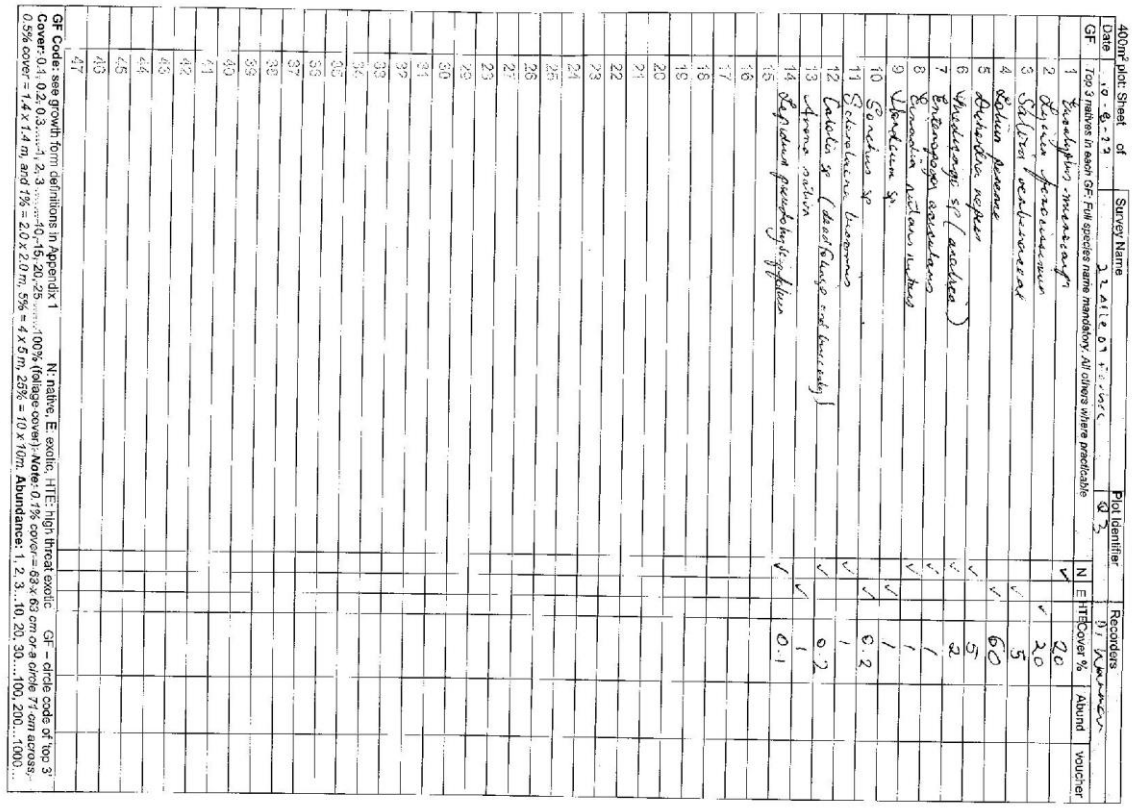


400m² plot Sheet of — Survey Name — Plot Identifier — Recorders

Date | GF | Top 3 natives in each GF. Full species name mandatory. All others where practicable | N | E | HTE | Cover % | Abund | voucher

GF Code: see growth form definitions in Appendix 1 — N: native, E: exotic, HTE: high threat exotic — GF – circle code of 'top 3'

Cover: 0.1, 0.2, 0.3.....1, 2, 3.....10, 15, 20, 25.....100% (foliage cover). Note: 0.1% cover = 63 x 63 cm or a circle 71 cm across, 0.5% cover = 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10m. Abundance: 1, 2, 3...10, 20, 30....100, 200...1000...



400m² plot Sheet of — Survey Name — Plot Identifier — Recorders

Date | GF | Top 3 natives in each GF. Full species name mandatory. All others where practicable | N | E | HTE | Cover % | Abund | voucher

GF Code: see growth form definitions in Appendix 1 — N: native, E: exotic, HTE: high threat exotic — GF – circle code of 'top 3'

Cover: 0.1, 0.2, 0.3.....1, 2, 3.....10, 15, 20, 25.....100% (foliage cover). Note: 0.1% cover = 63 x 63 cm or a circle 71 cm across, 0.5% cover = 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10m. Abundance: 1, 2, 3...10, 20, 30....100, 200...1000...

