PLANNING PROPOSAL – LACHLEY ESTATE BIODIVERSITY

1 LACHLEY ST, FORBES

BIODIVERSITY OPPORTUNITIES AND CONSTRAINTS REPORT

FORBES LOCAL GOVERNMENT AREA, NSW

JANUARY 2023

Report prepared by

OzArk Environment & Heritage

for Brisull Industries Pty Ltd

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Acknowledgement

OzArk acknowledge the traditional custodians of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the Elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

The Lachley Estate Planning Proposal is being prepared on behalf of Brisull Industries (the proponent) to rezone the former Lachley Meats Abattoir site at 1 Lachley Street, Forbes, NSW. OzArk Environment & Heritage has been engaged to complete an opportunities and constraints report assessing the local biodiversity on the subject site.

An ecological survey was conducted of the subject site on the 23rd of June 2022. Initially, 22.49 ha of native vegetation was found within the proposed Lachley Estate. Following provision of this information to the proponent, the boundaries of the proposed Lachley Estate were revised to include an additional zone, C3 (Environmental Management Zone) to reduce the total native vegetation within the proposed Lachley Estate to 14.63 ha. This vegetation was identified as belonging to six Plant Community Types (PCTs):

- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains (3.32 ha).
- PCT 76 (partially planted) – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (9.24 ha).
- PCT 77 – Yarran shrubland of the NSW central to northern slopes and plains (0.01 ha).
- PCT 85 (planted) – River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion (0.26 ha).
- PCT 201 – Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion (1.33 ha).
- PCT 217 (planted) – Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion (0.47 ha).

PCT 76 is associated with the Endangered Ecological Communities (EECs):

- *Biodiversity and Conservation Act 2016* (BC Act)-listed EEC: *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions.*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)-listed EEC: *Grey Box* (Eucalyptus microcarpa) *Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.*

All areas of PCT 76 fit the criteria for listing under the BC Act as the EEC (9.24 ha). One section of PCT 76 also fits the criteria for listing under the EPBC Act as the EEC (1.71 ha).

PCT 201 is associated with the EEC:

- BC Act-listed EEC: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregions.*

All areas of PCT 201, except the derived zones, fit the criteria for listing under the BC Act as the EEC (0.47 ha).

PCT 53 is associated with the Critical Endangered Ecological Community (CEEC)

- BC Act-listed CEEC: *Artesian Springs Ecological Community in the Great Artesian Basin.*

No areas of PCT 53 fit the criteria for listing due to the subject site being outside of the Great Artesian Basin.

Fifty-six live hollow-bearing trees and stags, containing 21 large (> 20cm diameter) and 159 small (< 20cm diameter) hollows suitable for fauna, along with three bird nests, were recorded within the subject site.

A total of 124 threatened species or populations recognised as threatened or migratory under the BC Act and/or the EPBC Act, are known or predicted to occur within the Interim Biogeographic Regionalisation of Australia (IBRA) subregion found within 10 km of the subject site. Thirteen threatened flora species, recognised under the BC Act and/or the EPBC Act were assessed as having a moderate to high likelihood of occurring on the subject site, though none were recorded during the site visit. Fifty fauna species, recognised as threatened or migratory under the BC Act and/or the EPBC Act, demonstrated a moderate to high likelihood of occurring on the subject site; of these, only the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) was recorded on site.

The former abattoir and nearby abandoned buildings may provide habitat for microbats, many of which are threatened. In particular, the Little Pied Bat, Yellow-bellied Sheathtail-bat and the Southern Myotis, all listed as Vulnerable under the BC Act, would need to be surveyed for (using echolocation, and/or trapping) to ensure they are not present, prior to any planned demolition of these buildings. The loss of human-made structures would be considered a Prescribed Impact under the Biodiversity Assessment Method (BAM) 2020 due to their value as microbat habitat.

An EPBC Act Protected Matters Search identified no World Heritage Properties, four Wetlands of International Importance, four Threatened Ecological Communities, 28 threatened, and 12 migratory species that may be present within the subject site. However, no significant impact to any entity listed under the EPBC Act is expected, provided that adequate mitigation measures are followed.

The application of the Koala Habitat Assessment Tool determined that the subject site failed to qualify as habitat critical to the koala (habitat score = 4), under the EPBC Guidelines. Given this, and a lack of recent Koala records, referral would likely be unnecessary if the proposal was to proceed through to the development phase. However, further consideration would need to be given under the Koala SEPP.

Three minor, non-perennial watercourses occur within the subject site. Key Fish Habitat mapped by the Department of Primary Industries – Fisheries (DPI), occurs within the subject site. As such, the proponent would need to seek a permit from DPI – Fisheries for dredging or reclamation work in this area.

As mentioned above, using the information from these fieldwork findings, the proponent has modified the project boundaries to reduce impacts to biodiversity. This resulted in excluding 7.86 hectares of native vegetation, including 6.54 hectares of the BC Act-listed Inland Grey Box EEC. Additionally, nine habitat trees containing two large and 24 small hollows will be excluded. Finally, planted River Red Gum (*Eucalyptus camaldulensis*) and Poplar Box (*Eucalyptus populnea*) are feed trees for the Koala, these trees have also been excluded from the revised footprint. Further efforts to minimise biodiversity loss will be considered throughout the detailed planning stage and will be guided by a Biodiversity Development Assessment Report (BDAR) that will need to be prepared to support the eventual Development Application.

This report covers the results of the ecological field survey and discusses potential impacts and opportunities to reduce impacts on biodiversity. This report is not a biodiversity assessment report, and should be used to guide planning only, for development approval a BDAR will be required.

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ABBREVIATIONS

Term	Description
^{0}C	Degrees Celsius
AOBV	Areas of Outstanding Biodiversity Value
ASL	Above Sea Level
BAM	Biodiversity Assessment Method 2020
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	NSW *Biodiversity Conservation Act 2016*
BOS	NSW Biodiversity Offsets Scheme
CAMBA	China-Australia Migratory Bird Agreement
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DCCEEW	Commonwealth Department of Climate Change, Energy the Environment and Water
DoE	Department of Environment
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESCP	Erosion and Sediment Control Plan
FM Act	NSW *Fisheries Management Act 1994*
GDEs	Groundwater dependent ecosystems
GPS	Global Positioning System
ha	Hectare
HTE	High Threat Exotic
IBRA	Interim Biogeographic Regionalisation of Australia. Each region is a land area made up of a group of interacting ecosystems repeated in similar form across the landscape.
JAMBA	Japan-Australia Migratory Bird Agreement
KAR	Koala Assessment Report
KFH	Key Fish Habitat
KTP	Key Threatening Process
LEP	Local Environmental Plan
LGA	Local Government Area
mm/cm/m/m^2/km	Millimetre/centimetre/metre/square metre/kilometre
MNES	Matters of National Environmental Significance
NPW Act	NSW *National Parks and Wildlife Act 1974*
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type

Term	Description
PMST	Protected Matters Search Tool
PW	Priority Weed
RAMSAR	Convention on Wetlands of International Importance
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
VIS	Vegetation information system
WoNS	Weeds of National Significance

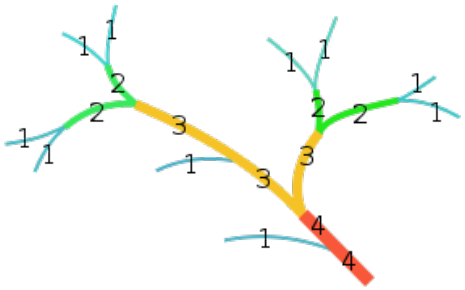
GLOSSARY OF TERMS

Term	Description

Areas of outstanding biodiversity	An area of outstanding biodiversity value is:
	• an area important at a State, national or global scale, and
	• an area that makes a significant contribution to the persistence of at least one of the following:
	  ○ multiple species or at least one threatened species or ecological community
	  ○ irreplaceable biological distinctiveness
	  ○ ecological processes or ecological integrity
	  ○ outstanding ecological value for education or scientific research.
	
	The declaration of an area may relate, but is not limited, to protecting threatened species or ecological communities, connectivity, climate refuges and migratory species (BC Act).

Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impacts	Are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat (OEH 2018).
Habitat	The area occupied or used, including areas periodically or occasionally occupied or used, by any threatened species or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycle (OEH 2018).
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 (DE 2013).
Indirect impact	Occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. 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, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas (OEH 2018).
Invasive species	Is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources, or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.
Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence

Term	Description
	may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
Local population (in regard to a threatened or migratory species)	A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extends into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate. A local population of fauna species comprises those individuals known or likely to occur in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time (DECC 2007).
Low condition (vegetation)	Either: a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-story percent foliage cover benchmark for that vegetation type, and where either: • less than 50% of ground cover vegetation is indigenous species, or • greater than 90% of ground cover vegetation is cleared or b) native grassland, wetland or herb field where either: • less than 50% of ground cover vegetation is indigenous species, or • more than 90% of ground cover vegetation is cleared. Note: The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetated compared to non-native ground cover vegetation is likely to be at its maximum.
Moderate to good condition (vegetation)	If native vegetation is into in low condition (above), it is in moderate to good condition.
Mitigation	Action to reduce the severity of an impact.
Mitigation measure	Any measure that prevents, reduce or controls adverse environmental effects of a project.
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (OEH 2018).
Proposal	Is considered to include 'all activities likely to be undertaken within the subject site to achieve the objective of the proposed development' (DECC 2007).
Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
Significant impact	A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
Strahler stream order	Strahler stream orders are used to define stream size based on a hierarchy of tributaries, based on the diagram below.

Term	Description
	
Study area	Means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (OEH 2018).
Study region	Is considered to 'include the lands that surround the subject site for a distance of 10 km' (DECC 2007). The study region has been used to search information sources to establish the landscape context of the subject site.
Subject site	Means the area directly affected by the proposal. The subject site includes the footprint of the proposal and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity (OEH 2018).
Target species	A species that is the focus of a study or intended beneficiary of a conservation action or connectivity measure.

1 INTRODUCTION

1.1 DESCRIPTION OF THE PROPOSAL

Brisull Industries (the proponent) seeks to amend zoning controls for the disused Forbes Abattoir which occupies a large site north of the Forbes Town Centre and has good access to the Newell Highway. The planning proposal aims to unlock its potential and benefit Forbes and the surrounding region by providing land for employment, residential, education and several other land uses which are outlined in a concept Master Plan for the precinct.

The Lachley Estate Planning Proposal covers land previously zoned as RU1 – Primary Production and proposes to rezone it as R5 – Large Lot Residential, SP2 – Infrastructure, C3 – Environmental Management, and E3 – Productivity Support **(Figures 1-1 and 1-2**).

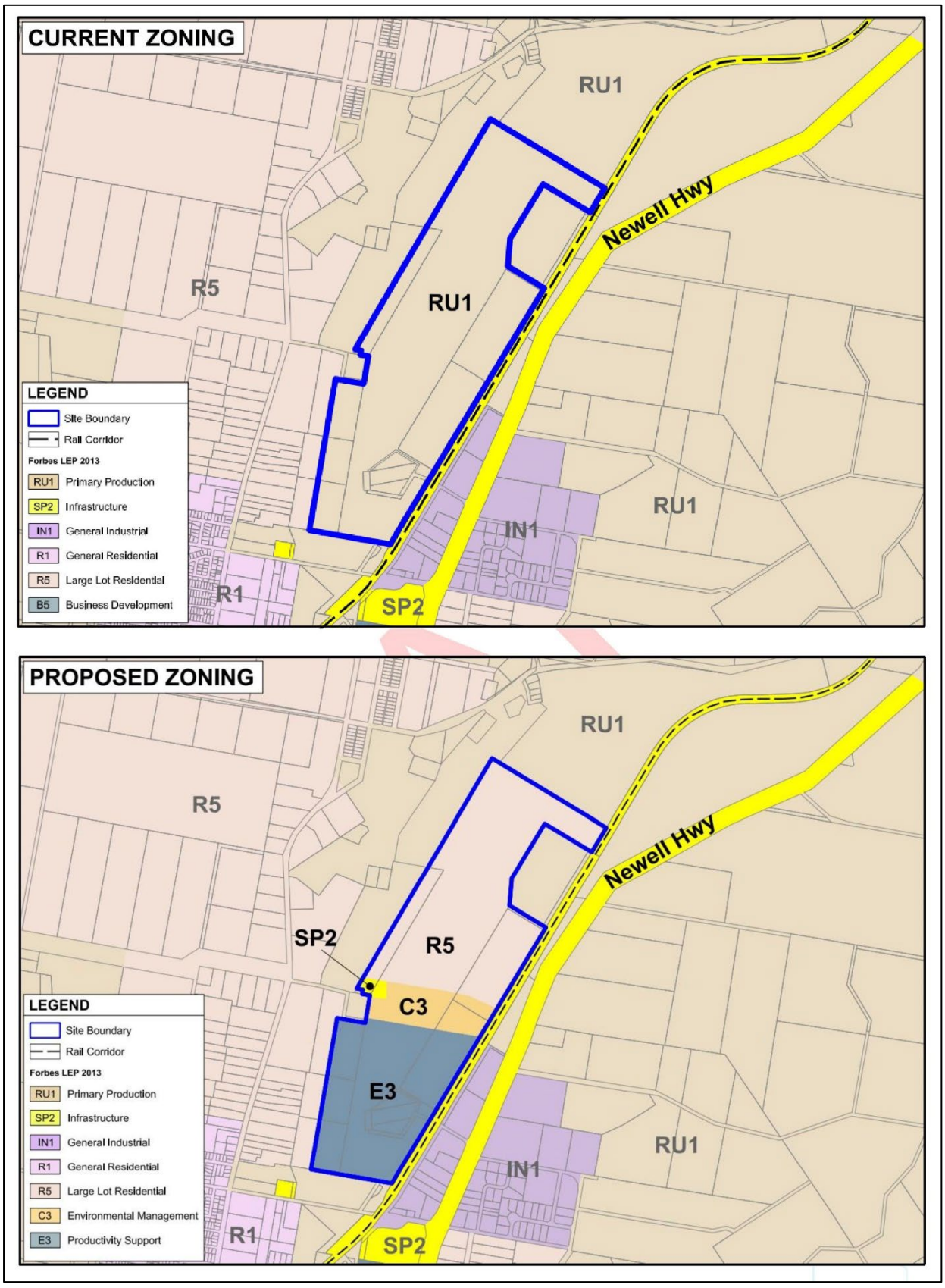


Figure 1-1. Proposed Zoning areas within subject site

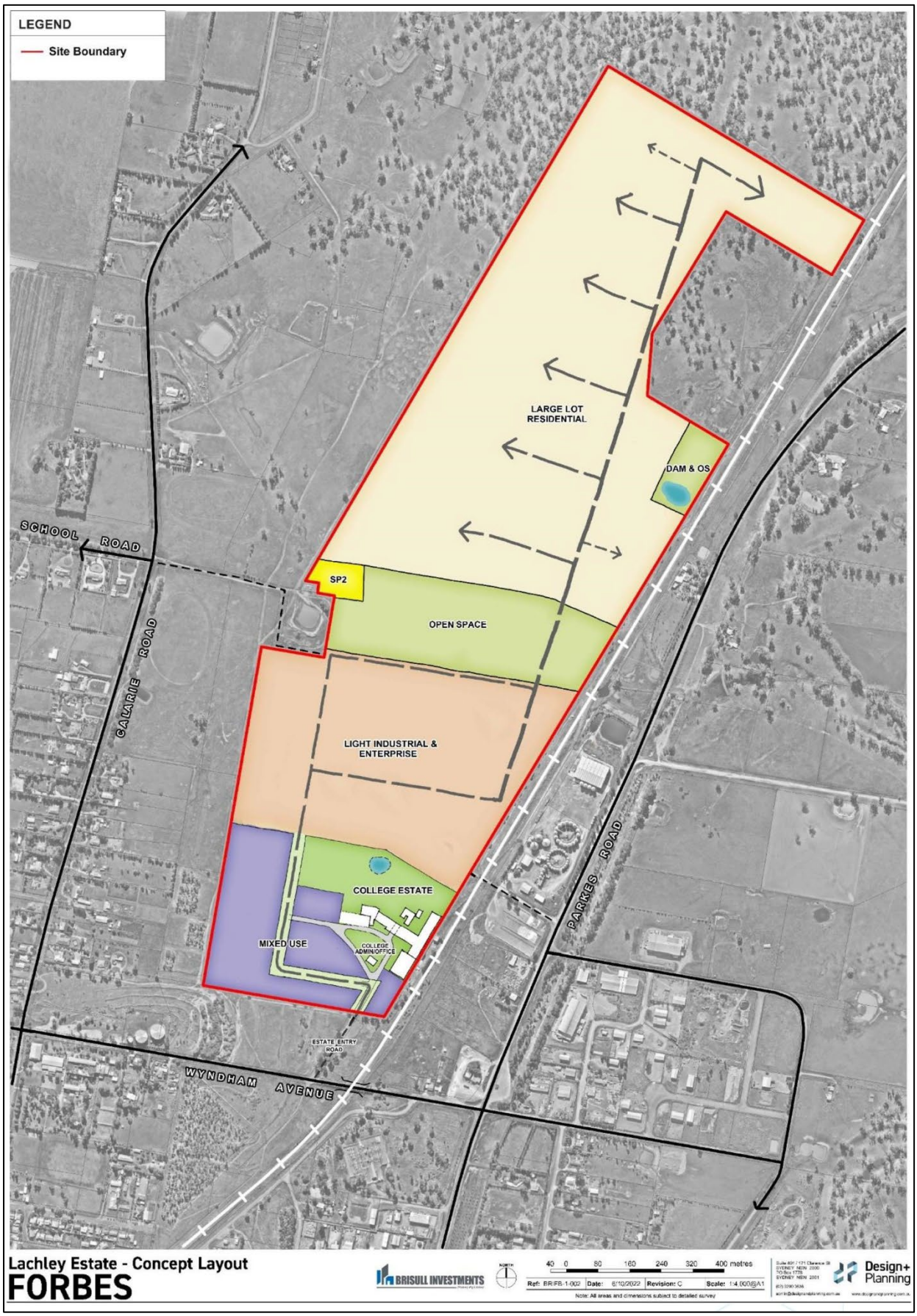


Figure 1-2. Concept layout for the proposed Estates

1.2 STUDY AREA

This report uses the following terms to describe and contextualise the development location:

10 km search area the area within a 10 km radius of the subject site. This 10 km buffer has been used to search information sources to establish the landscape context of the subject site.

Study area the area within a 1,500 m radius of the subject site. Native vegetation has been mapped within this 1,500 m buffer to provide some context regarding the connectivity and cover of native vegetation in the area affected by the proposal, and to inform the impact assessment of the proposal.

Subject site the footprint of the proposal and the area directly affected by the development activities.

The regional context of the proposal is explored in **Table 1-1** and depicted in **Figure 1-3**.

Table 1-1. Regional context of the proposal.

Criteria	Value
Interim Biogeographic Regionalisation for Australia (IBRA Region)	NSW South Western Slopes
Interim Biogeographic Regionalisation for Australia Sub-region (IBRA Sub-Region)	Lower Slopes
State	NSW
Local Government Area	Forbes
Nearest town	Forbes
Nearest park, state forest or reserve	Lachlan Valley National Park
Mitchell Landscapes	Calarie Plains
Nearest waterway (Name, Type)	Unnamed, minor, non-perennial
Surrounding land use	Cropping Grazing modified pastures Grazing native vegetation Managed resource production Manufacturing and industrial
Surrounding land zone	RU1 SP2

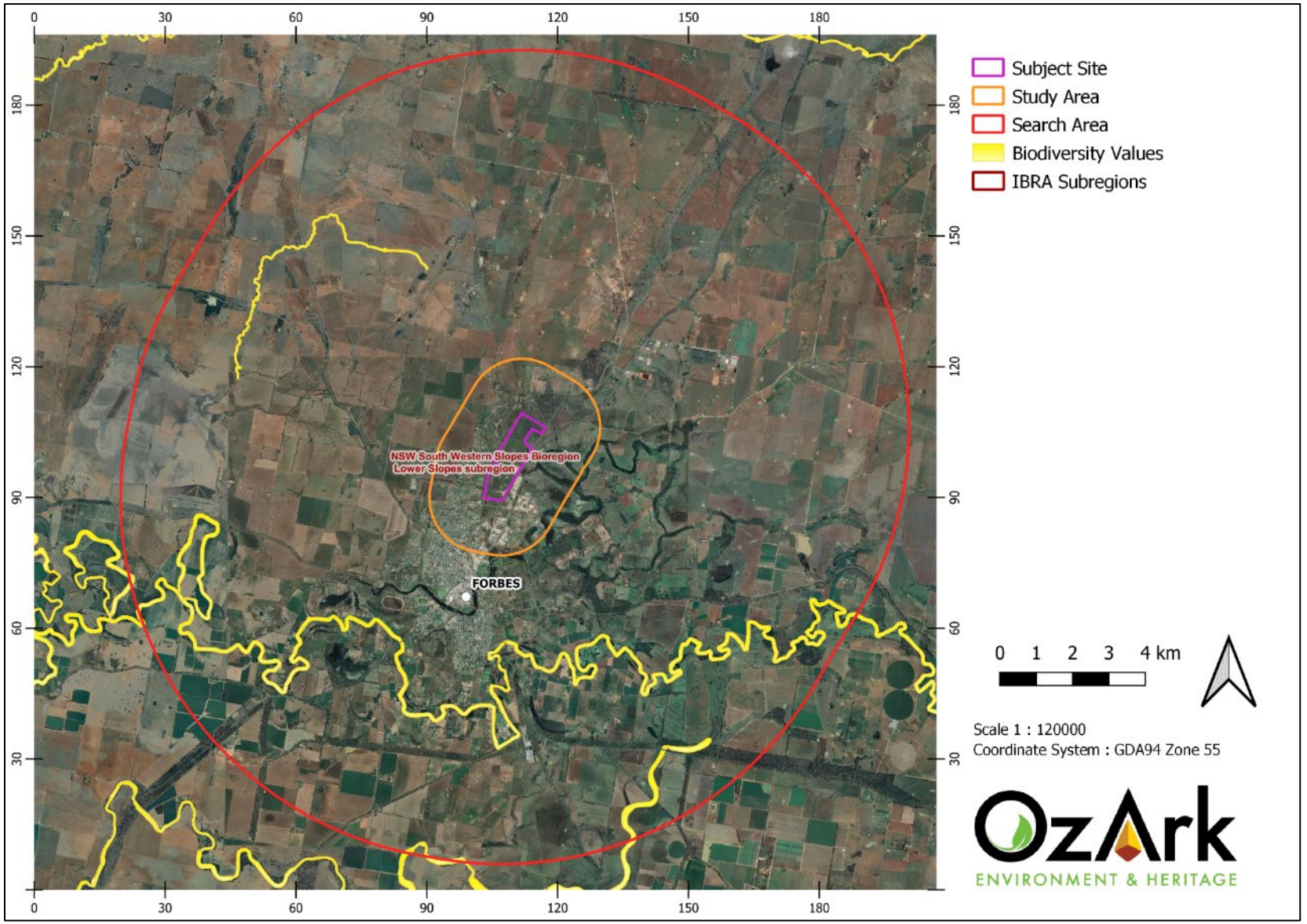


Figure 1-3. Regional location of the proposal.

2 STATUTORY AND PLANNING CONTEXT

2.1 COMMONWEALTH LEGISLATION

2.1.1 *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act)

To assist with nationally listed matters assessments, the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999* (DoE 2013) are followed.

Birds which are listed in the following international agreements are listed as migratory birds under the EPBC Act.

- Japan-Australia Migratory Bird Agreement (JAMBA),
- China-Australia Migratory Bird Agreement (CAMBA),
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA),
- Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II (Bonn Convention)

Matters which fall under this legislation are addressed in **Section 5.5.**

2.2 STATE LEGISLATION

2.2.1 *Environmental Planning and Assessment Act 1979* (EP&A Act)

The EP&A Act is the principal planning legislation for NSW by providing the framework for environmental planning and the assessment of proposals.

Part 4 of the EP&A Act requires the proponent to examine and consider to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

2.2.2 *Biodiversity Conservation Act 2016* (BC Act)

The BC Act relates to the terrestrial environment and includes threatened species, ecological communities, key threatening processes and other protected animals and plants.

Under the BC Act, the proponent has an obligation to consider impacts to all threatened species, populations and ecological communities listed in NSW, as well as ensuring the proposal does not exacerbate a Key Threatening Process (KTP).

Section 7.3 of the BC Act contains a five-part test of significance for determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

BC Act listed species and communities are addressed in **Sections 5.3** and **5.4** and **Appendix C**.

2.2.3 *Biodiversity Conservation Regulation 2017* (BCR)

The BCR defines the triggers and entry thresholds for the BOS. It also provides the rules for meeting offset obligations, triggers for authorities to refuse development applications and compliance provisions.

2.2.4 *NSW Biosecurity Act 2015*

The Biosecurity Act aims to manage biosecurity risks from animal and plant pests and diseases, weeds, and contaminants in NSW. The Biosecurity Act imposes a general biosecurity duty to ensure that, so far as is reasonably practicable, any biosecurity risk is prevented, eliminated, or minimised.

The proponent is required to manage the presence of weeds in the study area.

2.2.5 *Local land Services Act 2013* (LLS Act)

The objects of the Act include 'to ensure the proper management of natural resources in the social, economic, and environmental interests of the State, consistently with the principles of ecologically sustainable development.

2.2.6 *Fisheries Management Act 1994* (FM Act)

Part 7A of the FM Act along with schedules within the act, list threatened aquatic and marine species, populations and ecological communities and key threatening processes which must be considered as part of obligations under Section 5.5 of the EP&A Act.

Section 201 of the FM Act states that a person must not carry out dredging work or reclamation work except under the authority of a permit issued by the Minister. As such, the proponent would need to seek a permit from NSW Department of Primary Industries – Fisheries (DPI – Fisheries) for dredging or reclamation work. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

Under section 198A of the FM Act:

"water land" means land submerged by water:

(a) whether permanently or intermittently, or

(b) whether forming an artificial or natural body of water,

and includes wetlands and any other land prescribed by the regulations as water land to which this Division applies.

Refer to **Section 4.3** for issues relating to watercourses and the FM Act.

2.2.7 *Water Management Act 2000* (WM Act)

The WM Act aims to provide for the 'sustainable and integrated management of the water sources of the state for the benefit of both present and future generations.'

The WM Act provides for the granting of various licenses and approvals, including for the use of water and water supply work. Additionally, the WM Act identifies provisions relating to 'controlled activities' carried out on 'waterfront land' (within 40 m of a river bank, lake shore, or estuary's high water mark). Controlled activities include:

- erecting a building,
- carrying out works,
- removing material (e.g., plants and rocks),
- depositing material (e.g., gravel and fill),
- any activity which affects the quantity or flow of water in a water source.

Examples of controlled activities include:

- construction of watercourse crossings (e.g., bridges, bed level crossings),
- laying pipes and cables,
- sand and gravel extraction.

For private developments, approval (via a 'controlled activity' approval) is required from DPE under the WM Act if it is on 'waterfront land'.

2.2.8 *Forbes Local Environmental Plan* (2013)

A Local Environmental Plan (LEP) is a legal document prepared by a Council and approved by the State Government for the regulation of land-use and development. LEPs guide planning decisions for local governments. The plan allows Council to regulate the ways in which all land both private and public may be used and protected through zoning and development controls.

The aims of the Forbes LEP (2013) are:

(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,

(a) to encourage and manage ecologically sustainable development in Forbes,

(b) to reinforce the existing urban character of Forbes as the urban focus,

(c) to reinforce the rural character of Forbes while promoting sustainable development,

(d) to protect the agricultural land of Forbes for continued agricultural production while allowing for planned expansion at the urban fringe,

(e) to promote Forbes as a premier tourist-destination building on its unique heritage and environmental attributes as well as sporting and leisure facilities,

(f) to protect, enhance and conserve the natural environment, including the Lachlan River, Lake Forbes, wetlands, native vegetation, environmentally sensitive land and other natural features that provide habitat for fauna and flora, provide scenic amenity and that may prevent or mitigate land degradation,

(g) to provide a range and variety of housing choices to cater for the different needs and lifestyles of residents.

Terrestrial Biodiversity Values mapped in the LEP are shown in **Appendix A**. The proposed Lachley Estate North contains mapped areas of Terrestrial Biodiversity Value, as per the Forbes LEP.

2.3 STATE ENVIRONMENTAL PLANNING POLICIES UNDER THE EP&A ACT 1979

2.3.1 *State Environmental Planning Policy (Transport and Infrastructure) 2021*

The Transport and Infrastructure SEPP aims to facilitate the effective delivery of infrastructure across the state, including for roads and road infrastructure facilities. It permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under *SEPP (Resilience and Hazards) 2021, SEPP (Precincts - Regional) 2021* or *SEPP (Planning Systems) 2021*.

2.3.2 *State Environmental Planning Policy (Biodiversity and Conservation) 2021*

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (*Biodiversity and Conservation SEPP*) consolidates, transfers and repeals provisions of 11 SEPPs, the following of which are relevant to the current assessment:

- Former SEPP (Koala Habitat Protection) 2020
- Former SEPP (Koala Habitat Protection) 2021

These individual SEPPs are no longer current; however, their provisions are incorporated into the *Biodiversity and Conservation SEPP.* Through the principles contained in these amalgamated SEPPs, the *Biodiversity and Conservation SEPP* aims to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline'. No Koala Management Plan exists for the Forbes Shire.

The subject site is located on land zoned RU1 within the Forbes Shire LGA. Consequently, the provisions of the former SEPP (Koala Habitat Protection) 2020 apply to any development carried out on the relevant lots. Under these provisions, the consent authority must be satisfied as to whether the subject site is likely to constitute potential Koala habitat. As defined in the SEPP, potential koala habitat is habitat in which 15% of the canopy is comprised of core Koala feed tree species, as defined in Schedule 1 of the SEPP. Of these species, only River Red Gum (*Eucalyptus camaldulensis*) and Poplar Box (*Eucalyptus populnea*) were recorded within the subject site. Neither species was found to occur naturally within the relevant lots; instead, both were included in the extensive plantings located near the middle of the subject site. While the limited duration of the survey did not allow for the identification or quantification of all trees within this planted area, these two species appeared to represent only minor components of the overall planting and were unlikely to comprise 15% of the canopy. Should the site satisfy the above requirements to be considered Koala habitat, a Koala Assessment Report (KAR) may be required prior to development proceeding. However, following revision of the proposed Lachley Estate boundaries, these koala feed trees have been excluded from the subject site, so a KAR is unlikely (see **Figure 6-1**).

A separate of Koala habitat under the EPBC Act guidelines has also been conducted (**Appendix E**). This was carried out by applying the guidelines and Koala Habitat Assessment Tool contained in the Commonwealth Department of the Environment (2014) *EPBC Act referral guidelines for the vulnerable koala*. Although these guidelines are now outdated due to the Koala being up listed to Endangered, in the absence of new tools we retain the use of this tool here as no new tools have been released.

3 METHODS

The ecological investigation was carried out in three stages:

1. An investigation and review of the relevant ecological databases to identify threatened species, populations or ecological communities listed in the NSW *Biodiversity Conservation Act 2016*, *Fisheries Management Act 1994* and/or the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* that have the potential to occur in the study area.
2. A field survey of the subject site for the purposes of:
    - Collating lists of present plant species; with these assisting in the identification of the site's vegetation communities.
    - Determining the presence of habitat features such as rock outcrops, nests, and hollow-bearing trees.
    - Determining the presence of fauna species.
    - Identifying and documenting the nature and extent of any threatened species or communities and describing its 'viable local population'.
3. The preparation of a written biodiversity constraints and opportunities report that describes the existing environment and indicates the likelihood of presence of any threatened species, populations, and ecological communities.

3.1 PERSONNEL

OzArk operates under NSW Scientific Research License 101908, and NSW Department of Primary Industries (DPI) Accreditation of a corporation as an animal research establishment Ref No. AW2022/012.

The field survey was conducted by Ecologist Dr David Orchard and Ian Griffith on the 24th of June 2022. Reporting components were completed by Ecologist Ian Griffith, with quality control provided by Dr Crystal Graham. Key details of personnel are provided in **Table 3-1**.

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Table 3-1. Summary of OzArk personnel qualifications.

Name	Position	CV Details
Dr David Orchard	Ecologist	• BAM-accredited Assessor #BAAS21028 • Doctor of Philosophy (Agriculture) – Charles Sturt University • Graduate Diploma in Science (Botany) – University of New England • Bachelor of Arts (Honours)– Australia National University • First Aid Training • WH&S Induction Training for Construction Work • Rail Industry Worker Card
Ian Griffith	Ecologist	• Honours (Genetics) – La Trobe University • Bachelor of Biological Sciences – La Trobe University • First Aid Training • WH&S Induction Training for Construction Work • Rail Industry Worker Card
Dr Crystal Graham	Senior Ecologist	• BAM-accredited Assessor #BAAS22024 • Postdoctoral Fellow – Smithsonian Tropical Research Institute • Doctor of Philosophy (Biology) – University of Sydney • Honours in Biology – University of Sydney • Bachelor of Advanced Science – University of Sydney • 4WD Training • First Aid Training • WH&S Induction Training for Construction Work • Worker at Heights Training

3.2 BACKGROUND RESEARCH

Database search results were used to assist in identifying distributions, suitability of habitats, and known records of threatened species to increase the effectiveness of field investigations. Information sources reviewed included:

– Critical habitat register, available on the DPIE website: https://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm

– NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017* https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity

– Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.

– BioNet Wildlife Atlas and Plant Community Type (VIS) databases: www.bionet.nsw.gov.au

– Flora of NSW (Harden 1991-2002) and Flora NSW Online: https://www.plantnet.rbgsyd.nsw.gov.au/

– Regional Scale State Vegetation Type Map: State Vegetation Type Map: Central West / Lachlan Region v1.4 VIS_ID 4468 (OEH, 2016)

Database searches were conducted prior to the field survey to predict the occurrence of species in the subject site. These searches indicated key species for field survey efforts and targeted searches. The results of the database searches are provided in **Appendix A**.

A series of other background searches were performed to comply with legal standards (**Table 3-2**).

Table 3-2. Presence and/or proximity of environmental considerations.

Environmental Considerations	In the subject site?
Land identified on the Biodiversity Values Map under the NSW *BC Act 2016*	No (**Appendix A**)
Area of Outstanding Biodiversity Value (AOBV) under the NSW *BC Act 2016*	No
Critical habitat nationally?	No
An area reserved or dedicated under the *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under *SEPP (Biodiversity and Conservation) 2021*	No
Land identified as wilderness under the *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974?*	No
Aquatic reserves dedicated under the *Fisheries Management Act 1994*?	No
Aquatic Threatened Ecological Community?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the *National Parks and Wildlife Act 1974*?	No
Land identified as State Forest under the *Forestry Act 1916*?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped Key Fish Habitat?	Yes

3.3 HABITAT ASSESSMENT

The results of the database investigation and the field survey were collated and reviewed in the context of local ecological knowledge to determine the likelihood of threatened species and ecological community occurrence, and potential impacts of the proposal (**Appendix C**). To demonstrate, a threatened species may be predicted to occur, but key habitat elements may be absent, in which case the species would be assessed as either not being impacted or not present.

The likelihood of the occurrence of threatened species, populations or ecological communities was categorised as follows:

– ‘Present’ – species was detected during the field survey
– ‘High’ – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.

– ‘Moderate’ – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site.
– ‘Low’ – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.
– ‘Absent’ – habitat on-site and in the vicinity is unsuitable for the species.

3.4 FIELD SURVEY

The objectives of the field survey were to:

– Identify native species and the vegetation communities present.
– Describe the quality and value of the vegetation and the flora and fauna that inhabit the development site.
– Determine the presence of species, populations, or ecological communities listed as threatened under the BC Act or EPBC Act.

3.4.1 Vegetation surveys

Vegetation communities were identified in accordance with the online NSW Master Plant Community Type Classification (OEH, 2018a), which is the current state-wide vegetation classification system for Plant Community Types (PCT). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups vegetation communities into vegetation Class and Formation/Sub-formation as per Keith (2004).

PCTs were identified on the following basis:

– Regional Scale State Vegetation Type Map: State Vegetation Type Map: Central West / Lachlan Region v1.4 VIS_ID 4468 (OEH, 2016), which provides predictive mapping of PCTs in and around the subject site. This mapping is indicative only. It is not necessarily accurate at a fine scale for the purposes of the current study. The locations of the predicted PCTs are provided in **Figure 3-1**.
– Professional ecological knowledge about locally occurring vegetation types and landscape, soil, and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.
– Field survey results confirming the flora species present, vegetation structure, landscape position and soil type at the subject site and the extent and condition of native vegetation.
– The BioNet Vegetation Classification database was used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community on the subject site. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. Criteria includes location; species present; overstorey species; weed cover; number; and type of native species, including 'important' native species.

Plant identification followed nomenclature in the Royal Botanic Gardens PlantNET online database (Royal Botanic Gardens and Domain Trust, 2022).

When surveying the assessment area, the Random Meander Method (Cropper 1993) was employed. This method entails traversing by foot through sites that require investigation, during which notes are made on the structure and floristic composition of the native vegetation, as well as the availability of habitat for threatened species.

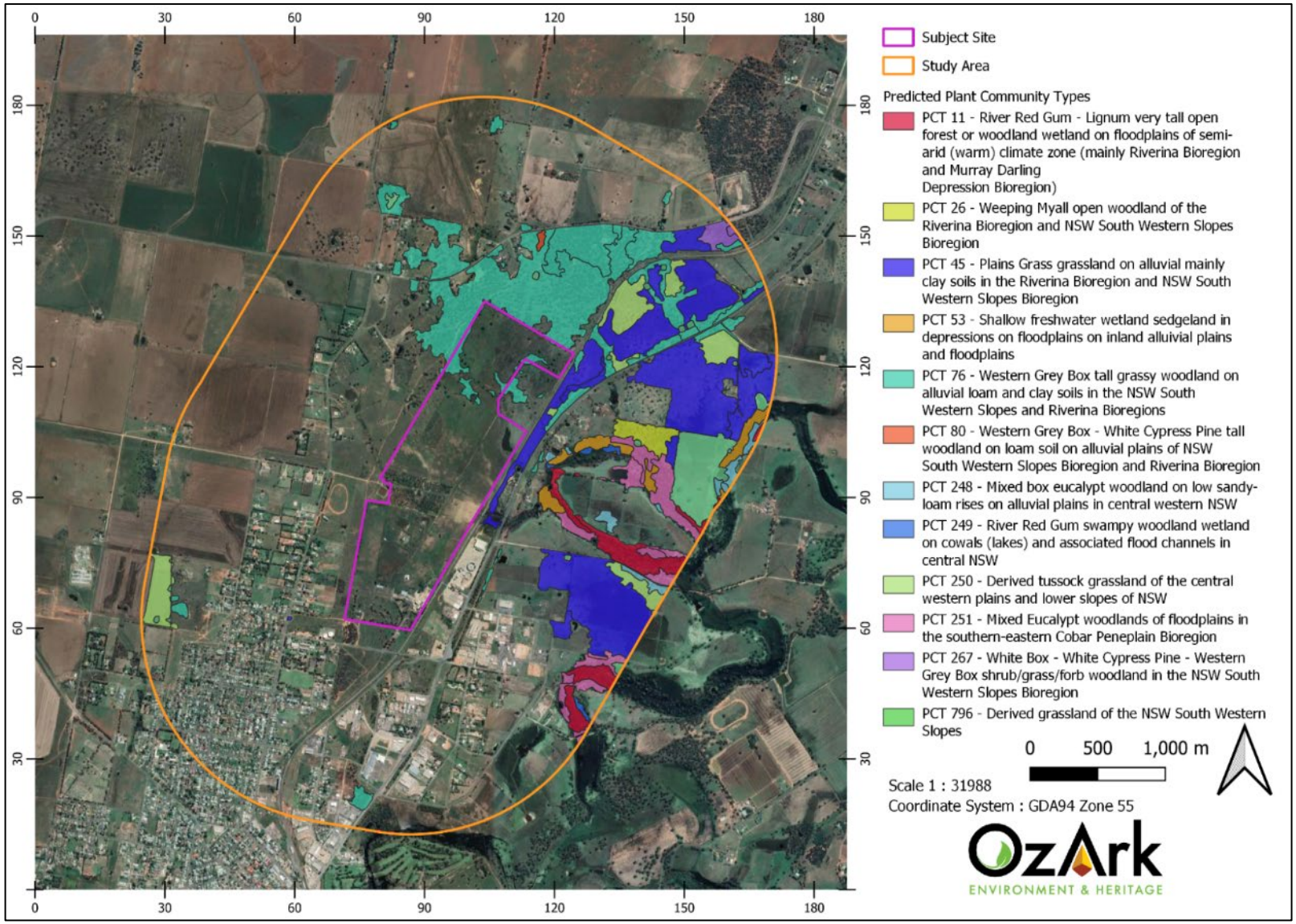

Figure 3-1. PCTs predicted to occur within the study area.

3.4.2 Incidental Fauna Surveys

The subject site was incidentally searched for fauna use while undertaking floristic and habitat surveys. The majority of habitat trees (i.e., hollow-bearing trees or trees containing nests) were GPS tagged, though given time constraints, some habitat trees were not. The size, number of hollows and/or type of nest was recorded for those habitat trees that were GPS tagged. Potential habitat (e.g., rocks, logs, loose bark, and coarse woody debris) was examined for cryptic species. Areas of suitable substrate were searched for animal tracks and burrows. Secondary evidence of fauna presence on the subject site (e.g., scats, feathers, and sloughed skin) was also recorded.

Considering the scope of the current constraints and opportunities study, combined with the substantial size of the subject site, no targeted surveys such as live trapping, nocturnal searches, aquatic surveys, deployment of bat echolocation detectors and so forth, were carried out.

3.5 LIMITATIONS

As this study is predicated on the data available at the time of the study, in addition to the environmental conditions, season, and time constraints imposed for the field survey, it has some limitations. These include:

- The field survey being completed in a single day in winter (23rd June 2022). This short duration may not have been conducive to surveying all species and thus the fauna and flora list should not be considered wholly representative of the diversity of species at the site. Non-detection should therefore not be treated as absence.
- Failure to conduct fauna trapping, aquatic and frog surveys, nocturnal spotlighting, and microbat ultrasonic call capture.

4 EXISTING ENVIRONMENT

4.1 BIOREGION

The bioregions and subregions of interest – as per the Interim Biogeographic Regionalisation of Australia (IBRA) – are the NSW South Western Slopes and Lower Slopes, respectively (Thackway & Cresswell, 1995). A formal description for the Lower Slopes subregion entailing its geology, landforms, soil types and vegetation is provided in **Table 4-1**.

Table 4-1. Description of the Lower Slopes subregion.

Bioregion	NSW South Western Slopes
Geology	Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanic rocks and large areas of intrusive granites.
Landforms	Undulating and hilly ranges and isolated peaks set in wide valleys at the apices of the Riverina alluvial fans.
Soils	Shallow stony soils on steep slopes, texture contrast soils grading from red subsoils on upper slopes to yellow subsoils on lower slopes. Alluvial sands, loams and clays.
Vegetation	Dwyer's red gum on granite, red ironbark on sedimentary rocks Hill red gum, white cypress pine and red stringybark in the ranges. Grey box woodlands with yellow box, white cypress pine and belah on lower areas. Poplar box, kurrajong, wilga and red box in the north, limited areas of bull mallee, blue mallee, green mallee and congoo mallee in the central west. Myall, rosewood and yarran on grey clays, yellow box, poplar box, and belah on alluvial loams. River red gum on all streams with black box in the west with some lignum and river coobah.

4.2 NSW (MITCHELL) LANDSCAPES

The landscapes of NSW were mapped in 2002 to provide a framework for reporting and for determining over-cleared landscapes and are known as NSW (or Mitchell) landscapes (Mitchell, 2002). These landscapes broadly describe areas of similar topography, geology, soils, and vegetation. The subject site is represented by the Calarie Plains landscape, which appears to have a very high extent of clearance at ~94%.

Calarie Plains

Undulating low hills and rises on folded steep dipping Ordovician quartz sandstone, slate and chert, Silurian and Devonian quartzite, sandstone, conglomerate, and small areas of limestone. General elevation 250 to 300m, local relief to 15m. Open woodlands of red ironbark (*Eucalyptus sideroxylon*) and grey box (*Eucalyptus microcarpa*) with a grassy understorey.

4.3 NSW WATERCOURSES

Three 1st order, unnamed, non-perennial watercourses are mapped within the subject site (**Figure 4-1**). These streams are tributaries of the Lachlan River; a major, perennial watercourse that crosses through the southern section of the 10 km search area. This section of the Lachlan River contains the mapped distributions of four threatened aquatic species/populations: the Flathead Galaxias (*Galaxias rostratus*), the Silver Perch (*Bidyanus bidyanus*), the Murray-Darling Basin population of the Eel-tailed Catfish (*Tandanus tandanus*), and the western population of the Olive Perchlet (*Ambassis agassizii*). Considering the distance to the Lachlan River, and provided that the mitigation measures provided in **Section 6** are adhered to, it is unlikely that the proposal will impact these threatened species and populations.

Key Fish Habitat (KFH), as recognised by the DPI, is present within the subject site (**Figure 4-1**). Under Section 201 of the FM Act, a person must not carry out dredging work or reclamation work except under the authority of a permit issued by the Minister. As such, the proponent would need to seek a permit from NSW Department of Primary Industries – Fisheries (DPI – Fisheries) for dredging or reclamation work. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

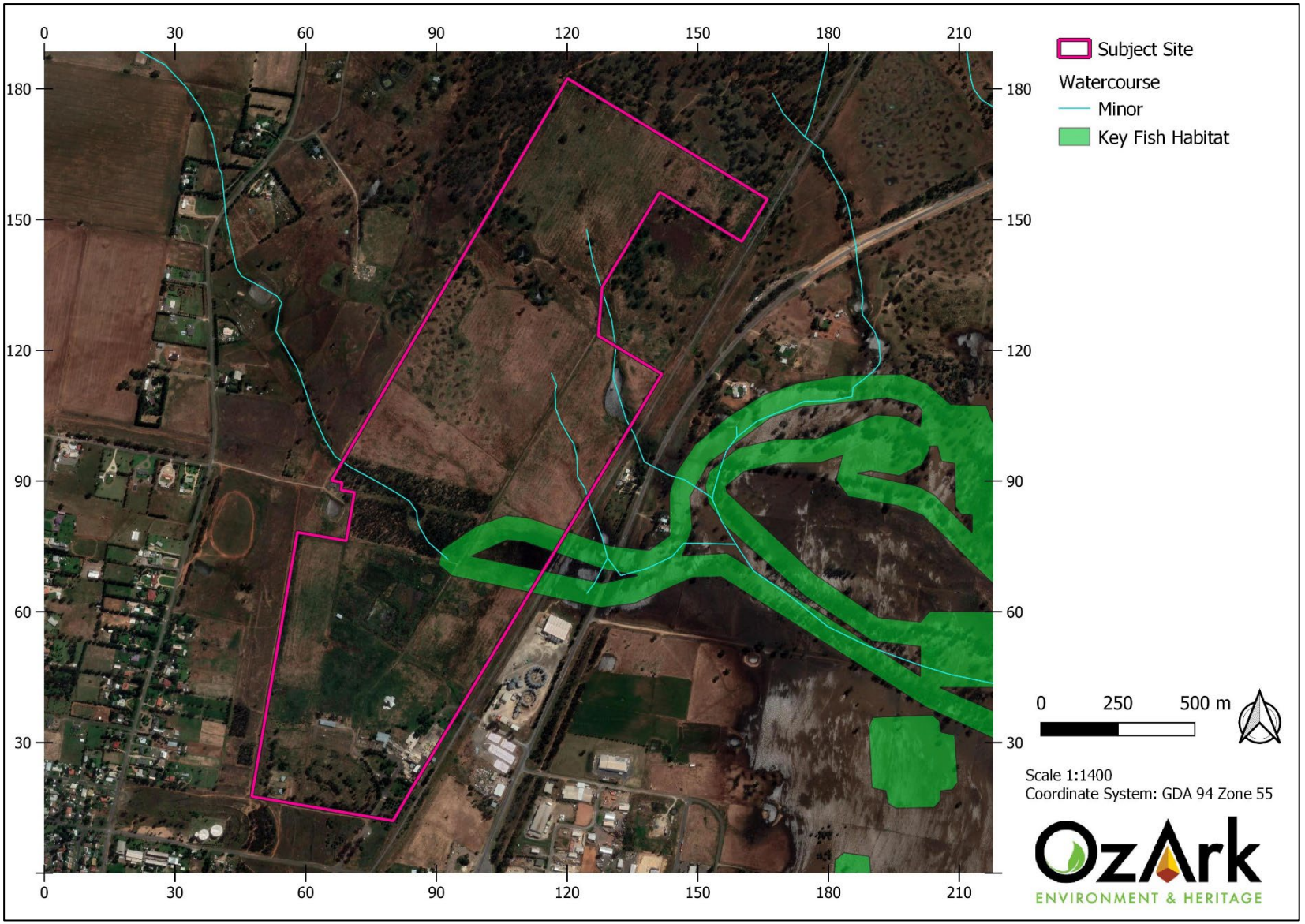

Figure 4-1. Watercourses within the subject site.