400m² plot: Sheet of | Survey Name 22 ALLE07 | Plot Identifier B1 | Recorders D. HARMAN

GF		Top 3 natives in each GF: Full species name mandatory. All others where practicable	N	E	HTE	Cover %	Abund	voucher
	1	Callitris glaucophylla	✓			25	12	
	2	Eragrostis tenuata tenuata	✓			1		
	3	Muellerina sp (Mistletoe on Callitris)	✓			1		
	4	Zygochloa paradoxa			✓	1		
	5	Dichanthium sepens	✓			0.5		
	6	Sclerolaena bicornis	✓			0.2		
	7	Trifolium repens		✓		0.2		
	8	Lolium perenne		✓		25		
	9	Salvia verbenaceae		✓		0.5		
	10	Medicago arabica		✓		0.5		
	11	Austrostipa sp	✓			25		
	12	(unknown herb sp #1)				0.1		
	13	Echium plantagineum		✓		0.1		
	14	Senecio sp		✓		0.1		
	15	Convolvulus erubescens	✓			0.1		
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
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	42							
	43							
	44							
	45							
	46							
	47							

GF Code: see growth form definitions in Appendix 1 N: native, E: exotic, HTE: high threat exotic GF – circle code of 'top 3'
Cover: 0.1, 0.2, 0.3 ..... 1, 2, 3 ..... 10, 15, 20, 25 ..... 100% (foliage cover): ***Note:** 0.1% cover = 63 x 63 cm or a circle 71 cm across, 0.5% cover = 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10m.* **Abundance:** 1, 2, 3…10, 20, 30….100, 200…1000…

BAM Site – Field Survey Form

Site Sheet no:

Survey Name	Zone ID	Recorders
		D. HARMAN

Date	10 / 8 / 23			Plot dimensions	Photo #
Zone 55	Datum	Plot ID	B2 Q2		
Easting 592790	Northing 6309223	IBRA region		Midline bearing from 0 m	0

		Confidence: H M L
Vegetation Class	(Derived) Grassland	
Plant Community Type	EEC:	Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
Sum of Cover of native vascular plants by growth form group	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
High Threat Weed cover		

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm		
50 – 79 cm		
30 – 49 cm		
20 – 29 cm		
10 – 19 cm		
5 – 9 cm		
< 5 cm		n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)		

Counts apply when the **number of tree stems** within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). **For a multi-stemmed tree,** only the largest living stem is included in the count/estimate. **Tree stems must be living.**

For hollows, count only the presence of a stem containing hollows. **For a multi-stemmed tree,** only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	5 5 5 5 5			
Average of the 5 subplots				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern	
Lithology		Soil Surface Texture		Soil Colour	
Slope		Aspect		Site Drainage	
					Microrelief / Soil Depth / Distance to nearest watercourse

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing (inc. logging)	3	0	
Cultivation (inc. pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (identify native/stock)			
Fire damage			
Storm damage			
Weediness	2	0	
Other			

Severity: 0=no evidence, 1=slight, 2=moderate, 3=severe Age: R=recent (<3yrs), hR=not recent (3-10yrs), O=old (>10yrs)

BAM Site – Field Survey Form

Site Sheet no:

Survey Name	Zone ID	Recorders
		D. Warnock

Date	10 · 8 · 23	Plot ID	Q1	Plot dimensions	20x50	Photo # ✓
Zone 56H	Datum GDA94	IBRA region		Midline bearing from 0 m	15°	
Easting 572938	Northing 6302345					
Vegetation Class	Open woodland					Confidence: H M L
Plant Community Type				EEC:		Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
Sum of Cover of native vascular plants by growth form group	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
High Threat Weed cover		

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	0	
50 – 79 cm	0	
30 – 49 cm	1	
20 – 29 cm	2	
10 – 19 cm	0	
5 – 9 cm	0	
< 5 cm		n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	4 m	

Counts apply when the **number of tree stems** within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a **multi-stemmed tree**, only the largest living stem is included in the count/estimate. **Tree stems must be living.**

For **hollows**, count only the **presence of a stem containing hollows**. For a **multi-stemmed tree**, only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	5 5 5 5 5	0 5 0 0 0		0
Average of the 5 subplots				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

5 4 3 2 1

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element	crest	Landform Pattern		Microrelief	
Lithology	red Soil	Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence:
Clearing (inc. logging)	2	0	
Cultivation (inc. pasture)	–		
Soil erosion	–		
Firewood / CWD removal	–		
Grazing (identify native/stock)			Native
Fire damage	–		
Storm damage	–		
Weediness	1	0	
Other			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

-This document has not been endorsed or approved by Office of Environment and Heritage or Muddy Boots Environmental Training-

BAM Site – Field Survey Form

Site Sheet no:

Survey Name	Zone ID	Recorders
		D. Warnock

Date	10 · 8 · 23	Plot ID	Q3	Plot dimensions	20x50	Photo # ✓
Zone	Datum	IBRA region		Midline bearing from 0 m	70°	
Easting 572926	Northing 6302172					
Vegetation Class	Open Woodland					Confidence: H M L
Plant Community Type	PCT76			EEC:		Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
Sum of Cover of native vascular plants by growth form group	Trees	
	Shrubs	
	Grasses etc.	
	Forbs	
	Ferns	
	Other	
High Threat Weed cover		

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	23 1	1 - HTI
50 – 79 cm	11	1
30 – 49 cm	–	
20 – 29 cm	–	
10 – 19 cm	–	
5 – 9 cm	/	
< 5 cm	–	n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	46	

Counts apply when the **number of tree stems** within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30..., 100, 200, 300...). For a **multi-stemmed tree**, only the largest living stem is included in the count/estimate. Tree stems must be living.

For **hollows**, count only the **presence of a stem containing hollows**. For a **multi-stemmed tree**, only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	5 5 0 5 5			5 –
Average of the 5 subplots				

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element	Slope	Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence:
Clearing (inc. logging)	3	0	
Cultivation (inc. pasture)	–		
Soil erosion	–		
Firewood / CWD removal	–		
Grazing (identify native/stock)	/		Some native
Fire damage	/		
Storm damage	/		
Weediness	1	0	
Other	/		

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

Appendix 4. EPBC impact criteria

Under the *EPBC Act* an action will require approval from the Australian Government Environment Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance. The following significant impact criteria were sourced from the *EPBC Act* Policy Statement 1.1 (May 2006):

CRITICALLY ENDANGERED AND ENDANGERED SPECIES

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or 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.
- Reduce the area of occupancy of the species.
- Fragment an existing population into two or more populations.
- Adversely affect habitat critical to the survival of a species.
- Disrupt the breeding cycle of a population.
- Modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.
- Introduce disease that may cause the species to decline; or
- Interfere with the recovery of the species.

What is 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 geographically distinct regional population, or collection of local populations; or
- a population, or collection of local populations, that occurs within a particular bioregion.

What is an important population of a species?

An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal.
- Populations that are necessary for maintaining genetic diversity; and/or
- Populations that are near the limit of the species range.

What is habitat critical to the survival of a species or ecological community?

'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.

VULNERABLE SPECIES

Significant impact criteria

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.
- reduce the area of occupancy of an important population.
- fragment an existing important population into two or more populations.
- adversely affect habitat critical to the survival of a species.
- disrupt the breeding cycle of an important population.
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
- introduce disease that may cause the species to decline, or

- interfere substantially with the recovery of the species.

CRITICALLY ENDANGERED AND ENDANGERED ECOLOGICAL COMMUNITIES

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- Reduce the extent of an ecological community.
- Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.
- Adversely affect habitat critical to the survival of an ecological community.
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.
- Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
    - assisting invasive species, that are harmful to the listed ecological community, to become established; or
    - causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community; or
- Interfere with the recovery of an ecological community.

MIGRATORY SPECIES

Significant impact criteria

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles, or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

What is important habitat for a migratory species?

An area of 'important habitat' for a migratory species is:

(a) a) Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
(b) b) Habitat that is of critical importance to the species at life-cycle stages; and/or
(c) c) Habitat utilised by a migratory species which is at the limit of the species range; and/or
(d) d) Habitat within an area where the species is declining.

What is an ecologically significant proportion??

Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an 'ecologically significant proportion' of the population varies with the species (each circumstance will need to be evaluated). Some factors that should be considered include the species' population status, genetic distinctiveness and species-specific behavioural patterns (for example, site fidelity and dispersal rates).

What is the population of a migratory species??

'Population,' in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

Appendix 5. Microbat call analysis

SUMMARY OF RESULTS			
ID Method	**Result**	**Threatened**	**ID Confidence**
Curved, down-sweeping tail and characteristic frequency of 51 kHz	*Chalinolobus morio*	No	High
flat calls (i.e., low bandwidth) around 27 kHz	*Ozimops planiceps*	No	High
Characteristic frequency around 45 kHz	*Vespadelus* sp	No	High

CALL REFERENCE LIBRARY
Calls were identified using 1) “Bat Calls of NSW” by Pennay *et al*. (2004) regional guide, 2) “Key to the bat calls of south-east Queensland and north-east New South Wales” by Reinhold *et al*. (2001), 3) “Bat Calls of Central Eastern NSW” by Chris Corben (2009), 4) Call metrics obtained from discussions with recognised bat experts including Michael Pennay, Brad Law, Chris Corben, and Greg Ford, and 5) Travers Bushfire & Ecology (Lachlan McRae) collected reference calls. The combination of reference calls and call metrics from these five sources results in a sufficient local reference-call library for identifying microbat species that occur in the greater Sydney region.

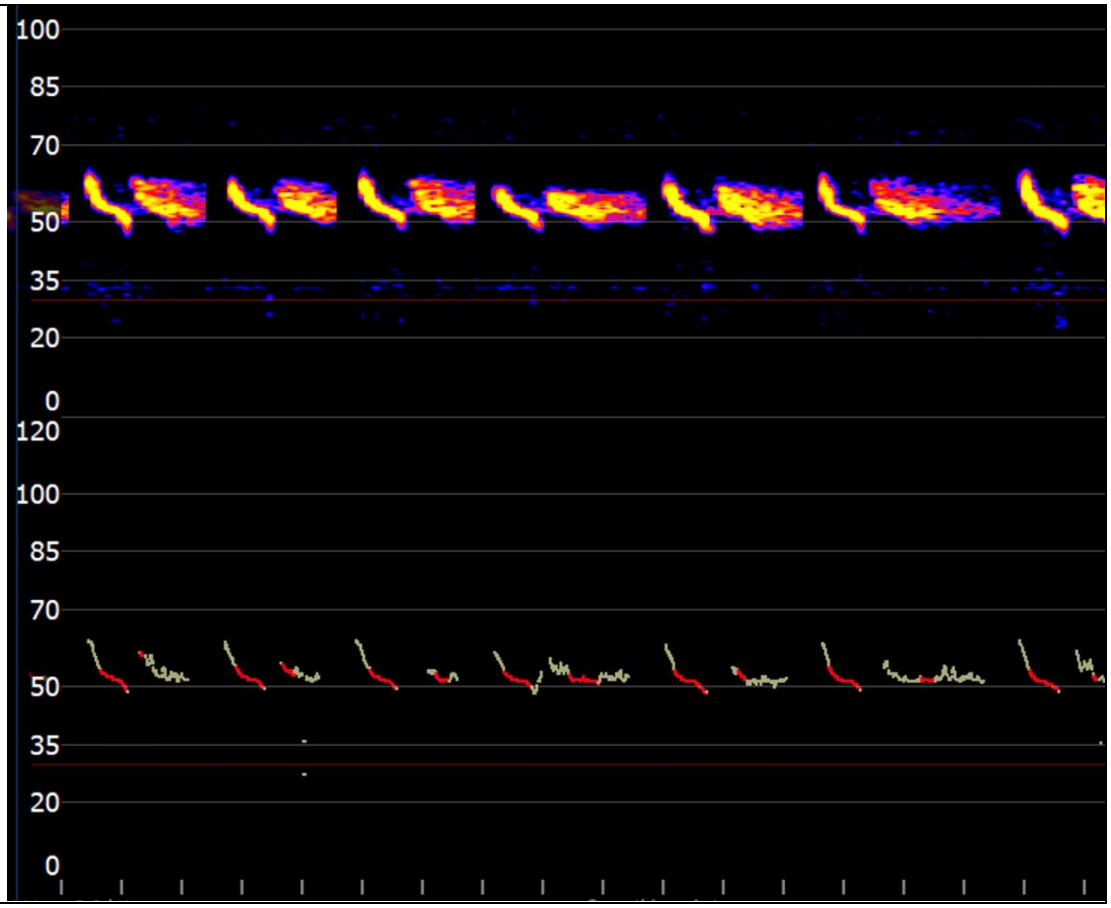


Figure 1: Chocolate Wattle Bat (*Chalinolobus morio*).

This sequence was identified as *C. morio* call due to the curved, down-sweeping tail and characteristic frequency of 51 kHz