4.4 GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater plays an important ecological role in supporting terrestrial and aquatic ecosystems. Groundwater sustains terrestrial and aquatic ecosystems by supporting vegetation and providing discharge to channels and wetlands. Aquifer ecosystems are inherently groundwater dependent (QLD Department of Environment and Heritage Protection, 2022).

The degree of groundwater dependence of ecosystems can be categorised into three broad categories:

- Non-dependent ecosystems that occur mostly in recharge areas and have no connection with groundwater.
- Facultative Groundwater Dependant Ecosystems (GDEs) that require groundwater in some locations but not in others, particularly where an alternative source of water can be accessed to maintain ecological function. Minor changes to the groundwater regime in facultative GDEs with proportional or opportunistic groundwater dependence may not have any adverse impacts but these ecosystems can be damaged or destroyed if a lack of access to groundwater is prolonged.
- Obligate GDEs that are restricted to locations of groundwater discharge and ecosystems located within aquifers (e.g., subterranean cave and stygofauna communities (Kuginis et al. 2012). Aquifer ecosystems are inherently groundwater dependent (QLD Department of Environment and Heritage Protection, 2022).

Groundwater dependant ecosystems have been classified into seven types under two broad categories as follows (Kuginis *et al*. 2012):

- Subsurface ecosystems – Underground ecosystems
  - Karst systems and caves (limestone geology)
  - Subsurface aquifer (phreatic) ecosystems
  - Baseflow streams (hyporheic or subsurface component)
- Surface ecosystems – Above ground ecosystems
  - Groundwater dependent wetlands
  - Baseflow surface streams (surface/free-water component)
  - Estuarine and near shore marine ecosystems
  - Groundwater dependent terrestrial ecosystems; dependent on subsurface groundwater (phreatophytic).

The Bureau of Meteorology Atlas of Groundwater Dependant Ecosystems identified aquatic and terrestrial GDEs with a low, moderate, and high potential for interaction within the broader study area (**Figure 4-2**). Within the subject site itself, only terrestrial GDEs with low potential are present (**Figure 4-2**).

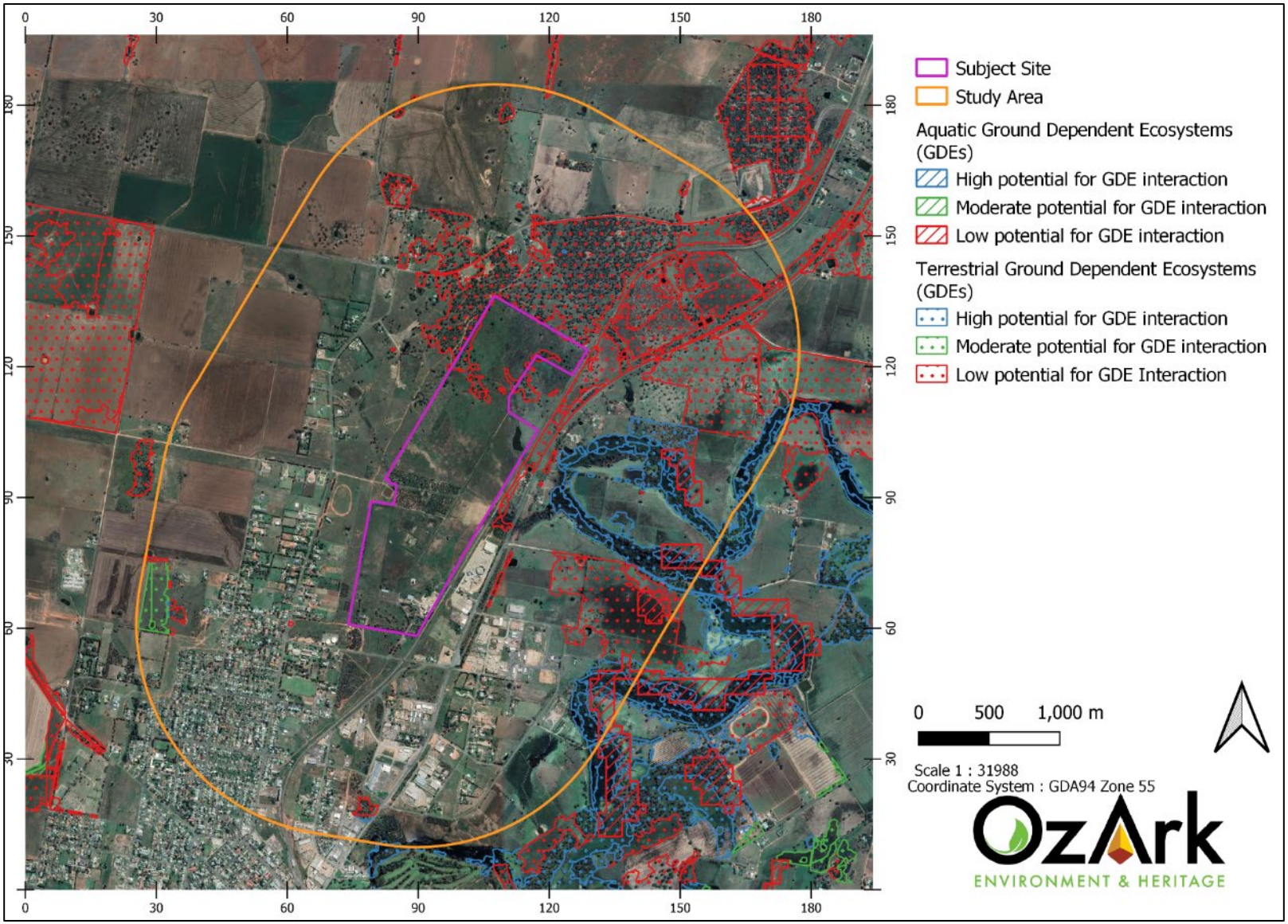

Figure 4-2. Groundwater Dependent Ecosystems (GDEs) within the study area and subject site.

4.5 CLIMATE

The nearest weather station is nearby to the subject site at Forbes (station number: 065016; Bureau of Meteorology, 2022).

Forbes lies in the transitional zones between semi-arid and temperate inland climates. Consequently, there are relatively large temperature variation between the seasons. The highest average maximum temperature occurs in January (32.7°C), with the lowest average minimum in July (2.7°C) (**Figure 4-3**).

The area experiences 526.3mm of rainfall, on average, annually (1881-2022). Rainfall occurs uniformly year-round, with January (49.9mm), October (48.9mm) and December (45.2mm) recording the highest, and April (40.3mm), November (40.3mm) and September (42.3mm) the lowest (**Figure 4-3**).

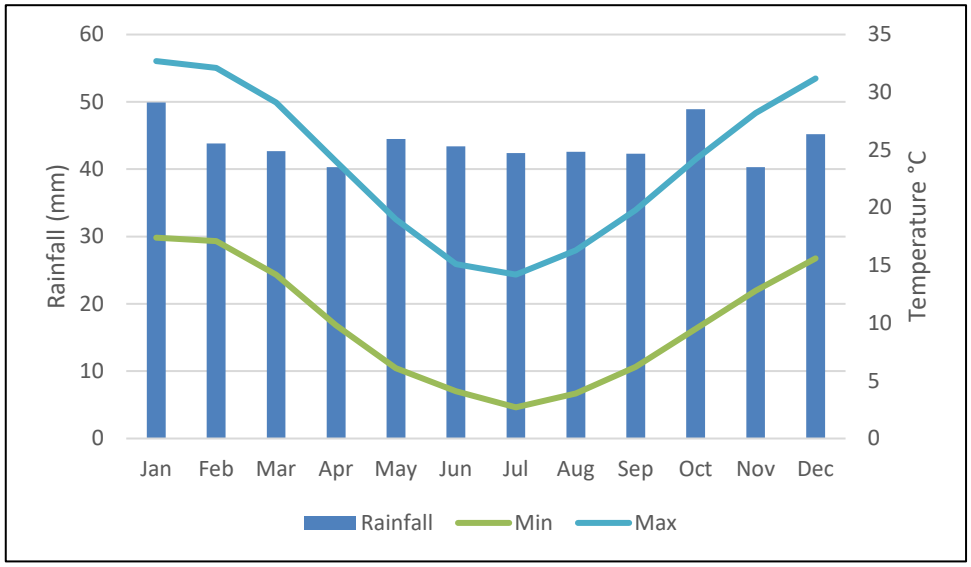

Figure 4-3. Data for the Forbes weather station, showing mean monthly rainfall and minimum/maximum temperatures.

5 RESULTS

5.1 ECOLOGICAL OVERVIEW OF THE SITE

The subject land consists of mostly cleared agricultural land with small woodland fragments, isolated paddock trees, derived grasslands, small wetlands, and planted vegetation, both native and non-native. Numerous small wetlands occur within the assessed area, chiefly in association with gilgai topography, but also along drainage lines. The remnant vegetation was in variable quality. Some areas of remnant vegetation had no native understory and natural regeneration of the parent trees was not evident. See photos in **Figure 5-1** and **Figure 5-2**.

The entrance to the site has been extensively planted with native and non-native tree and shrub species. Among these are many Mugga Ironbark (*Eucalyptus sideroxylon*) trees.

In total, 56 hollow bearing trees (live and dead) were identified in the subject site (**Figure 5-3**, **Figure 5-4**), containing a total of 180 hollows, including 21 large (> 20cm diameter) and 159 small (<20 cm diameter) hollows. Additional hollow bearing trees were present but were unable to be mapped during the short time allotted for the field survey. Tree hollows are critical for those fauna (such as bats, reptiles, birds, mammals) that rely on them for refuge and/or nesting. The loss of hollow bearing trees is a Key Threatening Process and future development proposals should aim to avoid these trees.

Additional fauna habitat within the subject site is provided by dams, gilgai wetlands, and drainage channels, which together may provide suitable freshwater conditions for occupation by aquatic fauna species. Little fallen timber was noted and no significant geological features (outcrops, caves, cliffs) occur within the subject site.

The former abattoir and nearby abandoned buildings (**Figure 5-1**) may provide habitat for microbats, many of which are threatened. In particular, the Little Pied Bat, Yellow-bellied Sheathtail-bat and the Southern Myotis, all listed as Vulnerable under the BC Act, would need to be surveyed for (using echolocation, and/or trapping) to ensure they are not present, prior to any planned demolition of these buildings. The loss of human-made structures would be considered a Prescribed Impact under the Biodiversity Assessment Method (BAM) 2020 due to their value as microbat habitat.

Figure 5-1. Representative Photographs of Lachley Estate (southern portion).

Figure 5-2. Representative Photographs of Lachley Estate (northern portion).

5.2 NATIVE VEGETATION (PLANT COMMUNITY TYPES)

The Regional Scale State Vegetation Map: State Vegetation Type Map: Central West / Lachlan Region v1.4. VIS_ID 4468 (OEH, 2016) models one PCT as occurring within the subject site (PCT 76) and 11 further PCTs within the study area (**Figure 3-1**):

- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
- PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
- PCT 248 – Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW
- PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
- PCT 250 – Derived tussock grassland of the central western plains and lower slopes of NSW
- PCT 251 – Mixed Eucalypt woodlands of floodplains in the southern-eastern Cobar Peneplain Bioregion
- PCT 267 – White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
- PCT 796 – Derived grassland of the NSW South Western Slopes

The field survey identified six PCTs within the subject site:

- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
- PCT 76 – (partially planted) – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- PCT 77 – Yarran shrubland of the NSW central to northern slopes and plains
- PCT 85 – (planted) – River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion

- PCT 201 – Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- PCT 217 – (planted) – Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion

The extent of each PCT within the subject site is mapped in **Figure 5-3** and **Figure 5-4**.

As it is assumed that a Biodiversity Development Assessment Report (BDAR) will be required if the proposal is to proceed to the Development Application phase, PCTs were further stratified into vegetation zones based on condition class, in line with the requirements of the BAM (2020). The following zones were identified:

- 53_Good: Higher-quality wetlands with a greater diversity of wetland species, including floating plants, sedges, rushes, and flanking wetland vegetation.
- 53_Moderate: Species-poor wetland with little to no evidence of weed incursion.
- 53_Poor: Species-poor wetlands with a significant weed infestation.
- 76_Moderate: A sparse remnant woodland with a mature Grey Box (*Eucalyptus microcarpa*) canopy and an understorey of native chenopods, forbs, and grasses, often with significant weed infestations.
- 76_Derived: An assemblage of native chenopods, forbs, and grasses likely derived from a prior occurrence of Grey Box woodland.
- 76_Planted: Planted vegetation in which Grey Box is the most conspicuous species.
- 77_Moderate: A small fragment of Yarran (*Acacia homalophylla*)-dominated vegetation.
- 85_Planted: Planted vegetation in which River Oak is the sole or dominant canopy species.
- 201_Moderate: A sparse remnant woodland with a mature Fuzzy Box (*Eucalyptus conica*) canopy and an understorey of native chenopods, forbs, and grasses, often with significant weed infestations.
- 201_Derived: A derived community often dominated by small chenopod shrubs, together with a selection of native grasses, forbs, and wetland species.
- 217_Planted: Planted vegetation in which Mugga Ironbark (*Eucalyptus sideroxylon*) is the dominant canopy species, occasionally with Grey Box.

These zones are mapped in **Figure 5-5** and **5-6**.

A list of all flora species encountered is available in **Appendix B** and representative photos of the PCTs are provided in **Appendix G**.

As “clearing of native vegetation” is recognised as a Key Threatening Process under the BC Act, future developments should aim to minimise the removal of native vegetation where possible.

Note that where planted vegetation can plausibly be assigned to a PCT, the BAM requires that assessors adopt this approach. As the future development phase of this proposal is likely to require assessment under the BAM, this approach has been followed here. A description of the planted vegetation recorded within the subject site is provided here.

The entrance to the site has been extensively planted with native and non-native tree and shrub species. Among these are many Mugga Ironbark (*Eucalyptus sideroxylon*) trees. These trees were mapped to PCT 217, as this PCT is dominated by *E. sideroxylon* but allows for the presence of *E. microcarpa*, which was occasionally recorded intermixed with *E. sideroxylon*. All occurrences of PCT 217 within the subject site are considered to be planted.

Planted trees of River Oak (*Casuarina cunninghamiana* subsp. *cunninghamiana*) were also noted. As PCT 85 is the only River Oak-dominated community recorded for the Lower Slopes subregion, this PCT was adopted in the present study. All occurrences of PCT 85 within the subject site are considered to be planted.

The larger planted block near the centre of the property presents additional difficulties. Canopy species planted or otherwise occurring in this area included Grey Box (*Eucalyptus microcarpa*), Yellow Box (*Eucalyptus melliodora*), Fuzzy Box (*E. conica*), River Oak, Yarran (*Acacia homalophylla*), Boree (*A. pendula*), White Cypress-pine (*Callitris glaucophylla*), Poplar Box (*E. populnea*), Buloke (*Allocasuarina luehmannii*), River Red Gum (*E. camaldulensis*), and Red Box (*E. polyanthemos*). As the limited duration of the survey did not allow for the identification of every plant within this section, it is likely that additional canopy species occur here that were not detected during the survey. A range of shrub species – including Old Man Saltbush (*Atriplex nummularia*), Miljee (*Acacia oswaldii*), Wedge-leaf Hop-bush (*Dodonaea viscosa* subsp. *cuneata*), and Deane's Wattle (*Acacia deanei*) – also appear to have been planted in this area. As the species appear to be almost randomly mixed, it was not possible within the limited survey duration to stratify the vegetation into distinct communities. As Grey Box was dominant over much of the planting, this area has been provisionally assigned to PCT 76. Should a BDAR be required, additional survey effort may be required to delineate separate communities in this section and conduct BAM plots.

Table 5-1. Plant Community Types recorded within the subject site.

Plant Community Type (PCT)	Total Area (ha)
PCT 53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	3.32
PCT 76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	9.24
PCT 77 - Yarran shrubland of the NSW central to northern slopes and plains	0.01
PCT 85 - River Oak Forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion	0.26
PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	1.33
PCT 217 - Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	0.47
Total native vegetation	**14.63**
Non-native	**141.05**
TOTAL AREA	**155.68**

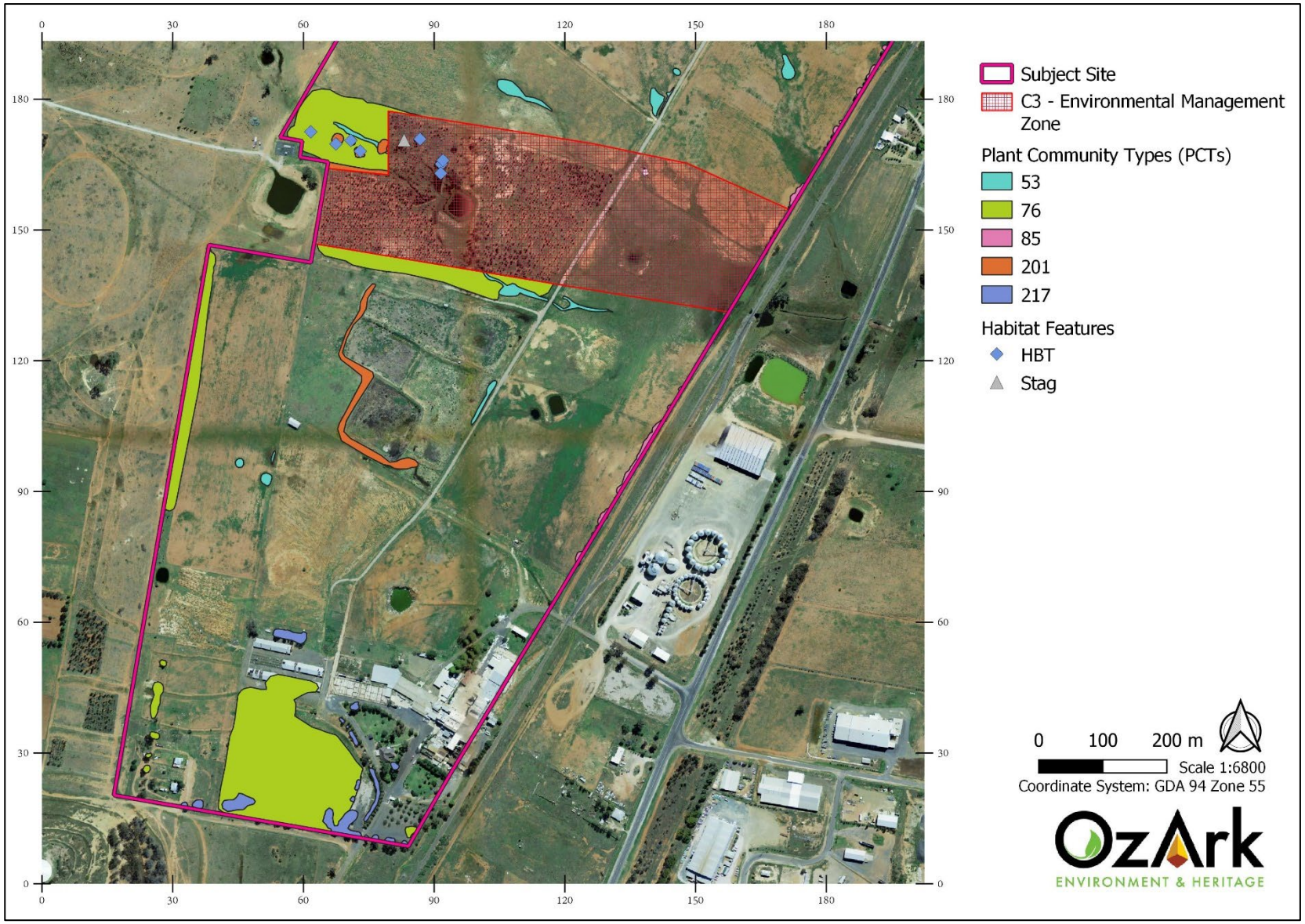

Figure 5-3. Location of confirmed Plant Community Types (PCTs) and habitat features within Lachley Estate (southern portion).

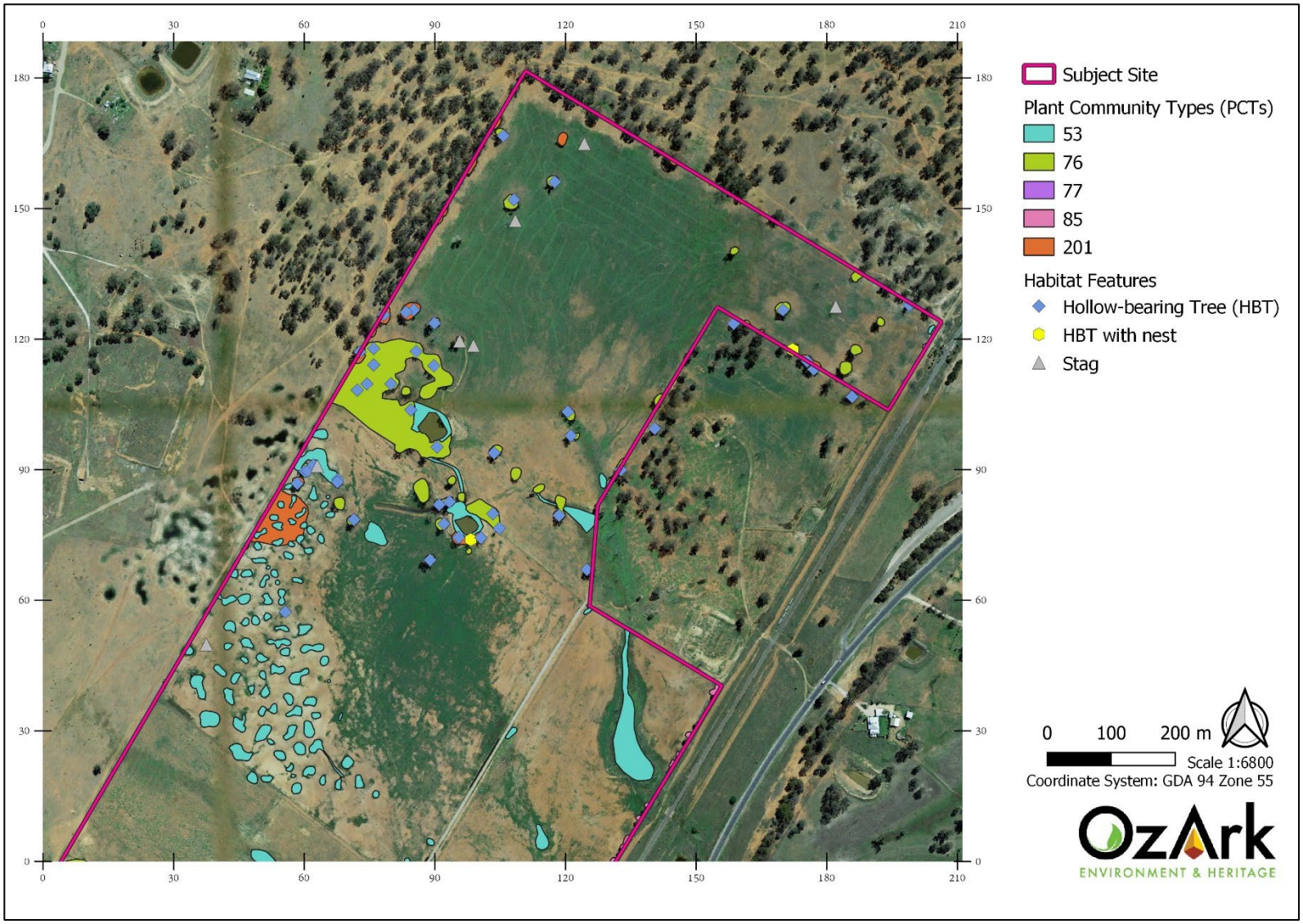

Figure 5-4. Location of confirmed Plant Community Types (PCTs) and habitat features within Lachley Estate (northern portion).