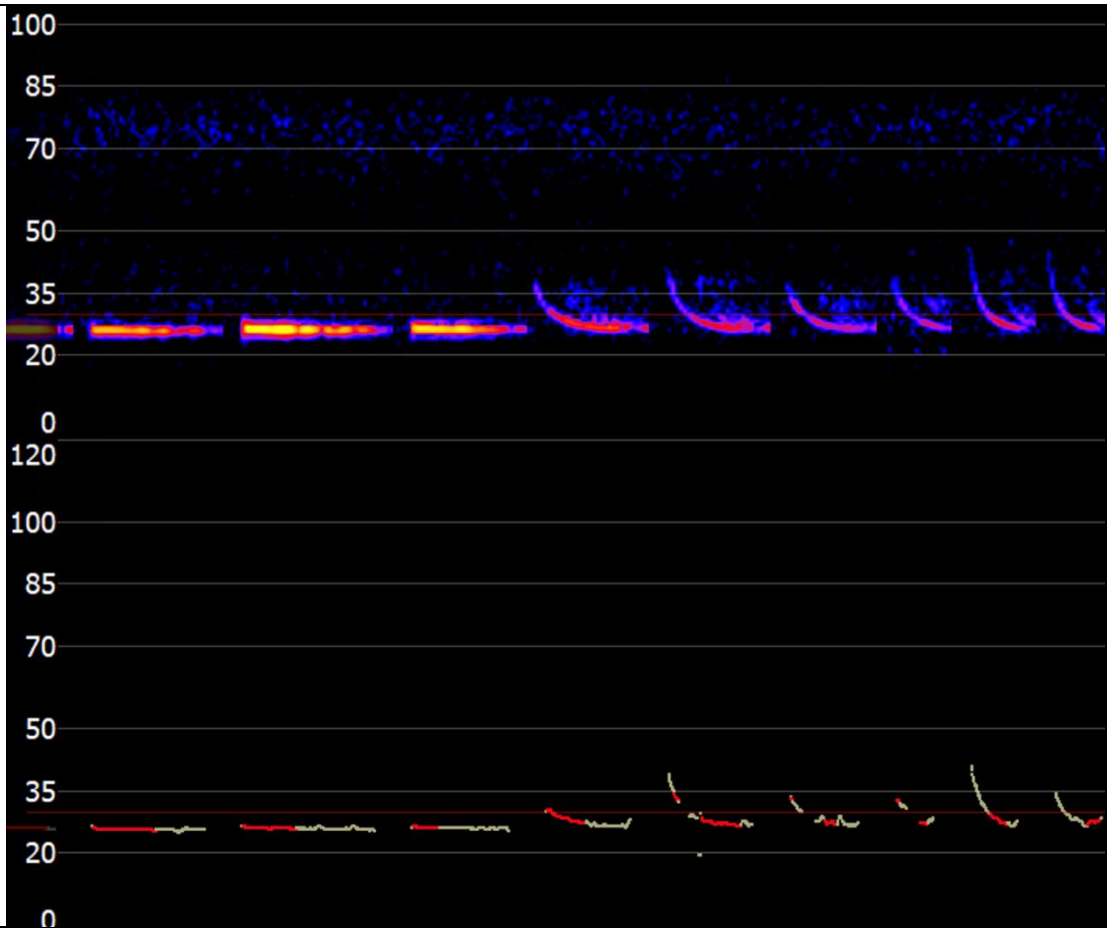
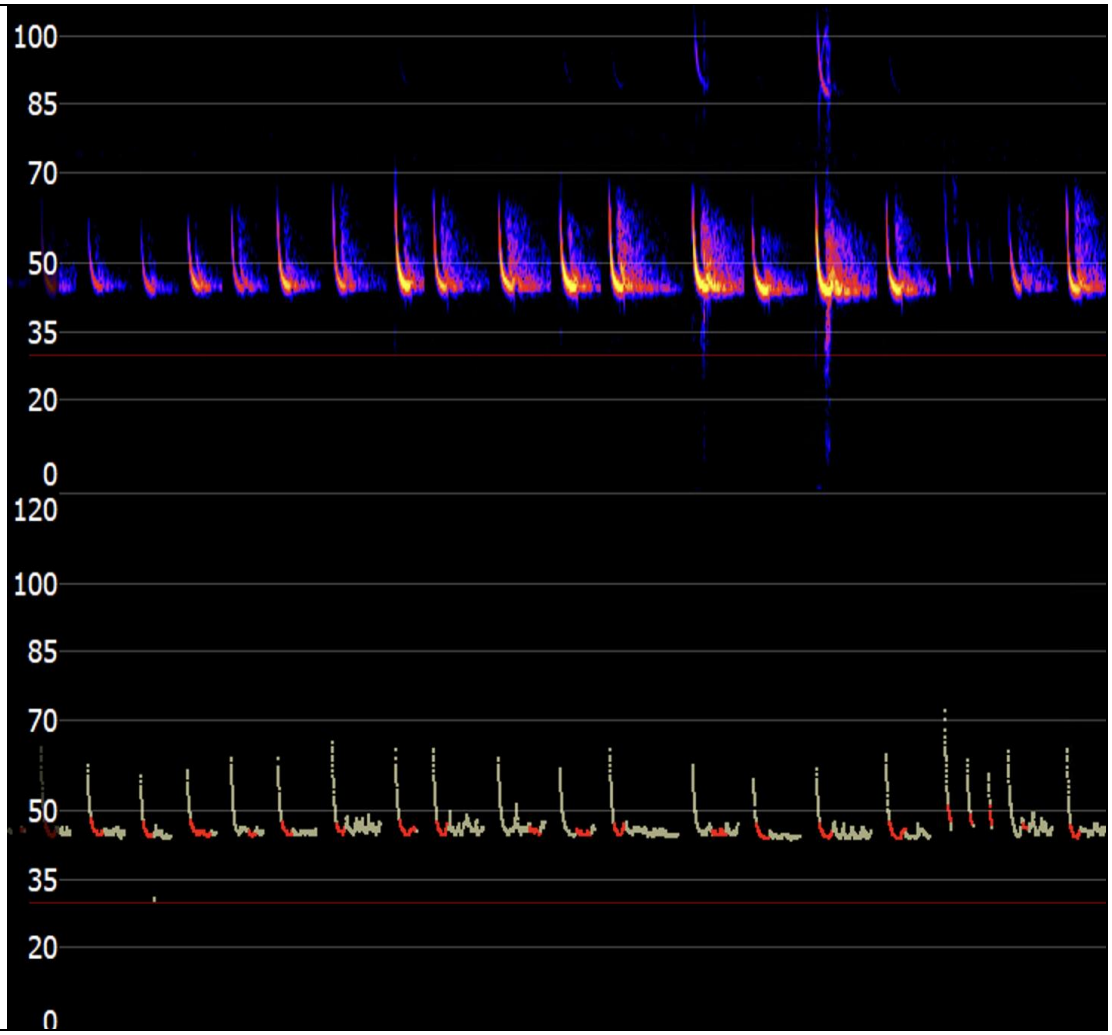