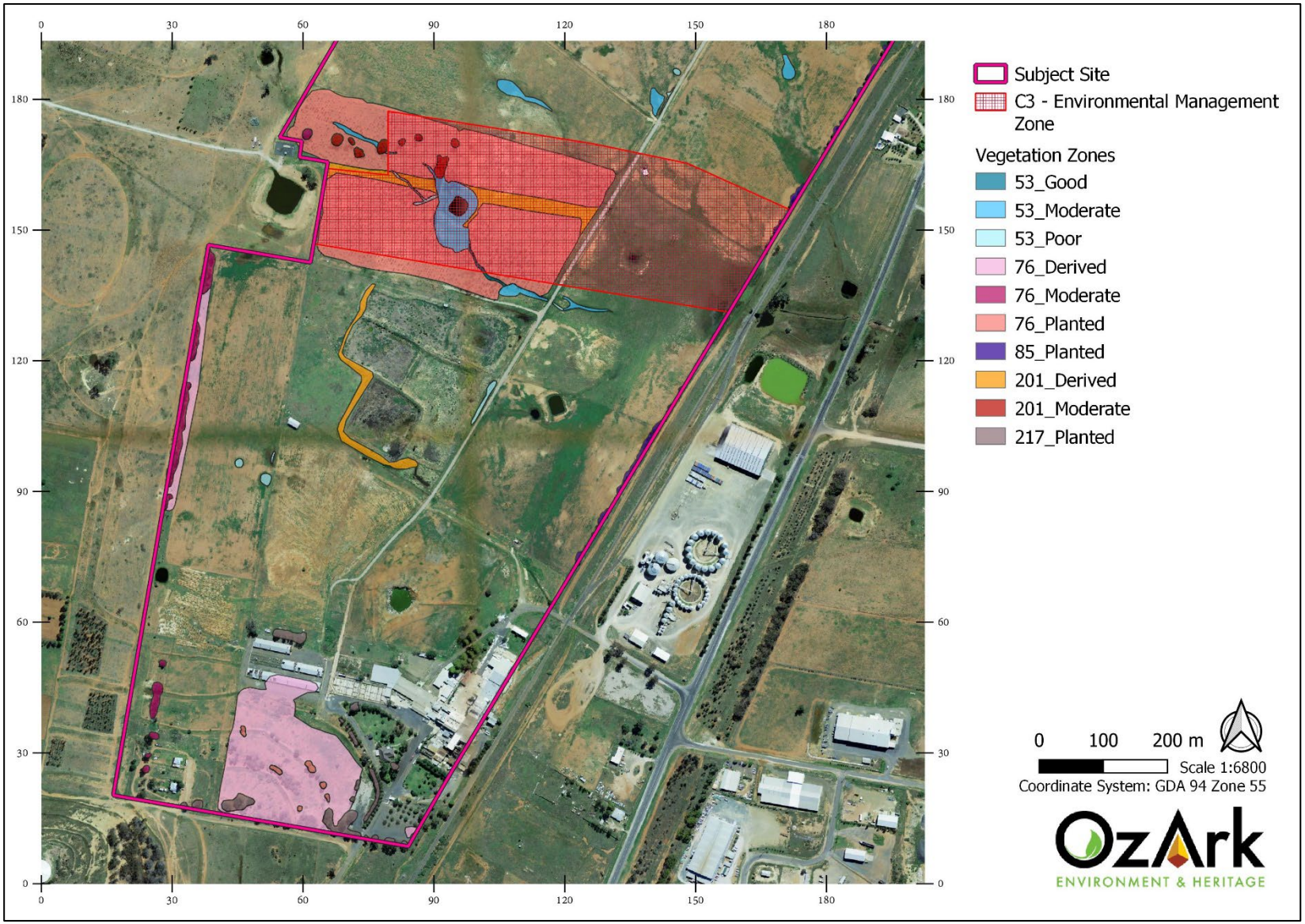

Figure 5-5. Vegetation zones based on condition class within Lachley Estate (southern portion).

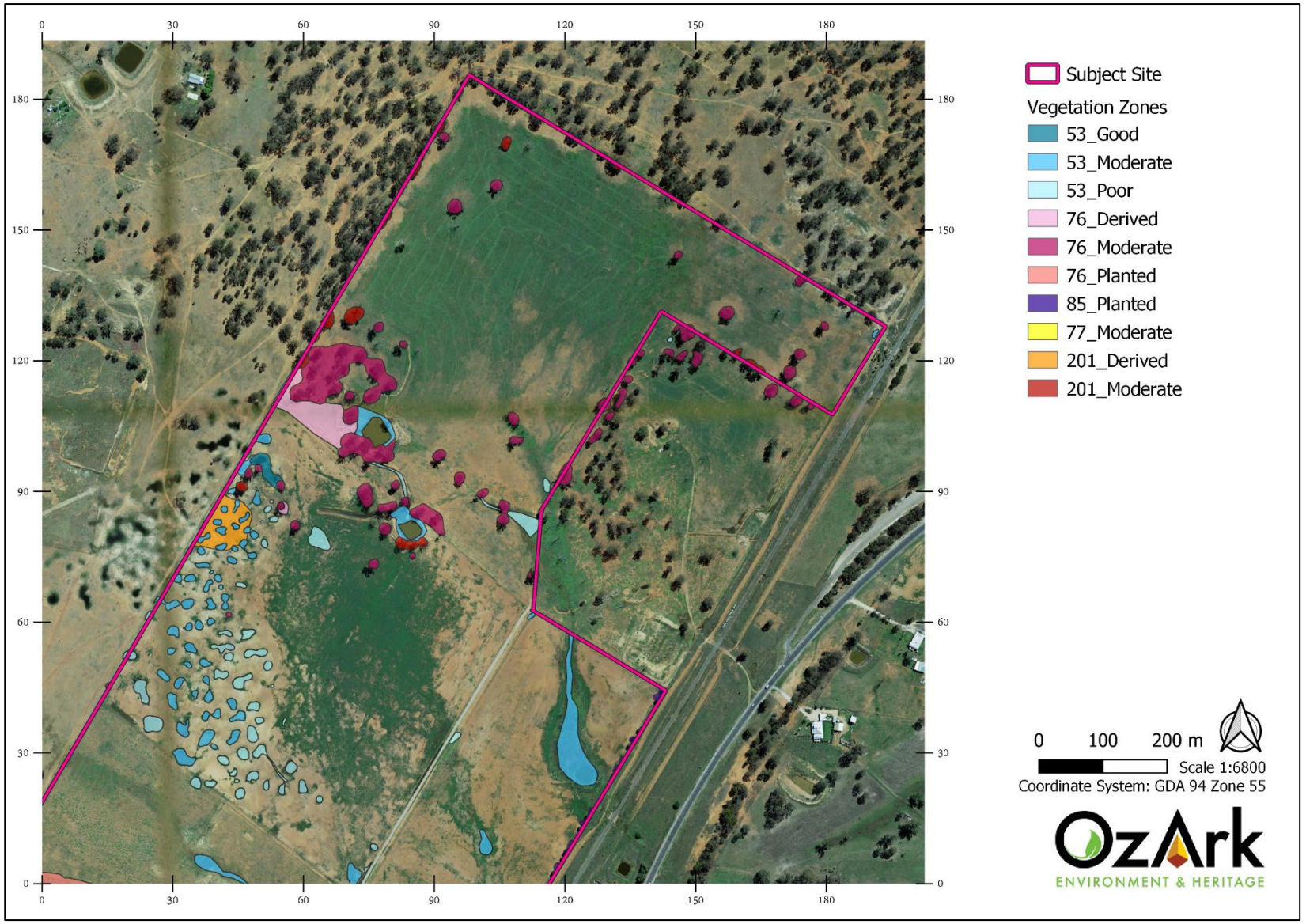

Figure 5-6. Vegetation zones based on condition class within Lachley Estate (northern portion).

5.3 THREATENED ECOLOGICAL COMMUNITIES (TECS)

Vegetation within the subject site was assessed against the conditional criteria for each BC Act- or EPBC Act-listed Threatened Ecology Community (TEC) known, or predicted, to occur within the Inland Slopes IBRA Subregion of the NSW South Western Slopes Bioregion.

PCT 76 is associated with the BC Act-listed EEC *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*, and the EPBC Act-listed EEC *Grey Box* (Eucalyptus microcarpa) *Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*. As the BC Act listing applies to all communities within the relevant subregions in which the "most characteristic" canopy species is Grey Box (*Eucalyptus microcarpa*), all areas ground-truthed as PCT 76 fit the criteria for including under this listing. Therefore, 9.24 ha of this EEC occurs in the subject site (**Table 5-2**). One section of PCT 76 in the northernmost paddock was found to fit the criteria for listing under the EPBC Act as an EEC (1.71 ha). The assessment of this section against the EPBC Act criteria is demonstrated in **Appendix F**.

PCT 201 is associated with the BC Act-listed EEC: *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions*. All areas ground-truthed as PCT 201, except the derived zones, fit the criteria for listing under the BC Act (**Appendix F**), therefore 0.47 ha of this EEC occurs in the subject site (**Table 5-2**).

The location of the TECs recorded within the subject site are shown in **Figure 5-7** and **Figure 5-8** and the areas of each TEC are given in **Table 5-2.**

Table 5-2. Endangered Ecological Communities recorded within the subject site.

Threatened Ecological Community	Status	PCTs	Total Area (ha)
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	BC Act, Endangered	76	9.24
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	BC Act, Endangered	201	0.47
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	EPBC Act, Endangered	76	1.71

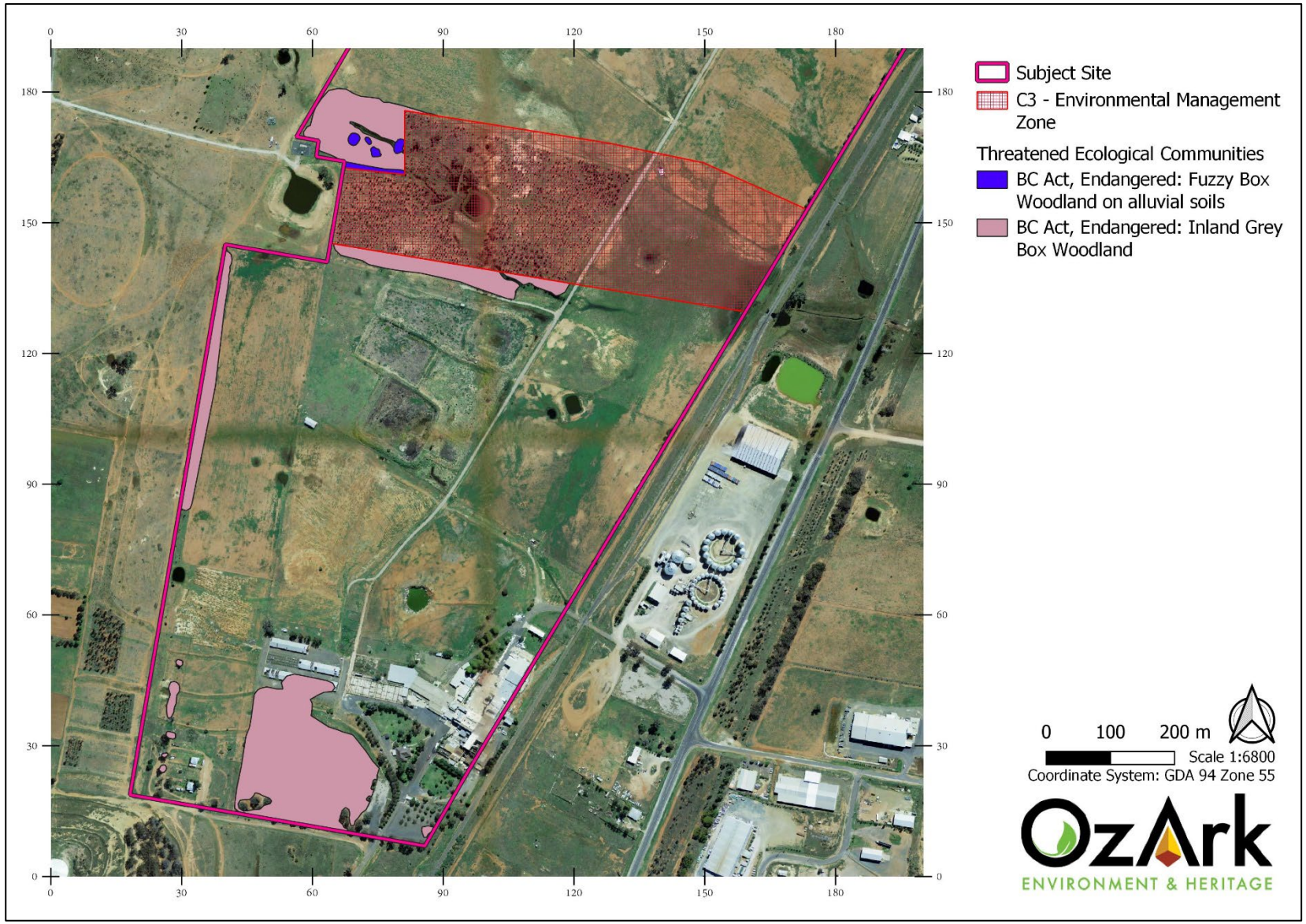

Figure 5-7. BC Act-listed Endangered Ecological Communities (EECs) within Lachley Estate (southern portion).

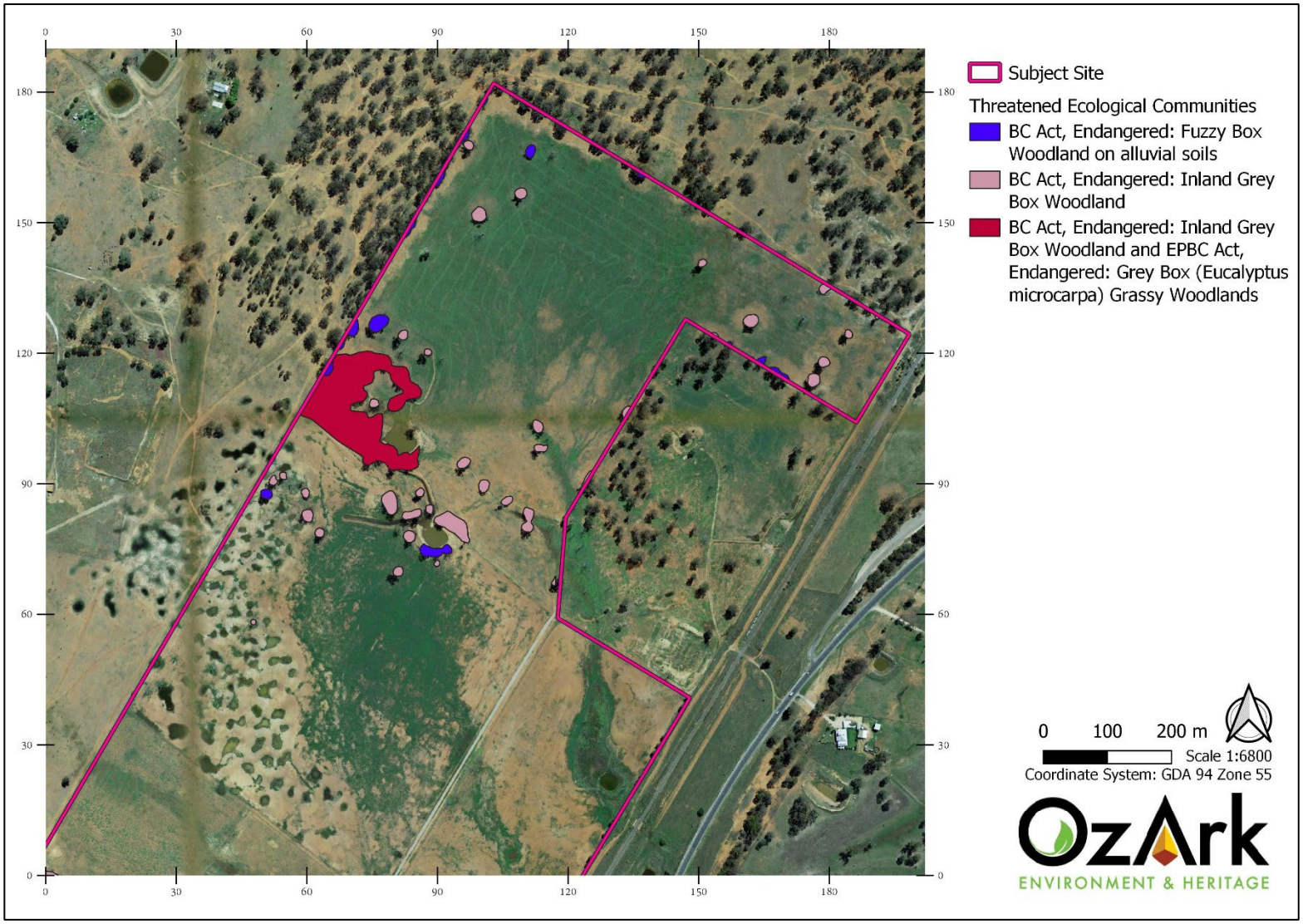

Figure 5-8. BC Act- and EPBC Act-listed Endangered Ecological Communities (EECs) within Lachley Estate (northern portion).

5.4 THREATENED FLORA AND FAUNA

A review of the Threatened Species Profiles database identified 124 threatened or migratory fauna and flora species/populations that are known/predicted to occur within the Inland Slopes subregion of the NSW South Western Slopes bioregion (**Appendices A** and **C**). Based on the proximity of past records, habitat requirements, and results of the field survey, 62 species (13 flora and 49 fauna) demonstrated a moderate or greater probability of occurrence (**Table 5-3**).

Although 13 threatened plant species are considered to have a moderate to high potential of occurring on site (**Appendix C**; **Table 5-3**), only one, *Diuris tricolor* has been previously recorded within 10 km. No threatened plant species were detected during the field survey. However, a failure to achieve detection does not serve as confirmation of absence as some species are only visible at specific times of year.

Fifty threatened or migratory fauna species were assessed as having a moderate to high potential of occurring on site (**Appendix C**; **Table 5-3**), of these, 26 have records within 10 km, one of which was detected during the field survey: the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*), which is listed as Vulnerable under the BC Act. Given the short duration of the survey and the lack of targeted studies (e.g., trapping), a failure to detect additional threatened species should not be treated as confirmation of their absence.

Koala habitat was assessed using the Commonwealth Department of the Environment (2014) *EPBC Act referral guidelines for the vulnerable koala*. The application of the Koala Habitat Assessment Tool (**Appendix E**) determined that the subject site failed to qualify as critical habitat for the Koala (habitat score = 4). If the proposal were to proceed to the Development Application phase, additional consideration would be given to the Koala under the BAM 2020 and Koala SEPP (see **Section 2.3.2**).

Table 5-3. Threatened and/or migratory species with a moderate-to-high likelihood of occurrence at the subject site.

Scientific Name	Common Name	*NSW Status	+Comm Status	Number of records within 10km	Associated PCT Present?	Likelihood of Occurrence
Litoria raniformis	Southern Bell Frog	E1,P	V	0	Yes	Moderate
Anthochaera phrgia	Regent Honeyeater			0	Yes	Moderate
Anseranas semipalmata	Magpie Goose	V,P		5	Yes	High
Apus pacificus	Fork-tailed Swift	P	C,J,K	3	Yes	High
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		13	Yes	High
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	2	No	Moderate
Burhinus grallarius	Bush Stone-curlew	E1,P		0	Yes	Moderate

Scientific Name	Common Name	*NSW Status	+Comm Status	Number of records within 10km	Associated PCT Present?	Likelihood of Occurrence
Calidris acuminata	Sharp-tailed Sandpiper	P	C,J,K	2	No	Moderate
Calyptorhynchus lathami	Glossy Black-Cockatoo	V,P,2		0	Yes	Moderate
Certhionyx variegatus	Pied Honeyeater	V,P		0	Yes	Moderate
Chthonicola sagittata	Speckled Warbler	V,P		3	No	Moderate
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V,P		5	Yes	High
Daphoenositta chrysoptera	Varied Sittella	V,P		3	No	Moderate
Epthianura albifrons	White-fronted Chat	V,P		6	No	Moderate
Falco hypoleucos	Grey Falcon	E1,P,2		8	Yes	High
Falco subniger	Black Falcon	V,P		10	No	Moderate
Grantiella picta	Painted Honeyeater	V,P	V	0	Yes	Moderate
Haliaeetus leucogaster	White-bellied Sea-Eagle	V, P		8	No	Moderate
Hamirostra melanosternon	Black-breasted Buzzard	V,P,3		0	Yes	Moderate
Hieraaetus morphnoides	Little Eagle	V,P		7	No	Moderate
Hirundapus caudacutus	White-throated Needletail	P	V,C,J,K	2	Yes	High
Limosa limosa	Black-tailed Godwit	V,P	C,J,K	0	Yes	Moderate
Lophoictinia isura	Square-tailed Kite	V,P,3		0	Yes	Moderate
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V,P		2	Yes	High
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		0	Yes	Moderate
Merops ornatus	Rainbow Bee-eater	P	Bonn.	3	No	Moderate
Neophema pulchella	Turquoise Parrot	V,P,3		0	Yes	Moderate
Ninox connivens	Barking Owl	V,P,3		0	Yes	Moderate
Oxyura australis	Blue-billed Duck	V,P		14	Yes	High
Polytelis swainsonii	Superb Parrot	V,P,3	V	21	Yes	High
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		26	Yes	Present
Petroica boodang	Scarlet Robin	V, P		0	Yes	Moderate
Petroica phoenicea	Flame Robin	V, P		3	Yes	High
Stagonopleura guttata	Diamond Firetail	V,P		4	Yes	High
Stictonetta naevosa	Freckled Duck	V,P		14	Yes	High
Tringa glareola	Wood Sandpiper	P	C,J,K	2	No	Moderate
Tringa nebularia	Common Greenshank	P	C,J,K	1	No	Moderate
Tringa stagnatilis	Marsh Sandpiper	P	C,J,K	1	No	Moderate

Scientific Name	Common Name	*NSW Status	+Comm Status	Number of records within 10km	Associated PCT Present?	Likelihood of Occurrence
Tyto novaehollandiae	Masked Owl	V,P,3		0	Yes	Moderate
Acacia ausfeldii	Ausfeld's Wattle	V		0	Yes	Moderate
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	V	0	Yes	Moderate
Austrostipa metatoris	A spear-grass	V	V	0	Yes	Moderate
Brachyscome muelleroides	Claypan Daisy			0	Yes	Moderate
Brachyscome papillosa	Mossgiel Daisy			0	Yes	Moderate
Caladenia arenaria	Sand-hill Spider Orchid	E1,P,2	E	0	Yes	Moderate
Diuris tricolor	Pine Donkey Orchid	V,P,2		1	Yes	High
Lepidium aschersonii	Spiny Peppercress	V	V	0	Yes	Moderate
Pilularia novae-hollandiae	Austral Pillwort	E1,3		0	Yes	Moderate
Swainsona murrayana	Slender Darling Pea	V	V	0	Yes	Moderate
Swainsona recta	Small Purple-pea	E1	E	0	Yes	Moderate
Swainsona sericea	Silky Swainson-pea	V		0	Yes	Moderate
Tylophora linearis		V	E	0	Yes	Moderate
Cercartetus nanus	Eastern Pygmy-possum	V,P		0	Yes	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	1	Yes	High
Phascolarctos cinereus	Koala	V,P	E	0	Yes	Moderate
Sminthopsis macroura	Stripe-faced Dunnart	V,P		0	Yes	Moderate
Petaurus norfolcensis	Squirrel Glider	V,P		0	Yes	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	0	Yes	Moderate
Chalinolobus picatus	Little Pied Bat	V,P		0	Yes	Moderate
Myotis macropus	Southern Myotis	V,P		0	Yes	Moderate
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	0	Yes	Moderate
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		0	Yes	Moderate
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	0	Yes	Moderate

***NSW Status:** P=Protected, V=Vulnerable, E1=Endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable, Bonn=Bonn Convention.