Figure 2: South-Eastern Free-Tailed Bat (*Ozimops planiceps*) in compressed mode.

This sequence was identified as *O. planiceps* call due to the flat calls (i.e., low bandwidth) around 27 kHz

Figure 3: Unidentified Forest Bat *Vespadelus regulus* or *V. darlingtoni*

This sequence was identified as either a *V. regulus* or *V. darlingtoni* call due to Frequency being around 45 kHz.



Appendix 6. Staff qualifications and experience

Table A6.1 – Staff qualifications

Team member (role)	Accreditations and qualifications	Experience	Employment history	Skills and expertise
Lindsay Holmes (Manager of Ecology)	• Biodiversity Assessment Method (BAM) Assessor (BAAS17032) • Bachelor of Science – Biology, James Cook University, Qld • Bush Regeneration II Certificate, Ourimbah TAFE • NSW WorkCover OHS Construction Induction • Senior First Aid Certificate • BioBanking Assessor (No. 199)	Lindsay has 24 years of experience as a flora ecologist and bushland regeneration supervisor and has expertise in botanical survey, ecological analysis, maintain and improve analysis, biometric analysis and geo-plotting of ecological data.	• 2007-Current: Senior Botanist, Travers bushfire & ecology • 2006-2007: Ecologist, Conacher Travers Pty Ltd • 1999-2006: Field Operations Manager, Microclimate	• Highly experienced in botanical survey and ecological analysis • Vegetation management planning • Flora and fauna assessment • Species impact statement • Threatened species, ecological communities and endangered population surveys and analysis • Preparation of BioBanking and Biodiversity Development Assessment Reports • Riparian, bushland and wetland restoration • Habitat tree analysis and assessment • Noxious weed identification and control • SULE assessment
Diane Warman (Botanist)	• Biodiversity Assessment Method (BAM) Assessor (BAAS22026) • Bachelor of Science (Hons) UoN 2012 • Basic 4wd training and experience • First Aid Certificate (expired) • White Card (expired) • Bush Regen Certificate II TAFE 2003 • Australian Flora ID TAFE 1991.	Diane has more than 23 years' experience working in the environmental industry with a particular focus on Australian plant identification, threatened species survey assessment and monitoring, biodiversity monitoring and riparian rehabilitation.	• 2021 – Current: Botanist *TBE* • 2016-2021 Consultant Botanist. • 2018-19 – RPS Senior Ecologist • 2919-2020 – NGH Botanist • 2002-2019 – University of Newcastle Casual Academic (Research Assistant, Tutor, Demonstrator, Guest/Acting Lecturer) - • 1999-2006 – Project Coordinator. Community Environment Network (Riparian Rehabilitation, Bush Stone Curlew, Tree Planting Events, COSS Connections).	• Threatened Species Targeted Search, Survey, Monitoring and Reporting. • Biodiversity Assessment Methodology (BAM) Plot surveys, Constraints Assessment and reporting (BAR, BCA and BDAR) • Australian Flora Identification Tutor and Mentor for Australian Plants Society CC and University of Newcastle • Bushland /Habitat/Riparian Weed Condition Assessment, Reporting and Monitoring. On-ground bush regeneration methods and supervision.