5.5 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (MNES)

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. The EPBC Act protected matters search identified no World Heritage Properties, four Wetlands of International Importance (**Table 5-4**), four Threatened Ecological Communities (**Table 5-5**), 31 threatened species, and 12 migratory species, that could occur within the subject site (**Appendix A**). All EPBC Act-listed threatened and/or migratory species that are considered to have a moderate or greater potential of occurring on the subject are listed in **Table 5-6**.

The EPBC Act policy Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DoE, 2013) forms the basis of determining if an impact to protected matters is significant. As this is a planning proposal and potential impacts have not yet been detailed, tests of significance have not been completed for this constraints and opportunities report. The following tables (**Table 5-4**, **Table 5-5**, **Table 5-6**) give an overview of which Wetlands of International Importance, TECs, and threatened or migratory species would require a test of significance should the proposal be likely to impact them. Specifically, no Wetlands of International Importance, one TEC, and 24 threatened and/or migratory species would require tests of significance under the EPBC Act, if they or their habitats are to be impacted.

Table 5-4. Wetlands of International Importance.

Name	Proximity	Assessment of Significance Required if Land is to be Developed?
Banrock station wetland complex	700 – 800km upstream from Ramsar site	**No.** The proposal is not within proximity to this wetland.
Hattah-Kulkyne lakes	500 – 600km upstream from Ramsar site	**No.** The proposal is not within proximity to this wetland.
Riverland	600 – 700km upstream from Ramsar site	**No.** The proposal is not within proximity to this wetland.
The Coorong, and Lakes Alexandrina and Albert Wetland	800 – 900km upstream from Ramsar site	**No.** The proposal is not within proximity to this wetland.

Table 5-5. EPBC Act-Listed Threatened Ecological Communities with potential to occur on the subject site.

Name	Status	Assessment of Significance Required if Land is to be Developed?
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	**Yes.** The TEC is present on site.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	**No.** The TEC does not occur on the subject site.
Weeping Myall Woodlands	Endangered	**No.** The TEC does not occur on the subject site.
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	**No.** The TEC does not occur on the subject site.

Table 5-6. EPBC Act-listed threatened or migratory species with a moderate to high likelihood of occurrence on site.

Scientific Name	Common Name	+Comm Status	Number of records within 10km	Associated PCT Present?	Likelihood of Occurrence
Litoria raniformis	Southern Bell Frog	V	0	Yes	Moderate
Apus pacificus	Fork-tailed Swift	C,J,K	3	Yes	High
Botaurus poiciloptilus	Australasian Bittern	E	2	No	Moderate
Calidris acuminata	Sharp-tailed Sandpiper	C,J,K	2	No	Moderate
Grantiella picta	Painted Honeyeater	V	0	Yes	Moderate
Hirundapus caudacutus	White-throated Needletail	V,C,J,K	2	Yes	High
Limosa limosa	Black-tailed Godwit	C,J,K	0	Yes	Moderate
Merops ornatus	Rainbow Bee-eater	Bonn.	3	No	Moderate
Polytelis swainsonii	Superb Parrot	V	21	Yes	High
Tringa glareola	Wood Sandpiper	C,J,K	2	No	Moderate
Tringa nebularia	Common Greenshank	C,J,K	1	No	Moderate
Tringa stagnatilis	Marsh Sandpiper	C,J,K	1	No	Moderate
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	0	Yes	Moderate
Austrostipa metatoris	A spear-grass	V	0	Yes	Moderate
Caladenia arenaria	Sand-hill Spider Orchid	E	0	Yes	Moderate
Lepidium aschersonii	Spiny Peppercress	V	0	Yes	Moderate
Swainsona murrayana	Slender Darling Pea	V	0	Yes	Moderate
Swainsona recta	Small Purple-pea	E	0	Yes	Moderate
Tylophora linearis		E	0	Yes	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	E	1	Yes	High
Phascolarctos cinereus	Koala	E	0	Yes	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	V	0	Yes	Moderate
Nyctophilus corbeni	Corben's Long-eared Bat	V	0	Yes	Moderate
Pteropus poliocephalus	Grey-headed Flying-fox	V	0	Yes	Moderate

A summary of those MNES that would need to be considered for any development on the subject site is provided in **Table 5-7.**

Table 5-7. Summary of potential impacts to Matters of National Environmental Significance.

Factor	Potential Impact?
Any impact on a World Heritage property?	No
Any impact on a National Heritage place?	No
Any impact on a wetland of international importance?	No
Any impact on a listed threatened species or community?	Yes (test of significance required)
Any impacts on listed migratory species?	Yes (test of significance required)
Any impact on a Commonwealth marine area?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No

5.6 WILDLIFE CONNECTIVITY CORRIDORS

The general area has experienced extensive clearing for agriculture, industrial and urban development. Most of the site was cleared and heavily infested with weeds, offering little connectivity. Some remnant vegetation remains in the northern section. Though of variable quality, this vegetation provides some connectivity with more extensive areas of remnant Fuzzy Box and Grey Box woodland in adjacent paddocks to the north of the subject site. A section of planted vegetation would act as a refuge for species moving across the landscape; however, this area is largely isolated from surrounding wooded remnants and is likely to serve as a stepping-stone at most. Lines of remnant or planted trees along fences may also contribute to overall landscape connectivity. The low-lying gilgais and dams offer foraging habitat for waterbirds and birds of prey. These gilgais are, by nature, not continuous but instead form chains of ponds. However, for aquatic species adapted to ephemeral wetlands, they may serve to connect the site with similar habitat in the surrounding landscape.

5.7 SIGNIFICANT WEEDS

In total, 12 significant weeds were recorded during the field survey (**Table 5-8**). Twelve species are listed as high-threat exotic species (HTE) under the BAM (2020), two are additionally listed Weeds of National Significance (WoNS) and three are listed as priority weeds for the Central West region (PW). See **Appendix B** for a full list of exotic species recorded on site.

Table 5-8. List of significant weeds encountered at the subject site.

Growth Form[1]	Scientific Name	Common Name	HTE[2]	WoNS[3]	PW[4]
FG	*Alternanthera pungens*	Khaki Weed	Yes	No	No
GG	*Bromus diandrus*	Great Brome	Yes	No	No
FG	*Carthamus lanatus*	Saffron Thistle	Yes	No	No
GG	*Cenchrus clandestinum*	Kikuyu	Yes	No	No
GG	*Cyperus eragrostis*	Umbrella Sedge	Yes	No	No
GG	*Eragrostis curvula*	African Love-grass	Yes	No	No
FG	*Heliotropium amplexicaule*	Blue Heliotrope	Yes	No	Yes
SG	*Lycium ferocissimum*	African Boxthorn	Yes	Yes	Yes
TG	*Pinus spp.*	Pines	Yes	No	No
TG	*Pistacia chinensis*	Chinese Pistachio	Yes	No	No
FG	*Solanum elaeagnifolium*	Silver-Leaved Nightshade	Yes	Yes	Yes
FG	*Xanthium spinosum*	Bathurst Burr	Yes	No	No

[1]Growth form: FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree, EG = Fern, OG = Other. [2]High-threat exotic species (Yes/No). [3]Weed of National Significance (Yes/No). [4]Priority weed for the Forbes LGA (Yes/No).

5.8 CUMULATIVE IMPACTS

The potential impacts of this proposal, should it proceed to the development phase, must be considered as part of the wider loss of biodiversity in NSW. Rather than acting in isolation, this development would be an additive part contributing to biodiversity loss. The incremental effects of multiple impacts – past, present, and future – are referred to as cumulative impacts. Historic vegetation clearing for agriculture and infrastructure have caused significant biodiversity losses in the local area. Ongoing projects, include the construction of the Inland Railway and upgrades to the Newell Highway. The nearby Parkes LGA is also part of a new Special Activation Precinct (SAP), designed to increase investment and create new economic activity. This will inevitably lead to increased development resulting in additional land clearing and other activities that will impact local biodiversity.

It must however be appreciated that any proposal will not be occurring in isolation, and that its implementation will contribute to larger cumulative effects.

6 AVOIDANCE AND MINIMISATION OF IMPACTS

The proposed impact area has been reduced in the planning phase to reduce impacts to native vegetation within the subject site. An additional zone has been added, C3 (Environmental Management Zone) preserving 7.88 ha of native vegetation including 6.54 ha of PCT 76 which fits the criteria for the BC-Listed EEC *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions.* Further reductions in impacts to biodiversity would be implemented following recommendations of the eventual BDAR that will be required to support a Development Application.

Figures 1-1 and **1-2** shows the planned boundaries of the Lachley Estate; these boundaries have been adjusted to reduce impacts on biodiversity. A side-by-side comparison of the original vs revised footprint, with respect to impacted PCTs is shown in **Figure 6-1**, and with respect to impacted TECs is shown in **Figure 6-2.**

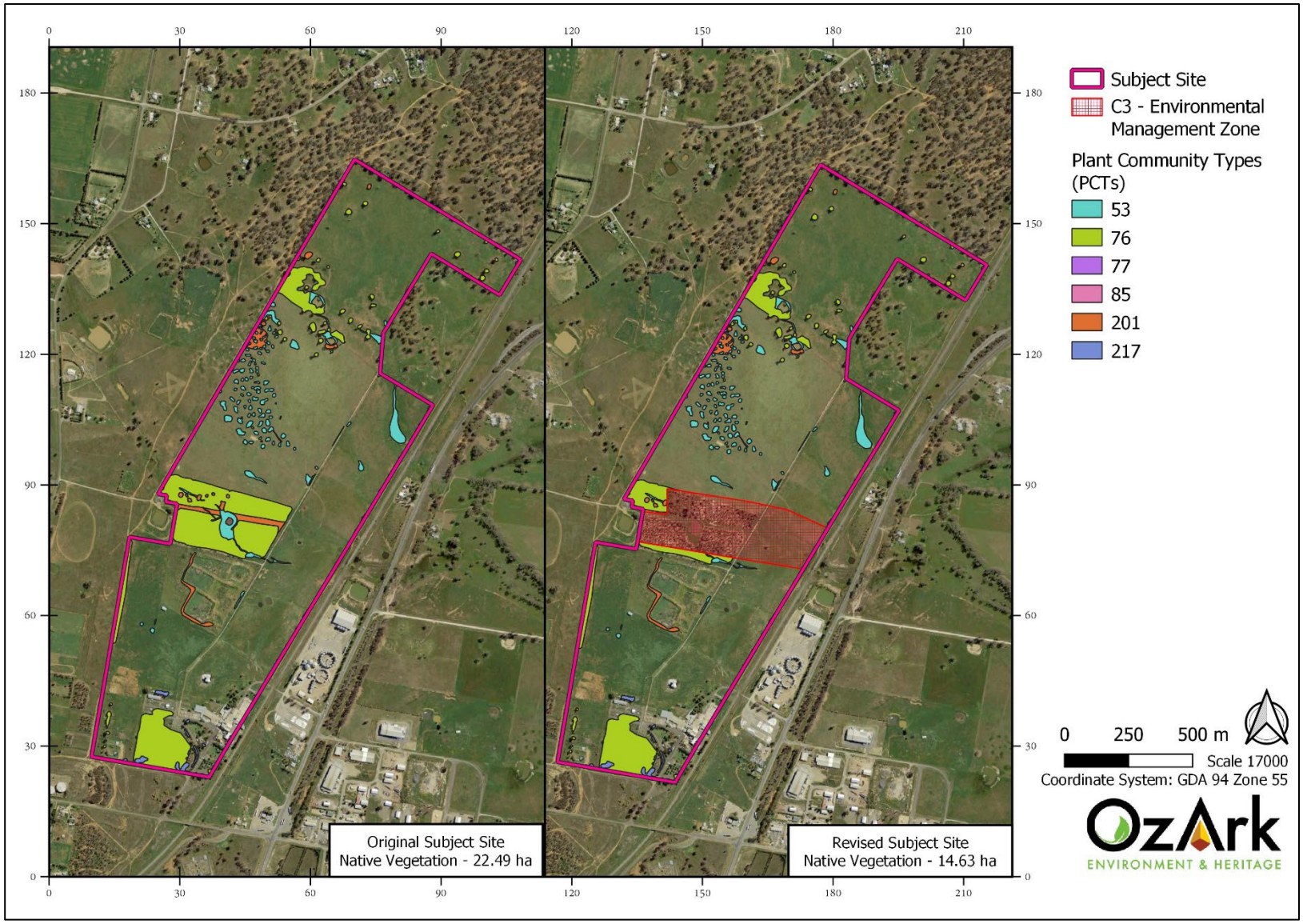

Figure 6-1. Comparison of impacted PCTs in the Original (left) vs Revised Subject Site (right).

Figure 6-2. Comparison of impacted TECs in the Original (left) vs Revised Subject Site (right).

7 FUTURE DIRECTIONS AND REQUIREMENTS

This report provides an overview of biodiversity matters identified within the Lachley Estate proposal area during the June 2022 field survey. The purpose of this report is to provide sufficient information to guide zoning decisions. It does not serve as a Biodiversity Development Assessment Report (BDAR), which is likely to be required should the proposal proceed to the development phase.

A BDAR is required where a proposal triggers entry into the NSW Biodiversity Offset Scheme (BOS). Entry into the BOS is triggered where one of the following conditions is met:

- The proposed clearing exceeds the allowable limit for the lot in question.
- The proposal will impact mapped biodiversity values on the NSW Biodiversity Values Map.
- The proposal will result in significant impacts to one or more threatened entities.

The subject site does not include mapped biodiversity values; therefore, the most likely means of triggering entry into the BOS are by identified significant impacts or by exceeding the allowable clearing limit.

The allowable clearing limit is determined by the minimum lot size associated with the relevant lot. According to the existing zoning, the applicable minimum lot size under the current zoning arrangement is 200 ha. For a lot with a minimum lot size of 200 ha, clearing of 1 ha or more of native vegetation would trigger entry into the BOS (**Table 7-1**). To avoid the offsetting requirements associated with the BOS, future clearing within the relevant lots must not exceed this 1 ha threshold. Note that 14.63 ha of native vegetation has been mapped within the overall subject site. In keeping with the requirements of the BAM, planted vegetation that can be reasonably assigned to a PCT has been mapped as native. Impacts to these planted areas will count towards the clearing threshold and may therefore trigger entry into the BOS.

Table 7-1. Minimum lot size and area clearing thresholds

Minimum Lot Size	Clearing threshold, above which entry into the BOS is triggered
< 1 ha	0.25 ha
1 ha to <40 ha	0.5 ha
40 ha to <1000 ha	1.0 ha
>1000 ha	2.0 ha

8 CONCLUSION

The Lachley Estate Planning Proposal is being prepared on behalf of Brisull Industries (the proponent) to rezone the former Lachley Meats Abattoir site at 1 Lachley Street, Forbes, NSW. OzArk Environment & Heritage has been engaged to complete an opportunities and constraints report assessing the local biodiversity on the subject site.

An ecological survey was conducted of the subject site on the 23rd of June 2022. Initially, 22.49 ha of native vegetation was found within the proposed Lachley Estate. Following provision of this information to the proponent, the boundaries of the proposed Lachley Estate were revised to include an additional zone, C3 (Environmental Management Zone) to reduce the total native vegetation within the proposed Lachley Estate to 14.63 ha. This vegetation was identified as belonging to six PCTs:

- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains (3.32 ha).
- PCT 76 (partially planted) – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (9.24 ha).
- PCT 77 – Yarran shrubland of the NSW central to northern slopes and plains (0.01 ha).
- PCT 85 (planted) – River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion (0.26 ha).
- PCT 201 – Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion (1.33 ha).
- PCT 217 (planted) – Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion (0.47 ha).

PCT 76 is associated with the EECs:

- BC Act-listed EEC: *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions.*
- EPBC Act-listed EEC: *Grey Box* (Eucalyptus microcarpa) *Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.*

All areas of PCT 76 fit the criteria for listing under the BC Act as the EEC (9.24 ha). One section of PCT 76 also fits the criteria for listing under the EPBC Act as the EEC (1.71 ha).

PCT 201 is associated with the EEC:

- BC Act-listed EEC: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregions.*

All areas of PCT 201, except the derived zones, fit the criteria for listing under the BC Act as the EEC (0.47 ha).

PCT 53 is associated with the Critical Endangered Ecological Community (CEEC)

- BC Act-listed CEEC: *Artesian Springs Ecological Community in the Great Artesian Basin.*

No areas of PCT 53 fit the criteria for listing due to the subject site being outside of the Great Artesian Basin.

Fifty-six live hollow-bearing trees and stags, containing 21 large (> 20cm diameter) and 159 small (< 20cm diameter) hollows suitable for fauna, along with three bird nests, were recorded within the subject site.

A total of 124 threatened species or populations recognised as threatened or migratory under the BC Act and/or the EPBC Act, are known or predicted to occur within the Interim Biogeographic Regionalisation of Australia (IBRA) subregion found within 10 km of the subject site. Thirteen threatened flora species, recognised under the BC Act and/or the EPBC Act were assessed as having a moderate to high likelihood of occurring on the subject site, though none were recorded during the site visit. Fifty fauna species, recognised as threatened or migratory under the BC Act and/or the EPBC Act, demonstrated a moderate to high likelihood of occurring on the subject site; of these, only the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) was recorded on site.

The former abattoir and nearby abandoned buildings may provide habitat for microbats, many of which are threatened. In particular, the Little Pied Bat, Yellow-bellied Sheathtail-bat and the Southern Myotis, all listed as Vulnerable under the BC Act, would need to be surveyed for (using echolocation, and/or trapping) to ensure they are not present, prior to any planned demolition of these buildings. The loss of human-made structures would be considered a Prescribed Impact under the BAM 2020 due to their value as microbat habitat.

An EPBC Act Protected Matters Search identified no World Heritage Properties, four Wetlands of International Importance, four Threatened Ecological Communities, 28 threatened, and 12 migratory species that may be present within the subject site. However, no significant impact to any entity listed under the EPBC Act is expected, provided that adequate mitigation measures are followed.

The application of the Koala Habitat Assessment Tool determined that the subject site failed to qualify as habitat critical to the koala (habitat score = 4), under the EPBC Guidelines. Given

this, and a lack of recent Koala records, referral would likely be unnecessary if the proposal was to proceed through to the development phase. However, further consideration would need to be given under the Koala SEPP.

Three minor, non-perennial watercourses occur within the subject site. Key Fish Habitat occurs within the subject site. As such, the proponent would need to seek a permit from DPI – Fisheries for dredging or reclamation work in this area.

As mentioned above, using the information from these fieldwork findings, the proponent has modified the project boundaries to reduce impacts to biodiversity. This resulted in excluding 7.86 hectares of native vegetation, including 6.54 hectares of the BC Act-listed Inland Grey Box EEC. Additionally, nine habitat trees containing two large and 24 small hollows will be excluded. Finally, planted River Red Gum (*Eucalyptus camaldulensis*) and Poplar Box (*Eucalyptus populnea*) are feed trees for the Koala, these trees have also been excluded from the revised footprint. Further efforts to minimise biodiversity loss will be considered throughout the detailed planning stage and will be guided by a BDAR that will need to be prepared to support the eventual Development Application.

This report covers the results of the ecological field survey and discusses potential impacts and opportunities to reduce impacts on biodiversity. This report is not a biodiversity assessment report, and should be used to guide planning only, for development approval a BDAR will be required.

9 REFERENCES

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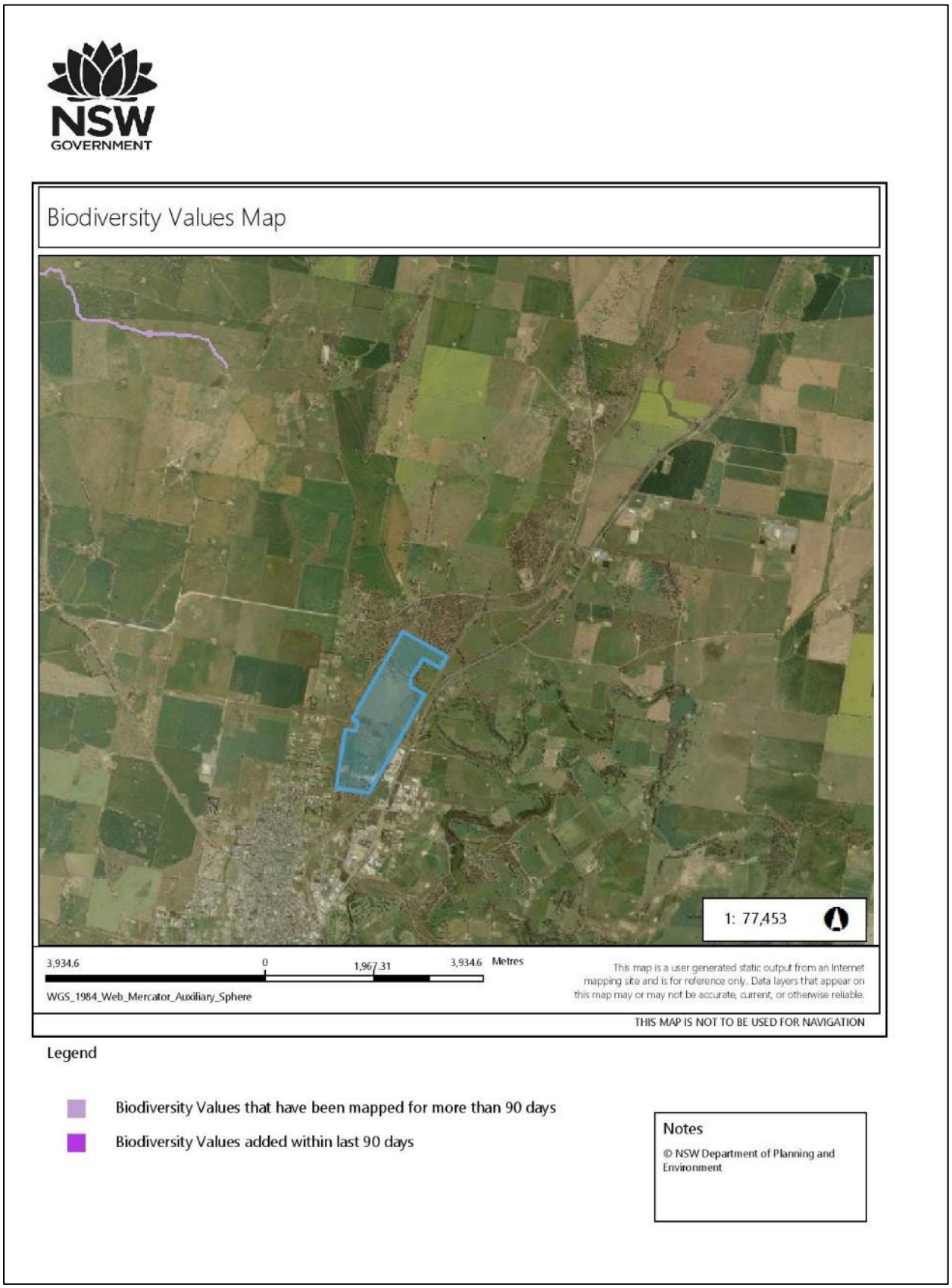
APPENDIX A – DATABASE SEARCH RESULTS

Biodiversity Values Map



NSW GOVERNMENT

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	11/07/2022 5:13 PM	**BDAR Required***
Total Digitised Area	1,622,254.8 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	10,000 sqm	
Area Clearing Threshold 10,000sqm = 1ha	5,000 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date: 11/07/2022 05:13 PM

EPBC Act Protected Matters Report

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 27-Oct-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	31
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	700 - 800km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	500 - 600km upstream from Ramsar site	In feature area
Riverland	600 - 700km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area	In buffer area only
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Polytelis swainsonii			
Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
Maccullochella macquariensis			
Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
Maccullochella peelii			
Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macquaria australasica			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
Crinia sloanei			
Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Androcalva procumbens [87153]	Vulnerable	Species or species habitat may occur within area	In feature area
Austrostipa metatoris [66704]	Vulnerable	Species or species habitat may occur within area	In feature area
Austrostipa wakoolica [66623]	Endangered	Species or species habitat likely to occur within area	In feature area
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa stagnatilis			
Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [15125]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15123]	NSW	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Forbes Post Office	NSW	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat likely to occur within area overfly marine area	In buffer area only

Extra Information

EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Inland Rail Stockinbingal to Parkes	2021/9138		Completed	In buffer area only
Not controlled action				
Daroobalgie Solar Farm Project	2021/9020	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

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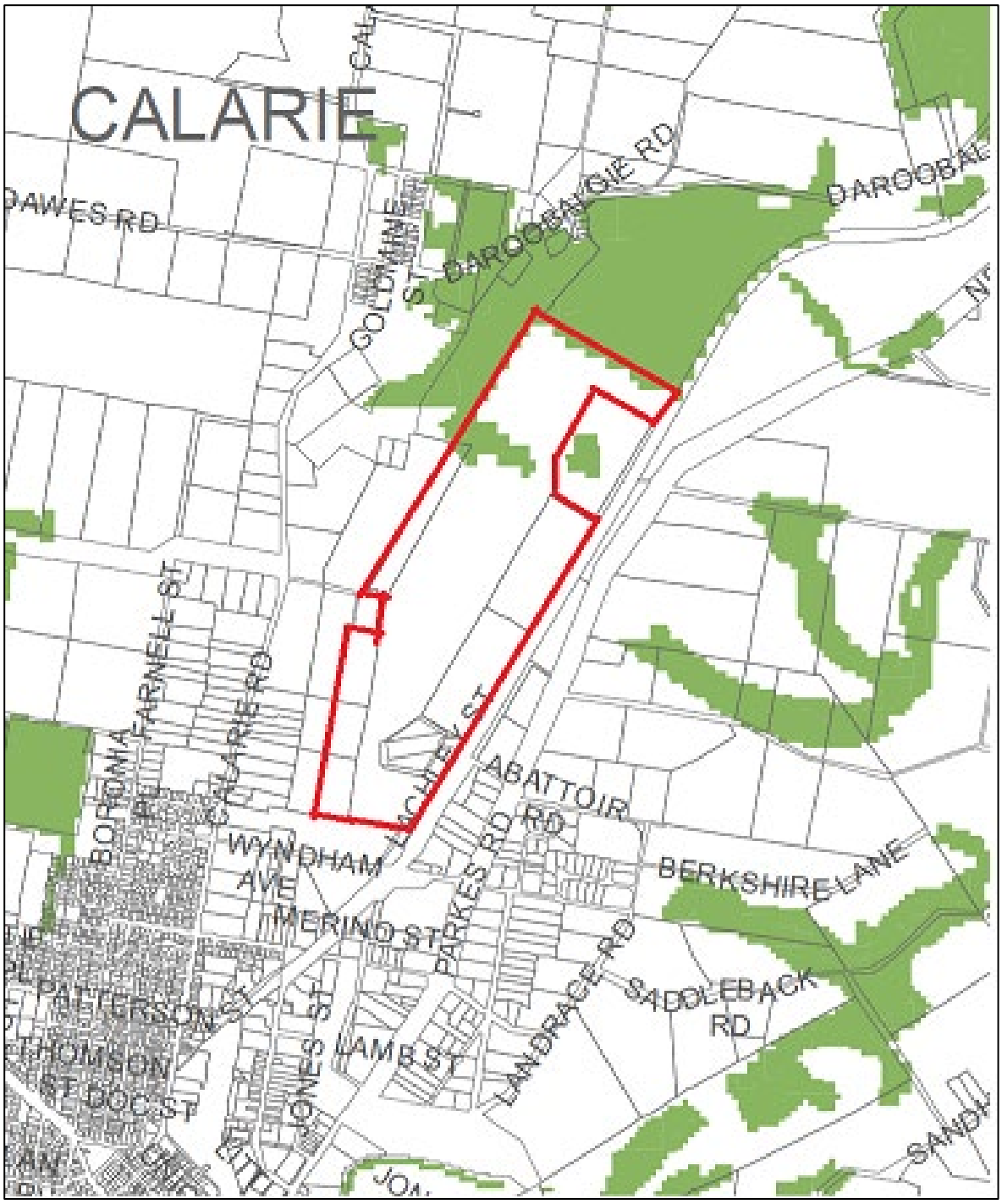
Forbes Local Environmental Plan (2013).

Subject site is outlined in red.

Green areas are Biodiversity values for the Forbes LEP.



BioNET Atlas search – threatened species predicted to occur within the Lower Slopes subregion of the NSW South Western Slopes IBRA Bioregion

Class	Scientific Name	Common Name	*NSW status	+Comm. Status	Records
Amphibian	*Crinia sloanei*	Sloane's Froglet	V,P	E	6
Amphibian	*Litoria raniformis*	Southern Bell Frog	E1,P	V	14
Reptilian	*Aprasia parapulchella*	Pink-tailed Legless Lizard	V,P	V	4
Aves	*Leipoa ocellata*	Malleefowl	E1,P	V	82
Aves	*Anseranas semipalmata*	Magpie Goose	V,P		35
Aves	*Oxyura australis*	Blue-billed Duck	V,P		26
Aves	*Stictonetta naevosa*	Freckled Duck	V,P		46
Aves	*Apus pacificus*	Fork-tailed Swift	P	C,J,K	18
Aves	*Hirundapus caudacutus*	White-throated Needletail	P	V,C,J,K	18
Aves	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	17
Aves	*Ixobrychus flavicollis*	Black Bittern	V,P		1
Aves	*Circus assimilis*	Spotted Harrier	V,P		79
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		29
Aves	^^*Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		7
Aves	*Hieraaetus morphnoides*	Little Eagle	V,P		155
Aves	^^*Lophoictinia isura*	Square-tailed Kite	V,P,3		7
Aves	^^*Pandion cristatus*	Eastern Osprey	V,P,3		2
Aves	^*Falco hypoleucos*	Grey Falcon	E1,P,2		50
Aves	*Falco subniger*	Black Falcon	V,P		58
Aves	*Grus rubicunda*	Brolga	V,P		53
Aves	*Ardeotis australis*	Australian Bustard	E1,P		1
Aves	*Burhinus grallarius*	Bush Stone-curlew	E1,P		51
Aves	*Pluvialis fulva*	Pacific Golden Plover	P	C,J,K	3
Aves	*Pedionomus torquatus*	Plains-wanderer	E1,P	CE	2
Aves	*Rostratula australis*	Australian Painted Snipe	E1,P	E	18
Aves	*Actitis hypoleucos*	Common Sandpiper	P	C,J,K	4
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	P	C,J,K	45
Aves	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	3
Aves	*Calidris melanotos*	Pectoral Sandpiper	P	J,K	3
Aves	*Calidris ruficollis*	Red-necked Stint	P	C,J,K	5
Aves	*Gallinago hardwickii*	Latham's Snipe	P	J,K	22
Aves	*Limosa lapponica*	Bar-tailed Godwit	P	C,J,K	3
Aves	*Limosa limosa*	Black-tailed Godwit	V,P	C,J,K	6
Aves	*Numenius phaeopus*	Whimbrel	P	C,J,K	1
Aves	*Tringa glareola*	Wood Sandpiper	P	C,J,K	5
Aves	*Tringa nebularia*	Common Greenshank	P	C,J,K	13

Class	Scientific Name	Common Name	*NSW status	+Comm. Status	Records
Aves	*Tringa stagnatilis*	Marsh Sandpiper	P	C,J,K	12
Aves	*Glareola maldivarum*	Oriental Pratincole	P	C,J,K	1
Aves	*Chlidonias leucopterus*	White-winged Black Tern	P	C,J,K	1
Aves	*Gelochelidon nilotica*	Gull-billed Tern	P	C	19
Aves	*Hydroprogne caspia*	Caspian Tern	P	J	7
Aves	^^*Callocephalon fimbriatum*	Gang-gang Cockatoo	V,P,3	E	2
Aves	^*Calyptorhynchus lathami*	Glossy Black-Cockatoo, Riverina population	E2,V,P,2		80
Aves	^*Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2		91
Aves	^*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		79
Aves	^^*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	V,P,3		1
Aves	*Glossopsitta pusilla*	Little Lorikeet	V,P		93
Aves	^^*Lathamus discolor*	Swift Parrot	E1,P,3	CE	117
Aves	^^*Neophema pulchella*	Turquoise Parrot	V,P,3		214
Aves	^^*Polytelis swainsonii*	Superb Parrot	V,P,3	V	793
Aves	^^*Ninox connivens*	Barking Owl	V,P,3		70
Aves	^^*Tyto novaehollandiae*	Masked Owl	V,P,3		P
Aves	*Climacteris affinis*	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	E2,P		16
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P		1905
Aves	*Chthonicola sagittata*	Speckled Warbler	V,P		413
Aves	*Hylacola cautus*	Shy Heathwren	V,P		117
Aves	*Anthochaera phrygia*	Regent Honeyeater	E4A,P	CE	15
Aves	*Certhionyx variegatus*	Pied Honeyeater	V,P		14
Aves	*Epthianura albifrons*	White-fronted Chat	V,P		97
Aves	*Grantiella picta*	Painted Honeyeater	V,P	V	115
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V,P		206
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		972
Aves	*Cinclosoma castanotum*	Chestnut Quail-thrush	V,P		3
Aves	*Daphoenositta chrysoptera*	Varied Sittella	V,P		155
Aves	*Pachycephala inornata*	Gilbert's Whistler	V,P		308
Aves	*Artamus cyanopterus*	Dusky Woodswallow	V,P		817

Class	Scientific Name	Common Name	*NSW status	+Comm. Status	Records
	cyanopterus				
Aves	*Drymodes brunneopygia*	Southern Scrub-robin	V,P		10
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V,P		264
Aves	*Petroica boodang*	Scarlet Robin	V,P		53
Aves	*Petroica phoenicea*	Flame Robin	V,P		207
Aves	*Stagonopleura guttata*	Diamond Firetail	V,P		700
Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	10
Mammalia	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		1
Mammalia	*Sminthopsis macroura*	Stripe-faced Dunnart	V,P		P
Mammalia	*Macrotis lagotis*	Bilby	E4,P	V	2
Mammalia	*Phascolarctos cinereus*	Koala	E1,P	E	272
Mammalia	*Cercartetus nanus*	Eastern Pygmy-possum	V,P		P
Mammalia	*Petaurus norfolcensis*	Squirrel Glider in the Wagga Wagga Local Government Area	E2,V,P		10
Mammalia	*Petaurus norfolcensis*	Squirrel Glider	V,P		118
Mammalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	19
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		33
Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	V,P	V	1
Mammalia	*Chalinolobus picatus*	Little Pied Bat	V,P		26
Mammalia	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V,P		1
Mammalia	*Myotis macropus*	Southern Myotis	V,P		9
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	V,P	V	6
Mammalia	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		1
Mammalia	*Vespadelus baverstocki*	Inland Forest Bat	V,P		1
Mammalia	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		1
Flora	*Tylophora linearis*		V	E	37
Flora	*Brachyscome muelleroides*	Claypan Daisy	V	V	53
Flora	*Brachyscome papillosa*	Mossgiel Daisy	V	V	3
Flora	*Kippistia suaedifolia*	Fleshy Minuria	E1		4
Flora	*Leptorhynchos orientalis*	Lanky Buttons	E1		69
Flora	*Senecio garlandii*	Woolly Ragwort	V		3
Flora	*Lepidium aschersonii*	Spiny Peppercress	V	V	12
Flora	*Lepidium monoplocoides*	Winged Peppercress	E1	E	28
Flora	*Wilsonia rotundifolia*	Round-leafed Wilsonia	E1		1
Flora	*Eleocharis obicis*	Spike-Rush	V	V	2

Class	Scientific Name	Common Name	*NSW status	+Comm. Status	Records
Flora	*Cullen parvum*	Small Scurf-pea	E1		3
Flora	*Swainsona murrayana*	Slender Darling Pea	V	V	49
Flora	*Swainsona recta*	Small Purple-pea	E1	E	2
Flora	*Swainsona sericea*	Silky Swainson-pea	V		74
Flora	*Acacia ausfeldii*	Ausfeld's Wattle	V		1
Flora	^^*Pilularia novae-hollandiae*	Austral Pillwort	E1,3		22
Flora	*Eucalyptus leucoxylon subsp. pruinosa*	Yellow Gum	V		1
Flora	^*Caladenia arenaria*	Sand-hill Spider Orchid	E1,P,2	E	1329
Flora	^*Caladenia concolor*	Crimson Spider Orchid	E1,P,2	V	P
Flora	^*Diuris sp. (Oaklands, D.L. Jones 5380)*	Oaklands Diuris	E1,P,2		575
Flora	^*Diuris tricolor*	Pine Donkey Orchid	V,P,2		421
Flora	*Amphibromus fluitans*	Floating Swamp Wallaby-grass	V	V	3
Flora	*Austrostipa metatoris*	A spear-grass	V	V	1
Flora	*Austrostipa wakoolica*	A spear-grass	E1	E	79
Flora	*Grevillea ilicifolia subsp. ilicifolia*	Holly-leaf Grevillea	E4A		P
Flora	*Pomaderris cocoparrana*	Cocoparra Pomaderris	E1	E	4
Flora	*Philotheca angustifolia subsp. angustifolia*		E4,P		1

***NSW Status:** ^=Location of records generalised to 0.1°, ^^=Location of records generalised to 0.01°, P=Protected, V=Vulnerable, E1=Endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable

BioNET Atlas search – Threatened ecological communities predicted to occur within the Lower Slopes subregion of the NSW South Western Slopes IBRA Bioregion.

Community	*NSW Status	+Common. status	Records
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	K
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		E	K
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3		K
Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion	E4B		K
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3		K
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E3		P
Weeping Myall Woodlands		E	K
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B		K
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	K

***NSW Status:** P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.
- Number of Records: P = predicted to occur, K = known to occur.

BioNET Atlas search – Key Threatening Processes predicted to occur within the Lower Slopes subregion of the NSW South Western Slopes IBRA Bioregion.

Threats	NSW Status	Comm Status
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, *Manorina melanocephala* (Latham, 1802)	KTP	KTP
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP	
Anthropogenic Climate Change	KTP	KTP
Bushrock removal	KTP	
Clearing of native vegetation	KTP	KTP
Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus* (L.)	KTP	KTP
Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758	KTP	KTP
Competition from feral honey bees, *Apis mellifera* L.	KTP	
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP	
Herbivory and environmental degradation caused by feral deer	KTP	
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP	
Importation of Red Imported Fire Ants *Solenopsis invicta* Buren 1972	KTP	KTP
Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP
Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP
Introduction of the Large Earth Bumblebee *Bombus terrestris* (L.)	KTP	
Invasion and establishment of exotic vines and scramblers	KTP	
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP	
Invasion and establishment of the Cane Toad (Bufo marinus)	KTP	KTP
Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata* (Wall. ex G. Don) Cif.	KTP	
Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP	
Invasion of native plant communities by exotic perennial grasses	KTP	
Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW	KTP	
Invasion, establishment and spread of Lantana (*Lantana camara L. sens. Lat*)	KTP	
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP
Loss of Hollow-bearing Trees	KTP	
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP	
Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP	
Predation by *Gambusia holbrooki* Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP	
Predation by the European Red Fox *Vulpes vulpes* (Linnaeus, 1758)	KTP	KTP

Threats	NSW Status	Comm Status
Predation by the Feral Cat *Felis catus* (Linnaeus, 1758)	KTP	KTP
Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa* Linnaeus 1758	KTP	KTP
Removal of dead wood and dead trees	KTP	

APPENDIX B – FIELD SURVEY RESULTS

Flora species list

The following table lists all 130 flora species recorded within, or immediately adjacent to the subject site. Of these, 76 (58.46%) were native and 54 (43.54%) were introduced.

Growth form[1]	Common name	Scientific name	Status[2]	HTE[3]	WoNS[4]	PW[5]
SG	*Acacia deanei*	Deane's Wattle	N	-	-	-
SG	*Acacia decora*	Western Silver Wattle	N	-	-	-
SG	*Acacia hakeoides*	Hakea Wattle	N	-	-	-
SG	*Acacia lineata*	Streaked Wattle	N	-	-	-
TG	*Acacia melvillei-homalophylla*	Yarran	N	-	-	-
TG	*Acacia oswaldii*	Miljee	N	-	-	-
TG	*Acacia stenophylla*	River Cooba	N	-	-	-
FG	*Alternanthera denticulata*	Lesser Joyweed	N	-	-	-
FG	*Alternanthera pungens*	Khaki Weed	I	Yes	No	No
FG	*Aster subulatus*	Wild Aster	I	No	No	No
FG	*Astragalus hamosus*	Yellow Milk-Vetch	I	No	No	No
SG	*Atriplex semibaccata*	Berry Saltbush	N	-	-	-
GG	*Austrostipa aristiglumis*	Plains Grass	N	-	-	-
GG	*Austrostipa bigeniculata*	Kneed Speargrass	N	-	-	-
GG	*Austrostipa scabra*	Speargrass	N	-	-	-
GG	*Austrostipa verticillata*	Slender Bamboo Grass	N	-	-	-
GG	*Avena fatua*	Wild Oats	I	No	No	No
GG	*Bothriochloa macra*	Red Grass	N	-	-	-
FG	*Brachyscome chrysoglossa*	Yellow-Tongue Daisy	N	-	-	-
FG	*Brachyscome smithwhitei*	Brachyscome	N	-	-	-
GG	*Bromus diandrus*	Great Brome	I	Yes	No	No
SG	*Callistemon citrinus*	Crimson Bottlebrush	I	No	No	No
TG	*Callitris glaucophylla*	White Cypress Pine	N	-	-	-
FG	*Calotis cuneifolia*	Purple Burr-Daisy	N	-	-	-
FG	*Calotis lappulacea*	Yellow Burr-Daisy	N	-	-	-
FG	*Capsella bursa-pastoris*	Shepherd's Purse	I	No	No	No
GG	*Carex inversa*	Inverse Sedge	N	-	-	-
FG	*Carthamus lanatus*	Saffron Thistle	I	Yes	No	No
TG	*Casuarina cunninghamiana subsp. cunninghamiana*	River Sheoak	N	-	-	-
GG	*Cenchrus clandestinum*	Kikuyu	I	Yes	No	No
GG	*Chloris truncata*	Windmill Grass	N	-	-	-
GG	*Chloris ventricosa*	Tall Chloris	N	-	-	-
GG	*Chloris virgata*	Feathertop Rhodes Grass	I	No	No	No
FG	*Cirsium vulgare*	Spear Thistle	I	No	No	No

Growth form[1]	Common name	Scientific name	Status[2]	HTE[3]	WoNS[4]	PW[5]
OG	*Convolvulus angustissimus*	Bindweed	N	-	-	-
FG	*Conyza bonariensis*	Flaxleaf Fleabane	I	No	No	No
TG	*Corymbia citriodora*	Lemon-Scented Gum	I	No	No	No
FG	*Cotula australis*	Common Cotula, Carrot Weed	N	-	-	-
FG	*Crassula colorata*	Stonecrop	N	-	-	-
FG	*Cucumis myriocarpus subsp. myriocarpus*	Paddy Melon	I	No	No	No
GG	*Cynodon dactylon*	Couch	N	-	-	-
GG	*Cyperus eragrostis*	Umbrella Sedge	I	Yes	No	No
TG	*Cypress sp.*	Cypress	I	No	No	No
GG	*Dichanthium sericeum*	Queensland Bluegrass	N	-	-	-
FG	*Dichondra repens*	Kidney Weed	N	-	-	-
SG	*Dodonaea viscosa subsp. cuneata*	Wedge-Leaf Hop-Bush	N	-	-	-
GG	*Echinochloa colona*	Awnless Barnyard Grass	N	-	-	-
FG	*Echium plantagineum*	Paterson's Curse	I	No	No	No
FG	*Einadia nutans*	Climbing Saltbush	N	-	-	-
GG	*Eleocharis plana*	Spike-rush	N	-	-	-
GG	*Eleocharis pusilla*	Spike-rush	N	-	-	-
SG	*Enchylaena tomentosa*	Ruby Saltbush	N	-	-	-
GG	*Enteropogon acicularis*	Curly Windmill Grass	N	-	-	-
GG	*Eragrostis curvula*	African Love-grass	I	Yes	No	No
GG	*Eriochloa pseudoacrotricha*	Early Spring Grass	N	-	-	-
FG	*Erodium crinitum*	Blue Crowfoot	N	-	-	-
TG	*Eucalyptus camaldulensis*	River Red Gum	N	-	-	-
TG	*Eucalyptus conica*	Fuzzy Box	N	-	-	-
TG	*Eucalyptus melliodora*	Yellow Box	N	-	-	-
TG	*Eucalyptus microcarpa*	Grey Box	N	-	-	-
TG	*Eucalyptus polyanthemos*	Red Box	N	-	-	-
TG	*Eucalyptus populnea subsp. bimbil*	Poplar Box	N	-	-	-
TG	*Eucalyptus sideroxylon*	Mugga Ironbark	N	-	-	-
FG	*Euchiton sphaericus*	Star Cudweed	N	-	-	-
FG	*Fumaria muralis*	Wall Fumitory	I	No	No	No
FG	*Geranium solanderi*	Native Geranium	N	-	-	-
FG	*Goodenia pinnatifida*	Scrambled Eggs	N	-	-	-
TG	*Grevillea robusta*	Silky Oak	I	No	No	No
OG	*Grona varians*	Slender Tick-Trefoil	N	-	-	-
FG	*Heliotropium amplexicaule*	Blue Heliotrope	I	Yes	No	Yes
GG	*Juncus aridicola*	Rush	N	-	-	-
GG	*Juncus subsecundus*	Rush	N	-	-	-
FG	*Lepidium africanum*	African Peppercress	I	No	No	No

Growth form[1]	Common name	Scientific name	Status[2]	HTE[3]	WoNS[4]	PW[5]
FG	*Lobelia concolor*	Poison Pratia	N	-	-	-
GG	*Lolium perenne*	Perennial Ryegrass	I	No	No	No
SG	*Lycium ferocissimum*	African Boxthorn	I	Yes	Yes	Yes
FG	*Lythrum hyssopifolia*	Hyssop Loosestrife	N	-	-	-
FG	*Marrubium vulgare*	White Horehound	I	No	No	No
EG	*Marsilea drummondii*	Common Nardoo	N	-	-	-
FG	*Medicago lupulina*	Black Medic	I	No	No	No
FG	*Medicago polymorpha*	Burr Medic	I	No	No	No
FG	*Medicago sativa*	Lucerne	I	No	No	No
TG	*Melaleuca bracteata*	Black Tea-Tree	I	No	No	No
TG	*Melaleuca styphelioides*	Prickly-Leaved Tea Tree	I	No	No	No
TG	*Melia azedarach*	White Cedar	I	No	No	No
FG	*Mesembryanthemum cordifolium*	Heartleaf ice plant	I	No	No	No
FG	*Onopordum acanthium*	Scotch Thistle	I	No	No	No
FG	*Ottelia ovalifolia*	Swamp Lily	N	-	-	-
FG	*Oxalis perennans*	Grassland Wood-sorrel	N	-	-	-
FG	*Oxalis pes-caprae*	Soursob	I	No	No	No
GG	*Panicum effusum*	Hairy Panic	N	-	-	-
GG	*Paspalidium aversum*	Paspalidium	N	-	-	-
GG	*Paspalidium constrictum*	Knottybutt Grass	N	-	-	-
GG	*Paspalum distichum*	Water Couch	N	-	-	-
FG	*Persicaria lapathifolia*	Pale Knotweed	N	-	-	-
FG	*Persicaria prostrata*	Creeping Knotweed	N	-	-	-
SG	*Photinia sp.*	Photinia	I	No	No	No
TG	*Pinus spp.*	Pines	I	Yes	No	No
TG	*Pistacia chinensis*	Chinese Pistachio	I	Yes	No	No
FG	*Polygonum arenastrum*	Wireweed	I	No	No	No
FG	*Polygonum aviculare*	Wireweed	I	No	No	No
FG	*Potamogeton sulcatus*	Pondweed	N	-	-	-
FG	*Rumex brownii*	Swamp Dock	N	-	-	-
FG	*Rumex crispus*	Curled Dock	I	No	No	No
FG	*Rumex tenax*	Shiny Dock	N	-	-	-
FG	*Salvia verbenaca*	Vervain	I	No	No	No
SG	*Sclerolaena birchii*	Galvanized Burr	N	-	-	-
SG	*Sclerolaena muricata*	Black Rolypoly	N	-	-	-
SG	*Senna artemisioides group*	Silver Cassia	N	-	-	-
FG	*Senna barclayana*	Pepper-Leaf Senna	N	-	-	-
FG	*Silybum marianum*	Variegated Thistle	I	No	No	No
FG	*Sinapis arvensis*	Charlock	I	No	No	No
FG	*Sisymbrium irio*	London Rocket	I	No	No	No

Growth form[1]	Common name	Scientific name	Status[2]	HTE[3]	WoNS[4]	PW[5]
FG	*Sisymbrium officinale*	Hedge Mustard	I	No	No	No
FG	*Sisymbrium orientale*	Indian Hedge Mustard	I	No	No	No
FG	*Solanum elaeagnifolium*	Silver-Leaved Nightshade	I	Yes	Yes	Yes
FG	*Solanum esuriale*	Quena	N	-	-	-
FG	*Solanum nigrum*	Black-berry Nightshade	I	No	No	No
FG	*Sonchus oleraceus*	Common Sowthistle	I	No	No	No
TG	*Syagrus romanzoffiana*	Queen Palm	I	No	No	No
FG	*Trifolium subterraneum*	Subterranean Clover	I	No	No	No
FG	*Urtica incisa*	Stinging Nettle	N	-	-	-
FG	*Verbena bonariensis*	Purpletop	I	No	No	No
FG	*Verbena officinalis*	Common Verbena	I	No	No	No
FG	*Vittadinia cuneata*	Fuzzweed	N	-	-	-
FG	*Vittadinia pterochaeta*	Winged New Holland Daisy	N	-	-	-
FG	*Wahlenbergia communis*	Tufted Bluebell	N	-	-	-
FG	*Wahlenbergia gracilenta*	Annual Bluebell	N	-	-	-
FG	*Xanthium spinosum*	Bathurst Burr	I	Yes	No	No
FG	*Zaleya galericulata*	Hogweed	N	-	-	-

[1]Growth form: FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree, EG = Fern, OG = Other. [2]Status: N = Native, I = Introduced. [3]High-threat exotic species (Yes/No). [4]Weed of National Significance (Yes/No). [5]Priority weed for the region (Yes/No).