Team member (role)	Accreditations and qualifications	Experience	Employment history	Skills and expertise
Michael Sheather-Reid (Managing Director)	• Bachelor of Natural Resources (Hons), University of New England • BioBanking Assessor • Engineering Assistant – CAD Drafting • MUSIC Modelling – Stormwater quality and quantity modelling (RMIT) • Bush Regeneration II Certificate, Ryde TAFE • NSW WorkCover OHS Construction Induction • Chemical Handling Certificate, Ryde TAFE	Michael has a wealth of experience in environmental consulting and on ground management of bushland, wetland and riparian habitats having undertaken environmental assessment, ecological consultancy and restoration in both the private and public sectors for over 25 years.	• 2007- Current: Senior Ecologist, Travers bushfire & ecology • 2004 -2007: Senior Ecologist, Conacher Travers Pty Ltd • 2002-2004: Project Manager, Urban Bushland Management Projects Pty Ltd • 1999-2002: Project Manager Sustainable Vegetation Management Pty Ltd • 1995-1999: Managing Director Sheather-Reid & Associates Pty Ltd • 1996-1997: NSW Landcare Liaison Officer, Australian Conservation Foundation • 1992-1995: Environmental Officer, Dept. Land & Water Conservation • 1990-1992: Scientific Officer Dept. of Water Resources	• Ecological assessment • Rezoning studies • Biodiversity offset planning • Restoration management and coordination • Biotic and soil translocation • Watercourse assessment • Project ecologist services • *EPBC Act* referrals • Controlled Activity Approvals • Vegetation management plans
Sandy Cardow (GIS officer)	• Bachelor of Science (Biological Sciences) (Macquarie University)	Sandy has over twenty years of experience in Spatial Information (Geographic Information Systems (GIS)), which includes preparation of mapping in local government roles and has completed a Bachelor of Science (Biological Sciences).	• 2017 – Current: GIS Officer, Travers bushfire & ecology • 2014 – 2017: GIS Consultant, Forestry Corp. NSW • 2005 – 2011: GIS Analyst, Forests NSW • 2002 – 2005: GIS Data Librarian, Forests NSW • 2000 – 2002: GIS Operator, Forests NSW • 2000 – 2002: GIS Data Import / Export Officer, Forests NSW • 1999 2000: GIS Project Officer DECC • 1998 – 1999: GIS Support Officer DECC • 1998 – 1999: Wildlife Atlas Data Entry Officer DECC	• Geographic Information Systems • Data management and analysis • Spatial databases and database administration • GPS • Cartography • Natural resource management • Client liaison
Corrine Edwards (Fauna Ecologist)	• Bachelor of Environmental Science and Management. (Hons) (University of New South Wales) (2016-2020)	Corrine has over 10 years' experience in fauna survey techniques, researching ecological interactions and identification of vertebrate fauna within a magnitude of Australian habitats. She is experienced in leading research projects, experimental design, data collection, data analysis and report writing.	• 2021 – Current: Fauna Ecologist, Travers Bushfire and Ecology • 2020 – Recipient of the Marilyn Fox Environmental Science Prize • 2019 – 2020: Research scholarship fellow at the Fowlers Gap Research Station • 2019 – Research assistant at University of NSW • 2015-2016 – Reptile Research Assistant, Adelaide Museum	• Survey techniques for all major vertebrate fauna groups (including threatened species target searches) • Fauna identification, morphology and behaviour • Fauna field assessment • Microhabitat identification • Project ecology

Team member (role)	Accreditations and qualifications	Experience	Employment history	Skills and expertise
			• 2014 – 2015 Amphibian Research Assistant, University of Western Australia • 2012-14 – Reptile Zookeeper – Australian Reptile Park.	• Experimental design and statistical analysis • Scientific report writing

Appendix 7. BAM-C outputs

BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00042568/BAAS22026/23/00042570	21ALLE07 FORBES	22/06/2023
Assessor Name	**Report Created**	**BAM Data version ***
Diane Warman	27/09/2023	61
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS22026	Part 4 Developments (General)	Finalised
Assessment Revision	**Date Finalised**	**BOS entry trigger**
1	27/09/2023	BOS Threshold: Area clearing threshold