Fauna species list

In total, 37 fauna species were recorded within or immediately adjacent to the subject site. A list of all fauna species encountered is provided below.

Class	Common Name	Scientific Name	Native or introduced
Amphibia	*Crinia signifera*	Common eastern froglet	N
Amphibia	*Limnodynastes tasmaniensis*	Spotted Grass Frog	N
Aves	*Acanthiza nana*	Yellow Thornbill	N
Aves	*Anas gracilis*	Grey Teal	N
Aves	*Anas superciliosa*	Pacific Black Duck	N
Aves	*Ardea alba*	Great Egret	N
Aves	*Circus approximans*	Swamp Harrier	N
Aves	*Columba livia domestica*	Rock Dove	N
Aves	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	N
Aves	*Corvus coronoides*	Australian Raven	N
Aves	*Cracticus torquatus*	Grey Butcherbird	N
Aves	*Egretta novaehollandiae*	White face heron	N
Aves	*Elanus axillaris*	Black-shouldered Kite	N
Aves	*Eolophus roseicapilla*	Galah	N
Aves	*Falco berigora*	Brown Falcon	N
Aves	*Falco peregrinus*	Peregrine Falcon	N
Aves	*Grallina cyanoleuca*	Mudlark	N
Aves	*Gymnorhina tibicen*	Australian Magpie	N
Aves	*Haliastur sphenurus*	Whistling kite	N
Aves	*Hirundo neoxena*	Welcome Swallow	N
Aves	*Lichenostomus penicillatus*	White-plumed Honeyeater	N
Aves	*Manorina melanocephala*	Noisy Miner	N
Aves	*Milvus migrans*	Black Kite	N
Aves	*Ocyphaps lophotes*	Crested Pigeons	N
Aves	*Pardalotus striatus*	Striated Pardalote	N
Aves	*Platycercus eximius*	Eastern Rosella	N
Aves	*Poliocephalus poliocephalus*	Hoary-headed Grebe	N
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler	N
Aves	*Rhipidura albiscapa*	Grey Fantail	N
Aves	*Rhipidura leucophrys*	Willie Wagtail	N
Aves	*Saxicola chrysorrhoa*	Yellow-rumped thornbill	N
Aves	*Synoicus ypsilophorus*	Brown Quail	N
Aves	*Taeniopygia bichenovii*	Double-barred Finch	N
Aves	*Tachybaptus novaehollandiae*	Australasian Grebe	N
Aves	*Zosterops lateralis*	Silvereye	N
Mammalian	*Macropus giganteus*	Eastern Grey Kangaroo	N
Mammalian	*Lepus Capensis*	European Hare	I

APPENDIX C – LIKELIHOOD OF OCCURRENCE FOR BC & EPBC THREATENED SPECIES AND BC COMMUNITIES

List generated by conducting a vegetation associations report for the Lower Slopes subregion of the NSW South Western Bioregion and filtering the results by the PCTs present within the subject site. To determine whether any threatened species were known to occur near the subject site, BioNet Atlas records of threatened species within these subregions were downloaded and the records clipped to within 10 km of the subject site in QGIS. Likelihood of occurrence description is sourced from https://www.environment.nsw.gov.au/threatenedSpeciesApp

Likelihood of occurrence table for BC Act listed threatened species

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Maccullochella macquariensis	Trout Cod	E	E	0	The Trout Cod is endemic to the southern Murray-Darling River system, including the Murrumbidgee and Murray Rivers, and the Macquarie River in central NSW. The species was once widespread and abundant in these areas but has undergone dramatic declines in its distribution and abundance over the past century. The last known reproducing population of Trout Cod is confined to the Murray River below Yarrawonga downstream to Tocumwal. **Absent – No waterways within the subject site are mapped as potential habitat.**
Maccullochella peelii	Murray Cod		V	0	The Murray Cod is the largest freshwater fish in Australia growing up to 100kg. It is endemic to the Murray-Darling Basin. Prefers slow flowing, turbid water in streams and Rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs. Overfishing and environmental changes have dramatically reduced their numbers. **Absent – No waterways within the subject site are mapped as potential habitat.**
Macquaria australasica	Macquarie Perch		E	0	Macquarie Perch are found in the Murray-Darling Basin within the Lachlan, Murrumbidgee and Murray rivers. **Absent – No waterways within the subject site are mapped as potential habitat.**
Crinia sloanei	Sloane's Froglet	V,P	E	0	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					inundated areas in grassland, woodland and disturbed habitats. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Litoria raniformis	Southern Bell Frog	E1,P	V	0	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. The species is also found in Victoria, Tasmania, and South Australia, where it has also become endangered. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53) and no records within 10 km.**
Actitis hypoleucos	Common Sandpiper	P	C,J,K	0	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Anseranas semipalmata	Magpie Goose	V,P		5	The Magpie Goose is still relatively common in the Australian northern tropics but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					High - Proposal site within known distribution. Associated vegetation communities present (53) and five records within 10 km.
Anthochaera phrygia	Regent Honeyeater	E4A,P	CE	0	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. **Moderate - Proposal site within known distribution. Associated vegetation communities present (85, 201, 217) and no records within 10 km**.
Apus pacificus	Fork-tailed Swift	P	C,J,K	3	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide; however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton. Sightings have been recorded at Milparinka, the Bulloo River and Thurloo Downs (Higgins 1999). The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. **Moderate - Proposal site within known distribution. No associated vegetation communities present and three records within 10 km**
Ardeotis australis	Australian Bustard	E1,P		0	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Breeding now only occurs in the north-west region of NSW. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams. Breeds on bare ground on low sandy

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					ridges or stony rises in ecotones between grassland and protective shrubland cover; roosts on ground among shrubs and long grasses or under trees. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		13	Dusky woodswallows are widespread in eastern, southern, and southwestern Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. **High - Proposal site within known distribution. Associated vegetation communities present (53, 76, 77, 85, 201 and 217) and 13 records within 10 km**
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	2	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch. **Moderate - Proposal site within known distribution. No associated vegetation communities present and 2 records within 10 km**
Burhinus grallarius	Bush Stone-curlew	E1,P		0	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and, in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards, and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer. **Moderate - Proposal site within known distribution. Associated vegetation**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					communities present (76, 201, 217) and no records within 10 km.
Calidris acuminata	Sharp-tailed Sandpiper	P	C,J,K	2	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh, or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands. **Moderate - Proposal site within known distribution. No associated vegetation communities present and two records within 10 km**
Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	0	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Calidris melanotos	Pectoral Sandpiper	P	J,K	0	The Pectoral Sandpiper breeds in northern Russia and North America. Within Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					species is widespread in the Riverina and Lower Western regions. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent, or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Calidris ruficollis	Red-necked Stint	P	C,J,K	0	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons, and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks, and pools in salt flats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Callocephalon fimbriatum	Gang-gang Cockatoo	V,P,3	E	0	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**.
Calyptorhynchus lathami	Glossy Black-Cockatoo, Riverina population	E2,V,P,2		0	The Riverina population of the Glossy Black-Cockatoo is largely restricted to hills and low ridges where suitable stands of its food plant, Drooping She-Oak (*Allocasuarina verticillata*), remain within the Narrandera Range and to the north-west in the Brobenah Hills, McPhersons Range, Cocoparra Range, Lachlan Range and Jimberoo State Forests, and the Naradhan Range. This population now occurs west of longitude 146º 40' E, within Cobar, Carrathool, Narrandera, and Leeton local government areas. The population is largely restricted to hills and low ridges where suitable stands of its food plant Drooping Sheoak (*Allocasuarina verticillata*) remain.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Absent – Subject Site is outside of Riverina
Calyptorhynchus lathami	Glossy Black-Cockatoo	V,P,2		0	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuaraina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 201, 217) and no records within 10 km**.
Certhionyx variegatus	Pied Honeyeater	V,P		0	Pied Honeyeater is widespread throughout acacia, mallee, and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila* spp.); also, from mistletoes and various other shrubs (e.g. *Grevillea* spp.); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times. **Moderate - Proposal site within known distribution. Associated vegetation communities present (77) and no records within 10 km**.
Chalcites osculans	Black-eared cuckoo	P	Bonn.	0	Widespread in mainland Australia, avoiding wet and heavily forested areas. Occasional found in Tasmania and offshore islands. A parasitic breeder by laying eggs nests of other birds including Speckled warblers and red throats. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Chlidonias leucopterus	White-winged Black Tern	P	C,J,K	0	The species is a non-breeding migrant to Australia, where it is widespread and common along south-western, northern and central-eastern coasts, with only scattered records of small numbers along the coasts elsewhere in southern Australia. In Australia, and elsewhere in their non-breeding range, the species mostly inhabits fresh, brackish or saline, and coastal or subcoastal wetlands. White-winged Black Terns frequent tidal wetlands, such as harbours, bays, estuaries and lagoons, and their associated tidal

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					sandflats and mudflats. Terrestrial wetlands, including swamps, lakes, billabongs, rivers, floodplains, reservoirs, saltworks, sewage ponds and outfalls are also inhabited. In NSW, the species is widespread east of the Great Divide, mainly south to about Wollongong, but with scattered records further south along the coast and on inland wetlands west of the Great Divide, for example Lake Cowal, Narran Lake and as far west as the Menindee Lakes. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Chthonicola sagittata	Speckled Warbler	V,P		3	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth, and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. The eggs are a glossy red brown, giving rise to the unusual folk names ‘Blood Tit’ and ‘Chocolatebird’. Some cooperative breeding occurs. The species may act as host to the Black-eared Cuckoo. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills. **Moderate - Proposal site within known distribution. No associated vegetation communities present and three records within 10 km**
Cinclosoma castanotum	Chestnut Quail-thrush	V,P		0	Throughout its distribution it occurs in a wide range of arid and semi-arid habitats, mainly in the low shrubs and undergrowth of mallee scrub, but also in Acacia scrubs, dry sclerophyll woodland, heath, and native pine. However, in NSW it seems to occur almost exclusively in mallee habitats, with understorey dominated by spinifex, chenopods or other shrubs including Acacia species. Only rarely, such as in Cocoparra NP, is it recorded in other types of woodland, and in these areas a dense understorey may be a prerequisite.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Occupies vegetation with a wide range of fire histories, though appears to occur at highest densities in areas two to fifteen years post fire. There is some evidence from the Victorian mallee that if the interval between fires is too short (less than fifteen years) local declines may occur. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Circus assimilis	Spotted Harrier	V,P		0	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland, and shrub steppe. It is found most in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Climacteris affins	White-browed Treecreeper in Carrathool local government area south of the Lachlan Rier and Griffith local government area	E2,P		0	In NSW, occupies a broad area of western NSW, west from a line from Balranald to Lake Cargelligo then Lightning Ridge. The species appears absent in the far north west of the state with no records occurring west of a line from Broughams Gate, 100km northwest of Broken Hill to Hungerford. A small population, now recognised as isolated, occurs in Carrathool local government area south of the Lachlan River and Griffith local government areas. Occurs in a range of semi-arid and arid tall shrublands and woodlands across the southern half of Australia. In NSW, the species occupies a variety of habitats including Mulga, Brigalow, Gidgee, Belah, Buloke and White Cypress. The species may also occur in habitats adjacent to those detailed above, including Coolibah, River Red Gum and Black Box. **Absent – Subject outside Carrathool LGA**
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V,P		5	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo, and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has been greatly reduced over

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares, that have been isolated or fragmented for more than 50 years. **High - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and five records within 10 km**
Daphoenositta chrysoptera	Varied Sittella	V,P		3	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee, and Acacia woodland. **Moderate - Proposal site within known distribution. No associated vegetation communities present and three records within 10 km**
Epthianura albifrons	White-fronted Chat	V,P		6	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. **Moderate - Proposal site within known distribution. No associated vegetation communities present and six records within 10 km**
Falco hypoleucos	Grey Falcon	E1,P,2		8	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. **High - Proposal site within known distribution. Associated vegetation communities present (53, 76, 77) and eight records within 10 km**
Falco subniger	Black Falcon	V,P		10	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring. **Moderate - Proposal site within known distribution. No associated vegetation communities present and 10 records within 10 km**
Gallinago hardwickii	Latham's Snipe	P	J,K	0	Latham's Snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (i.e., it travels through northern Australia to reach non-breeding areas located further south). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South. The species is widespread in Tasmania and is found in all regions of Victoria except for the north-west. Most birds spend the non-breeding period at sites located south of the Richmond River in New South Wales. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g., swamps, flooded grasslands, or heathlands, around bogs and other water bodies. However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Gelochelidon nilotica	Gull-billed Tern	P	C	1	The Gull-billed Tern occurs on all continents except Antarctica. Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands, and grasslands. They are only rarely found over the ocean. **Low - Proposal site within known distribution. No associated vegetation communities present and one records within 10 km**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V,P,3		0	The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and southwest slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. Breeds away from feeding areas, utilising hollow branches or holes in trees. Also roosts in dense vegetation up to several kilometres away from feeding areas. **Low - Proposal site within known distribution. No associated vegetation communities present and one records from 1970 within 10 km**
Glossopsitta pusilla	Little Lorikeet	V,P		0	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca, and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Grantiella picta	Painted Honeyeater	V,P	V	0	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria, and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (Acacia pendula), Brigalow *(A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 77, 85, 201, 217) and no records within 10 km**
Grus rubicunda	Brolga	V,P		0	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs, and frogs. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		8	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, lagoons, estuaries, and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts. Nests are large structures built from sticks and lined with leaves or grass. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals, and carrion. Hunts its prey from a perch or whilst in flight (by circling slowly, or by sailing along 10–20 m above the shore). Prey is usually carried to a feeding platform or (if small) consumed in flight, but some items are eaten on the ground. May be solitary or live in pairs or small family groups consisting of a pair of adults and dependent young. Typically lays two eggs between June and September with young birds remaining in the nest for 65-70 days. **Moderate - Proposal site within known distribution. No associated vegetation communities present and eight records within 10 km**
Hamirostra melanosternon	Black-breasted Buzzard	V,P,3		0	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands. **Moderate - Proposal site within known distribution. Associated vegetation communities present (77) and no records within 10 km**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Hieraaetus morphnoides	Little Eagle	V,P		7	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland, or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. **Moderate - Proposal site within known distribution. No associated vegetation communities present and seven records within 10 km**
Hirundapus caudacutus	White-throated Needletail	P	V,C,J,K	2	The White-throated Needletail is widespread in eastern and south-eastern. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. **Moderate - Proposal site within known distribution. Associated vegetation communities present and two records within 10 km**
Hydroprogne caspia	Caspian Tern	P	J	2	Within Australia, the Caspian Tern has a widespread occurrence and can be found in both coastal and inland habitat (Higgins & Davies 1996). Widespread east of the Great Divide, mainly in coastal regions, and in the Riverina and Lower and Upper Western Regions, with occasional records elsewhere (Higgins & Davis 1996). The Caspian Tern is mostly found in sheltered coastal embayment's (harbours, lagoons, inlets, bays, estuaries, and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers, and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Hylacola cautus	Shy Heathwren	V,P		0	Occurs across southern Australia extending from the wheatbelt in southern Western Australia east to central NSW, including Kangaroo Island. Two subspecies occur in NSW. The first (*macrorhyncha*) is confined to central NSW between Griffith, Roto, Nymagee and West Wyalong, with most records within OEH managed reserves (including Yathong,

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Nombinnie, Round Hill and The Charcoal Tank Nature Reserves and Cocoparra National Park). The nominate subspecies (*cautus*) occurs in the far south west between Balranald and Trentham Cliffs (including Mallee Cliffs National Park), north into the Scotia Mallee (including Tarawi Nature Reserve and Scotia Sanctuary). This subspecies also occurs in north west Victoria and eastern South Australia (as far west as the Flinders Ranges). Inhabits mallee woodlands with a relatively dense understorey of shrubs and heath plants. The central NSW population (for example in Cocoparra NP) also occurs at low densities in rocky hilltop vegetation with a thick shrub layer such as Broombush or Tea-tree. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Ixobrychus flavicollis	Black Bittern	V,P		0	The Black Bittern has a wide distribution, from southern NSW north to Cape York and along the north coast to the Kimberley region. The species also occurs in the south-west of Western Australia. In NSW, records of the species are scattered along the east coast, with individuals rarely being recorded south of Sydney or inland. Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Lathamus discolor	Swift Parrot	E1,P,3	CE	0	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and southwest slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood C. gummifera, Forest Red Gum *E. tereticornis*, Mugga Ironbark *E. sideroxylon*, and White Box *E. albens*. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Leipoa ocellata	Malleefowl	E1,P	V	0	The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary and is part of a larger population north of the Murray River in South Australia. The population in central NSW has been significantly reduced through land clearance and fox predation and now occurs chiefly in Yathong,

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Nombinnie and Round Hill NRs and surrounding areas, though birds continue to survive in Loughnan NR. To the south of this area the species is probably locally extinct in such reserves as Pulletop NR (last recorded 1989), Ingalba NR (1982) and Buddigower NR (1990) and the intensely studied population at Yalgogrin was still known to have at least one active mound in 2017. Further east, a population continues to persist in the Goonoo forest near Dubbo, though the size of this population is unknown. Outside these areas, occasional records have been made in the Pilliga forests (most recently 1999), around Cobar (1991) and Goulburn River NP (1989) though the extent and status of populations in these areas are unknown. Predominantly inhabit mallee communities, preferring the tall, dense and floristically rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Limosa lapponica	Bar-tailed Godwit	P	C,J,K	0	Bar-tailed Godwits arrive in Australia each year in August from breeding grounds in the northern hemisphere. Birds are more numerous in northern Australia. Bar-tailed Godwits inhabit estuarine mudflats, beaches, and mangroves. They are common in coastal areas around Australia. They are social birds and are often seen in large flocks and in the company of other waders. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Limosa limosa	Black-tailed Godwit	V,P	C,J,K	0	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53) and no records within 10 km**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V,P,2		0	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles, and cypress pines. Normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Lophoictinia isura	Square-tailed Kite	V,P,3		0	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW, and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September, and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 77, 85, 201, 217) and no records within 10 km**
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V,P		2	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, except for the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs, and a ground layer of moderately tall native grasses. **High - Proposal site within known distribution. Associated vegetation communities present (76, 77, 85, 201, 217) and 2 records within 10 km**
Melithreptus gularis	Black-chinned Honeyeater	V,P		0	The Black-chinned Honeyeater has two subspecies, with only the nominate (gularis) occurring in NSW. The eastern subspecies extends south from central Queensland,

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
gularis	(eastern subspecies)				through NSW, Victoria into south eastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (Eucalyptus sideroxylon), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. A gregarious species usually seen in pairs and small groups of up to 12 birds. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares. Moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers, and honeydew is gleaned from foliage. Breeds solitarily or co-operatively, with up to five or six adults, from June to December. The nest is placed high in the crown of a tree, in the uppermost lateral branches, hidden by foliage. It is a compact, suspended, cup-shaped nest. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and no records within 10 km.**
Merops ornatus	Rainbow Bee-eater	P	Bonn.	3	Widespread throughout Australia except desert areas and Tasmania. Migrates to Northern Australia, Indonesia and New Guinea during the Austral winter. **Moderate - Proposal site within known distribution. No associated vegetation communities present and three records within 10 km.**
Monarcha melanopsis	Black-faced Monarch	P	Bonn.	0	Breeds in Australia during Summer before migrating to PNG for the Australian winter. They are found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating. **Absent – Subject site not within known or predicted range for this species.**
Motacilla flava	Yellow Wagtail	P	C,J,K		Widespread wagtail, favouring wet meadows, marshland, grassy and muddy lakeshores. Occurs in fields and often near livestock during migration. Like other wagtails, walks on ground and pumps its long, white-sided tail up and down. Plumage highly variable, but breeding male wholly bright yellow below, with greenish back. Male head pattern varies regionally: in U.K. has greenish head with yellow eyebrow; in northern Europe head slaty grey overall; in central and southwest Europe head blue-grey with white eyebrow. Individuals of several subspecies may winter together. Female and nonbreeding plumages drabber and paler, with ghosting of male patterns. Uncertainty exists regarding this

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					species presence outside of northern Europe. **Absent – Subject site not within known or predicted range for this species.**
Myriagra cyanoeuca	Satin Flycatcher	P	Bonn.	0	The Satin flycatcher breeds in Tasmania and south-eastern Australia in the warmer months and migrates to eastern NSW, QLD and PNG. Found in tall forests and wet habitats including forest gullies, but rarely rainforests. **Absent – Subject site not within known or predicted range for this species.**
Neophema chrysostoma	Blue-winged Parrot	P	Bonn.	0	The movements of Blue-winged parrots are not well understood. Believed to breed in Tasmania, southern Victoria, and coastal South Australia. Migrates further north to central and western NSW and QLD. **Absent – Subject site not within known or predicted range for this species.**
Neophema pulchella	Turquoise Parrot	V,P,3		0	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges, and creeks in farmland. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and no records within 10 km.**
Ninox connivens	Barking Owl	V,P,3		0	The Barking Owl is found throughout continental Australia except for the central arid regions. Although common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Many populations crashed as woodland on fertile soils was cleared over the past century, leaving linear riparian strips of remnant trees as the last inhabitable areas. Surveys in 2001 demonstrated that the Pilliga Forest supported the largest population in southern Australia. The owls sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g., western NSW) due to the higher density of prey on these fertile riparian soils. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53, 76, 85, 201, 217) and no records within 10 km.**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Numenius phaeopus	Whimbrel	P	C,J,K	0	The Whimbrel is a regular migrant to Australia and New Zealand, with a primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions. It is found in all states but is more common in the north. It is found along almost the entire coast of Queensland and NSW and regularly at some places in Victoria, Tasmania, and South Australia. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Oxyura australis	Blue-billed Duck	V,P		14	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. **High - Proposal site within known distribution. Associated vegetation communities present (53) and 14 records within 10 km.**
Pachycephala inornata	Gilbert's Whistler	V,P		0	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt. The species was probably once distributed almost continuously across the woodlands and mallee of southern NSW, but this range has been greatly reduced. The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards, and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hopbushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (*Exocarpus* species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised. **Low - Proposal site within known distribution. Associated vegetation communities present (217) and no records within 10 km.**
Pandion cristatus	Eastern Osprey	V,P,3		0	The Osprey has a global distribution with four subspecies previously recognised throughout its range. Eastern Ospreys are found right around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast, especially