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

1	76_DNG	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	DNG	4.17	2	DNG (4.17 ha)
2	76_poor_moderate	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	poor_moderate	3.8	2	Zone 2 (3.8 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00042568/BAAS22026/23/00042570	21ALLE07 FORBES	22/06/2023
Assessor Name	Report Created	BAM Data version *
Diane Warman	27/09/2023	61
Assessor Number	Assessment Type	BAM Case Status
BAAS22026	Part 4 Developments (General)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
1	BOS Threshold: Area clearing threshold	27/09/2023

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Black Falcon	Falco subniger	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Diamond Firetail	Stagonopleura guttata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Dusky Woodswallow	Artamus cyanopterus cyanopterus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Flame Robin	Petroica phoenicea	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Grey Falcon	Falco hypoleucos	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Grey-headed Flying-fox	Pteropus poliocephalus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Major Mitchell's Cockatoo	Lophochroa leadbeateri	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Scarlet Robin	Petroica boodang	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Speckled Warbler	Chthonicola sagittata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Superb Parrot	Polytelis swainsonii	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Swift Parrot	Lathamus discolor	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
White-bellied Sea-Eagle	Haliaeetus leucogaster	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
White-throated Needletail	Hirundapus caudacutus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Glossy Black-Cockatoo	Calyptorhynchus lathami	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

BAM Predicted Species Report

Common Name	Scientific Name	Justification in the BAM-C
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	Refer to BAR
Glossy Black-Cockatoo	Calyptorhynchus lathami	Habitat constraints

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00042568/BAAS22026/23/00042570	21ALLE07 FORBES	22/06/2023
Assessor Name	Report Created	BAM Data version *
Diane Warman	27/09/2023	61
Assessor Number	BAM Case Status	Date Finalised
BAAS22026	Finalised	27/09/2023
Assessment Revision	Assessment Type	BOS entry trigger
1	Part 4 Developments (General)	BOS Threshold: Area clearing threshold

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions												
1	76_DNG	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	5.3	5.3	4.2	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		0
2	76_poor_moderate	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	38.3	38.3	3.8	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		73
											Subtotal	**73**
											Total	**73**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits

Austrostipa wakoolica / A spear-grass (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	73
								Subtotal	**84**
Crinia sloanei / Sloane's Froglet (Fauna)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Endangered	False	8
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Endangered	False	55
								Subtotal	**63**
Diuris tricolor / Pine Donkey Orchid (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	8

76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	55
								Subtotal	**63**
Eleocharis obicis / Spike-Rush (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	73
								Subtotal	**84**
Lepidium aschersonii / Spiny Peppercress (Flora)									
76_DNG	5.3	5.3	4.2	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	11
76_poor_moderate	38.3	38.3	3.8	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	73

								Subtotal	**84**
Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	73
								Subtotal	**84**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	73
								Subtotal	**84**
Phascolarctos cinereus / Koala (Fauna)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	11

76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	73
								Subtotal	**84**
Polytelis swainsonii / Superb Parrot (Fauna)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	73
								Subtotal	**84**
Swainsona murrayana / Slender Darling Pea (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	73
								Subtotal	**84**

Swainsona recta / Small Purple-pea (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	73
								Subtotal	**84**
Swainsona sericea / Silky Swainson-pea (Flora)									
76_DNG	5.3	5.3	4.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	11
76_poor_moderate	38.3	38.3	3.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	73
								Subtotal	**84**

BAM Candidate Species Report

Proposal Details

Assessment Id 00042568/BAAS22026/23/00042570	Proposal Name 21ALLE07 FORBES	BAM data last updated * 22/06/2023
Assessor Name Diane Warman	Report Created 27/09/2023	BAM Data version * 61
Assessor Number BAAS22026	Assessment Type Part 4 Developments (General)	BAM Case Status Finalised
Assessment Revision 1	Date Finalised 27/09/2023	BOS entry trigger BOS Threshold: Area clearing threshold

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Austrostipa wakoolica A spear-grass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Crinia sloanei Sloane's Froglet	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris tricolor Pine Donkey Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Eleocharis obicis Spike-Rush	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium aschersonii Spiny Peppercress	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Major Mitchell's Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Polytelis swainsonii Superb Parrot	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona recta Small Purple-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Glossy Black-Cockatoo	Calyptorhynchus lathami	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Mossgiel Daisy	Brachyscome papillosa	Geographic limitations
Sand-hill Spider Orchid	Caladenia arenaria	Geographic limitations

Squirrel Glider in the Wagga Wagga Local Government Area	Petaurus norfolcensis - endangered population	Refer to BAR
Swift Parrot	Lathamus discolor	Habitat constraints