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Pedionomus torquatus	Plains-wanderer	E1,P	CE	0	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including several state and nationally threatened species. The Plains-wanderer has declined greatly since European settlement. Areas where the species was formerly common and is now so reduced in numbers that it is effectively extinct include eastern NSW, south-western Victoria, and south-eastern South Australia. Its current stronghold is the western Riverina of southern NSW. Areas of secondary importance include north-central Victoria and central-western Queensland. The bird was formerly common until about 1920 on the Slopes and Tablelands, and there are two earlier records of birds near Sydney. The main reason for the decline in the numbers and distribution of Plains-wanderers in all eastern States has been the conversion of native grasslands to dense introduced pasture or croplands. If native grasslands are not overgrazed or cultivated then Plains-wanderers are largely sedentary, though there is some recent evidence to suggest that birds may not remain sedentary during prolonged drought conditions. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Petroica boodang	Scarlet Robin	V,P		0	The Scarlet Robin is found from southeast Queensland to southeast South Australia and in Tasmania and southwest Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range, and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. The Scarlet Robin is a quiet and unobtrusive species which is often quite tame and easily approached. Birds forage from low perches, fenceposts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and no records within 10 km.**
Petroica phoenicea	Flame Robin	V,P		3	The Flame Robin is endemic to southeastern Australia, and ranges from near the Queensland border to southeast South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. Prefers clearings or areas with open understoreys. In winter, birds migrate to drier more open habitats in the lowlands (i.e., valleys below the ranges, and to the western slopes and plains), in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. **High - Proposal site within known distribution. Associated vegetation communities present (76, 85, 217) and three records within 10 km**
Pluvialis fulva	Pacific Golden Plover	P	C,J,K	0	Within Australia, the Pacific Golden Plover is widespread in coastal regions, though there are also several inland records (in all states), sometimes far inland and usually along major river systems, especially the Murray and Darling Rivers and their tributaries. As the species breeds overseas, in non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Polytelis swainsonii	Superb Parrot	V,P,3	V	21	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra, and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward, and Murrumbidgee Rivers where birds are present all year round. This species inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the Southwest Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. May forage up to 10 km from nesting sites, and feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. **High - Proposal site within known distribution. Associated vegetation communities present (76, 77, 85, 201, 217) and 21 records within 10 km.**
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		26	The eastern subspecies (temporalis) occurs from Cape York south through Queensland, NSW and Victoria and formerly to the southeast of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Lives in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to fifteen individuals. Feed on invertebrates and nests in several conspicuous, dome-shaped stick structures that are about the size of a football. A nest is used as a dormitory for roosting each night. Nests are maintained year-round, and old nests are often dismantled to build new ones. **Present - Proposal site within known distribution. Associated vegetation communities present (76, 77, 85, 201, 217), 26 records within 10 km and detected during the field survey.**
Rhipidura ruffions	Rufous Fantail	P	Bonn.	0	Breeds in eastern Australian in moist forests and rainforests before migrating to northern Australia, Indonesia, Micronesia and New Guinea. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Rostratula australis	Australian Painted Snipe	E1,P	E	0	The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps,

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					dams, and nearby marshy areas where there is a cover of grasses, lignum, low scrub, or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks, or reeds. Forages nocturnally on mudflats and in shallow water. Feeds on worms, molluscs, insects, and some plant-matter. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Stagonopleura guttata	Diamond Firetail	V,P		4	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and Southwestern Slopes and the Northwest Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley, and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. **High - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and 4 records within 10 km.**
Stictonetta naevosa	Freckled Duck	V,P		14	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Generally, rest in dense cover during the day, usually in deep water. Feed at dawn and dusk and at night on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates. Nesting usually occurs between October and December but can take place at other times when conditions are favourable. Nests are usually located in dense vegetation at or near water level. **High - Proposal site within known distribution. Associated vegetation communities present (53) and 14 records within 10 km.**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Tringa glareola	Wood Sandpiper	P	C,J,K	2	Wood Sandpipers are more numerous in the north than the south of Australia and are also found in New Guinea, Africa, the Indian subcontinent, and South-east Asia. They breed widely across the north of Europe and Asia, mostly in Scandinavia, Baltic countries, and Russia. They are the most abundant migratory wader in non-coastal areas of Asia. Wood Sandpipers are seen in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber. **Moderate - Proposal site within known distribution. No associated vegetation communities present and 2 records within 10 km.**
Tringa nebularia	Common Greenshank	P	C,J,K	1	The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves, or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats, and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes, and inundated floodplains, claypans and salt flats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. It was once recorded with Black-winged Stilts (*Himantopus himantopus*) in pasture but are generally not found in dry grassland. **Moderate - Proposal site within known distribution. No associated vegetation communities present and 1 record within 10 km.**
Tringa stagnatilis	Marsh Sandpiper	P	C,J,K	1	The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (Higgins & Davies 1996), although surveys in Kakadu National Park recorded more birds around shallow freshwater lakes than in areas influenced by tide (Bamford 1988). At the Top End they often use ephemeral pools on

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					inundated freshwater and tidal floodplains (Higgins & Davies 1996). Three of the five sites with highest recorded numbers are saltwater habitats (Hunter Estuary, NSW; Port Hedland Saltworks, Western Australia; Tullakool Evaporation Ponds, NSW) (Watkins 1993). In the south-east Gulf of Carpentaria, they have been recorded round both saline and fresh waters (Garnett 1989). Elsewhere they said to avoid, or rarely occur in, tidal habitats, and rarely occur on beaches. In Western Australia they prefer freshwater to marine environments. In south-east Australia they prefer inland saline lakes and coastal saltworks. They are found infrequently around mangroves (Higgins & Davies 1996). **Moderate - Proposal site within known distribution. No associated vegetation communities present and 1 record within 10 km**
Tyto novaehollandiae	Masked Owl	V,P,3		0	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53, 76, 201, 217) and no records within 10 km**
Acacia ausfeldii	Ausfeld's Wattle	V		0	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions. Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. Associated species include *Eucalyptus albens*, *E. blakelyi* and Callitris spp., with an understorey dominated by *Cassinia* spp. and grasses. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76) and no records within 10 km**
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	V	0	There are many historic collections in the City of Greater Albury. It has been recorded recently in lagoons beside the Murray River near Cooks Lagoon (Shire of Greater Hume), Mungabarina Reserve, East Albury, at Ettamogah, Thurgoona (Charles Sturt University Campus), near Narranderra, and further west along the Murray River (near Mathoura) and in Victoria. There is a recent record of this species near Laggan in Upper Lachlan Shire. It is also found in Victoria and in Tasmania. *Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile, and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					tank beds in hard clay and in semi-dry mud of lagoons with Potamogeton and Chamaeraphis species. **Moderate - Proposal site within known distribution. Associated vegetation communities present (201) and no records within 10 km.**
Austrostipa metatoris	A spear-grass	V	V	0	Most records occur in the Murray Valley with sites including Cunninyeuk Station, Stony Crossing, Kyalite State Forest (now part of Murrumbidgee Valley Regional Park) and Lake Benanee. Scattered records also occur in central NSW including Lake Cargelligo, east of Goolgowi, Condobolin and south west of Nymagee. Otherwise only known from near Bordertown in south east South Australia, where it may be locally extinct. Grows in sandy areas of the Murray Valley; habitats include sandhills, sand ridges, undulating plains and flat open mallee country, with red to red-brown clay-loam to sandy-loam soils. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 201, 217) and no records within 10 km.**
Austrostipa wakoolica	A spear-grass	E1	E	0	Confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and Mairjimmy State Forest (now part of South West Woodland Nature Reserve). Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Brachyscome muelleroides	Claypan Daisy	V	V	0	The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Also occurs in north-central Victoria (only along the Murray from Tocumwal to the Ovens River). Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus*, *Agrostis avenacea* and *Austrodanthonia duttoniana*. Also recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides*. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76) and no records within 10 km.**
Brachyscome papillosa	Mossgiel Daisy	V	V	0	The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington Point. In addition, there are several records from the Willandra Lakes World Heritage Area (including Mungo National

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Park) with a north-western outlier at Byrnedale Station, north of Menindee. The only known site on South Western Slopes is Ganmain Reserve. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76) and no records within 10 km.**
Caladenia arenaria	Sand-hill Spider Orchid	E1,P,2	E	0	Caladenia arenaria is found mostly on the southwest plains and western south west slopes. The original description is of a plant from Nangus, west of Gundagai (1865) and there is a report of the species from Adelong near Tumut. A record near Cootamundra needs verifying. The Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narranderra. Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*). **Moderate - Proposal site within known distribution. Associated vegetation communities present (76) and no records within 10 km.**
Caladenia concolor	Crimson Spider Orchid	E1,P,2	V	0	The current NSW Scientific Committee listing incorporates two populations which have each been described as separate species by D.L. Jones. One of these populations comprises a few hundred plants on private property near Bethungra and the other of about 100 plants occurs in Burrinjuck Nature reserve. The other occurrences of the Crimson Spider Orchid in NSW are from the Nail Can Hill Crown Reserve near Albury. The species also occurs at two localities in Victoria near Beechworth and Chiltern. Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Cullen parvum	Small Scurf-pea	E1		0	The Small Scurf-pea is known in NSW from only two herbarium collections: one from Wagga Wagga in 1884 and the other from Jindera (near Albury) in 1967. A small population was recently reported from near Jerilderie (although it has not been relocated). In recent years, two populations have been recorded in travelling stock reserves south-west of Wagga Wagga, and a population reputedly exists on a roadside near Galong. Another population has recently been discovered on private land near Young. Large populations have been recorded in grassy gaps in the Red Gum Woodlands of Barmah State Park, just across the border in Victoria. Extensive suitable habitat probably occurs across the border in NSW. In known populations in Victoria and NSW, plants are found in grassland, River Red Gum (Eucalyptus camaldulensis) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses, in areas with rainfall of between 450 and 700 mm.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	E1,P,2		0	Currently known only from the Oaklands-Urana region of southern NSW. Grows in White Cypress Pine (*Callitris glaucophylla*) Woodland, either among dense grasses in flat areas with associated eucalypts, or amongst sparse grasses and forbs on low sandhills. Grows mostly on sandy loam soils. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Diuris tricolor	Pine Donkey Orchid	V,P,2		1	Sporadically distributed on the western slopes of NSW, extending from south of Narrandera all the way to the north of NSW. Localities in the south include Red Hill north of Narrandera, Coolamon, and several sites west of Wagga Wagga. Condobolin-Nymagee road, Wattamondara towards Cowra, Eugowra, Girilambone, Dubbo and Cooyal, in the Central West. Pilliga SCA, Pilliga National Park, and Bibblewindi State Forest in the north (and extending into Queensland) and Muswellbrook in the east. Disturbance regimes are not known, although the species is usually recorded from disturbed habitats. **High - Proposal site within known distribution. Associated vegetation communities present (76, 201) and one record within 10 km.**
Eleocharis obicis	Spike-Rush	V	V	0	Found near Condobolin and Hay, as well as being known from an old collection from the Barrier Range near Broken Hill. The later collection was made on the Lachlan River floodplain at Micabil, near Condobolin. Grows in ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	V		0	Restricted to several small areas between Barham and Euston. This species is not known from any protected area within NSW, though some remnants occur within State Forests along the Murray River, particularly within Campbells Island and Euston SFs. Eucalyptus leucoxylon subsp. pruinosa is a tree species which, in New South Wales, occurs at the bases of sandy rises and on loamy clay flats on the floodplains of the Murray River and its tributaries in the Riverina Bioregion. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Grevillea ilicifolia subsp.	Holly-leaf Grevillea	E4A		0	Grevillea ilicifolia, commonly known as holly grevillea, is a species of the plant genus Grevillea. It is a shrub of variable form, growing to between 0.3 and 2 metres in

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
ilicifolia					height and 3 metres wide. Typically, leaves are lobed and holly like, but may also be unlobed. The flowers have perianths that have a base that is cream to green grading to grey-mauve. Styles may be pink, red, orange, or yellow. The main flowering period in the species' native range is September to November. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Kippistia suadedifolia	Fleshy Minuria	E1		0	Recorded from several collections near Conoble in the Ivanhoe district. This locality is an open-cast gypsum mine (Marlow Gypsum Mine), located 22 km north of Conoble railway siding. Also reported from the Scotia mapsheet area in far south-western NSW. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Lepidium aschersonii	Spiny Peppercress	V	V	0	Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Also known from the West Wyalong in the south of the State. The Spiny Peppercress occurs in periodically wet sites such as gilgai depressions and the margins of freshwater and saline marshes and shallow lakes, usually on heavy clay soil. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53, 76, 77) and no records within 10 km**
Lepidium monoplocoides	Winged Peppercress	E1	E	0	Widespread in the semi-arid western plains regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. There is a single collection from Broken Hill and only two collections since 1915, the most recent being 1950. Also previously recorded from Bourke, Cobar, Urana, Lake Cargelligo, Balranald, Wanganella, and Deniliquin. Recorded more recently from the Hay Plain, south-eastern Riverina, and from near Pooncarie. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Leptorhynchos orientalis	Lanky Buttons	E1		0	Recorded from several Hay Plain and southern Riverina localities, including Willanthry east of Hillston, Zara-Wanganella via Hay, McKinley Road SW of Hillston, and “Morundah” navy land west of Buckingbong SF. A large population has most recently been recorded from Cowl Cowl Station SSW of Hillston along a TSR. Grows in woodland or grassland, sometimes on the margins of swamps. Communities include a Bimble Box plain in red-

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					brown soil, dense Acacia pendula woodland with herbaceous understorey on red clay to clay-loam, open grassland areas on red soils, and red clay plains at the edge of a Canegrass swamp. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Philotheca angustifolia subsp. angustifolia		E4,P		0	*Philotheca angustifolia* subsp. *angustifolia* is presumed to be extinct in NSW. Its current distribution is in Queensland, Victoria and South Australia. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Pilularia novae-hollandiae	Austral Pillwort	E1,3		0	In NSW, Austral Pillwort has been recorded from suburban Sydney, Khancoban, the Riverina between Albury, and Urana (including Henty, Walbundrie, Balldale and Howlong), Oolambeyan National Park near Carathool and at Lake Cowal near West Wyalong. The populations at Lake Cowal and Oolambeyan NP are the only known extant populations in NSW, although the species is obscure and has possibly been overlooked elsewhere. The species has also been recorded in the Australian Capital Territory, Victoria, Tasmania, South Australia, and Western Australia. Austral Pillwort grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53) and no records within 10 km**
Pomaderris cocoparrana	Cocoparra Pomaderris	E1	E	0	Shrub 1–3 m high, stems rusty with short simple and stellate hairs. Leaves ovate to circular, 1–3 cm long, 8–15 mm wide, upper surface dark green, with very short erect hairs, lower surface greyish with longer appressed rusty simple hairs, secondary veins prominent with rusty simple hairs. Flowers yellow, in small terminal panicles. Sepals not persistent in fruit. Petals usually absent. Capsule and hypanthium covered with fine stellate tomentum below fine whitish scattered simple hairs. Confined to the Cocoparra Ranges near Griffith. An isolated population also occurs 65 kilometres east of the Ranges on private land north of Ardlethan. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Senecio garlandii	Woolly Ragwort	V		0	This daisy is found between Temora, Bethungra, and Albury and possibly Burrinjuck near Yass. The largest populations are at The Rock and Mt Tabletop (and surrounds). There is a single population in Victoria at Chiltern. Woolly Ragwort occurs on sheltered slopes of

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					rocky outcrops. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Swainsona murrayana	Slender Darling Pea	V	V	0	Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 77) and no records within 10 km**
Swainsona recta	Small Purple-pea	E1	E	0	Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, *poa tussocks* Poa spp. and spear-grasses *Austrostipa* spp. **Moderate - Proposal site within known distribution. Associated vegetation communities present (and no records within 10 km**
Swainsona sericea	Silky Swainson-pea	V		0	Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Also found in South Australia, Victoria, and Queensland. Found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 77, 201) and no records within 10 km**
Tylophora linearis		V	E	0	Occurs from southern Queensland into central NSW, as far south near Temora with most records occurring in the central western region. Records from Goonoo, Pilliga West, Pilliga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs. Grows in dry scrub and open forest. **Moderate - Proposal site within known distribution. Associated vegetation**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					communities present (217) and no records within 10 km
Wilsonia rotundifolia	Round-leafed Wilsonia	E1		0	Round-leafed Wilsonia is known from several sites in the Jervis Bay area, Royal National Park, near Deniliquin and on the lakebeds of Lake George and Lake Bathurst when these are exposed during droughts. The Lake George and Lake Bathurst populations appear to be locally extensive. Also found Western Australia, South Australia, and Victoria. Grows in mud in coastal saltmarsh and inland saline or brackish lake beds. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Cercartetus nanus	Eastern Pygmy-possum	V,P		0	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes, and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. **Moderate - Proposal site within known distribution. Associated vegetation communities present (85, 217) and no records within 10 km.**
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	0	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and Northwest Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. **Moderate - Proposal site within known distribution. Associated vegetation communities present (201, 217) and no records within 10 km.**
Chalinolobus picatus	Little Pied Bat	V,P		0	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings.

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					Moderate - Proposal site within known distribution. Associated vegetation communities present (53, 76, 77, 201) and no records within 10 km.
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	1	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. **Moderate - Proposal site within known distribution. Associated vegetation communities present (85, 201, 217) and one record within 10 km**
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		0	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Macrotis lagotis	Bilby	E4,P	V	0	Bilbies were common in many habitats throughout Australia, from the dry interior to temperate coastal regions. Changes to the Bilby's habitat have seen their numbers greatly reduced and today the species is nationally listed as vulnerable and is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland. Once widespread in arid, semi-arid and relatively fertile areas, the Bilby is now restricted to arid regions and remains a threatened species. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P		0	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings, and other man-made structures. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Myotis macropus	Southern Myotis	V,P		0	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. **Moderate - Proposal site within known distribution. Associated vegetation communities present (85) and no records within 10 km.**
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	0	Overall, the distribution of the southeastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. **Moderate - Proposal site within known distribution. Associated vegetation communities present (201, 217) and no records within 10 km.**
Petaurus norfolcensis	Squirrel Glider in the Wagga Wagga Local Government Area	E2,V,P		0	The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA. The distribution of the Squirrel Glider and its known or potential habitats within, or linked across, this boundary is not well defined. However, potential habitat occurs at low densities and is patchily distributed on public lands (TSRs, NPWS reserves, Bush Heritage Trust reserves), private lands and roadside corridors with remnant vegetation. Inhabits a wide range of open forest, woodland, and riverine forest habitats. Utilise remnants of various sizes, including small remnants and even small stands of trees within Travelling Stock Reserves, roadside reserves, or private land. Often utilise linear remnant vegetation along roadsides or rivers and streams. Eucalypt species known to provide suitable denning and foraging resources include (but are not restricted to): Blakely's Red Gum (*Eucalyptus blakelyi*), Grey Box (*E. microcarpa*), Red Box (*E. polyanthemos*), Mugga Ironbark (*E. sideroxylon*), River Red Gum (*E. camaldulensis*), White Box (*E. albens*) and Yellow Box (*E. melliodora*). **Absent – Subject Site is outside of Wagga Wagga LGA.**
Petaurus norfolcensis	Squirrel Glider	V,P		0	Squirrel Gliders is distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands, and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					understorey in coastal areas **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 85, 201, 217) and no records within 10 km.**
Phascogale tapoatafa	Brush-tailed Phascogale	V,P		0	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs, or leaf litter. Also inhabit heath, swamps, rainforest, and wet sclerophyll forest. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Phascolarctos cinereus	Koala	V,P	E	0	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. **Moderate - Proposal site within known distribution. Associated vegetation communities present (53, 76, 77, 85, 201, 217) and no records within 10 km.**
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	0	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths, and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular Eucalyptus, *Melaleuca* and *Banksia*, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops. **Moderate - Proposal site within known distribution. Associated vegetation communities present (76, 217) and no records within 10 km.**

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		0	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW, and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and Northwest Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March when a single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn. **Moderate - Proposal site within known distribution. Associated vegetation communities present and no records (53, 76, 77, 201, 217) within 10 km.**
Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		0	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however, does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km.**
Sminthopsis macroura	Stripe-faced Dunnart	V,P		0	Throughout much of inland central and northern Australia, extending into central and northern NSW, western Queensland, Northern Territory, South Australia, and Western Australia. They are rare on the NSW Central West Slopes and North West Slopes with the most easterly records of recent times located around Dubbo, Coonabarabran, Warialda and Ashford. Native dry grasslands and low dry shrublands, often along drainage lines where food and shelter resources tend to be better. **Moderate - Proposal site within known distribution. Associated vegetation communities present (77) and no records within 10 km.**
Vespadelus baverstocki	Inland Forest Bat	V,P		0	Because of the difficulty of identification, the distribution of this species, particularly in NSW, is very poorly known. Believed to occur widely in all the mainland states, generally

Scientific name	Common Name	NSW Status*	Comm. Status+	# Bionet Records within 10 km	Likelihood of Occurrence
					in areas with annual rainfall less than 400 millimetres. In Victoria it is confined to the extreme north west. In NSW it has been most regularly captured in the far south west, north from the Murray River to Menindee, and at least as far east as the Balranald-Ivanhoe Road. There is some evidence to suggest that this species also occurs in the central NSW mallee, centred on Nombinnie Nature Reserve, although there has been very little recent survey in this part of the state. There are also records just south of the Queensland border around the Culgoa River, though whether this connects with other NSW populations, or is the southern extent of a northern population is unknown. There are records further east in NSW but the identification of these records has not been confirmed. There are relatively few records of any *Vespadelus* species in the north west of NSW and so whether this species does occur here is unknown. Some of the gaps in knowledge on the distribution of this and other bat species in western NSW probably reflects the lack of survey effort in most of this region. **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**
Aprasia parapulchella	Pink-tailed Legless Lizard	V,P	V	0	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury, and West Wyalong. This species is also found in the Australian Capital Territory. Inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass (*Themeda australis*). **Low - Proposal site within known distribution. No associated vegetation communities present and no records within 10 km**

*NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

+Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable, Bonn. =Bonn Convention.

Likelihood of occurrence table for BC Act-listed Threatened Ecological Communities.

Community	NSW Status	Likelihood of Occurrence
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	EEC	Alluvial soils of the South West Slopes, Brigalow Belt South and Darling Riverine Plains Bioregions. Mainly in the Dubbo-Narromine-Parkes-Forbes area. **Present – 0.72 ha of those areas mapped as PCT 201 fit the description of this community.**
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	EEC	Inland Grey Box Woodland occurs predominately within the Riverina and South West Slopes regions of NSW down to the Victorian border. It includes Albury to the east and may extend out west towards Hay. This community also extends across the slopes and plains in Central and Northern NSW up to the Queensland Border. This includes Yetman and Inverell in the North, Molong to the east of the Central Slopes and plains and out towards Nymagee to the west. **Present – Areas mapped as PCT 76 fit the description of this community**
Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion	CEEC	A highly restricted distribution, with known occurrences falling with a region of less than 4000 km^2 bounded by Lake Cowal - Temora - Ardlethan - Ungarie. It is estimated that the total area remaining is around 2300 hectares within the local government areas of Bland and Temora. Most remaining areas are on private property or within roadside easements, though small areas are known from the following Natures Reserves: Buddigower, The Charcoal Tank, portions of South West Woodland (former Blue Mallee Flora Reserve and State Forest and Wyalong State Forest) and possibly Big Bush. **Absent – No vegetation within the subject site is associated with this community**
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	EEC	Known from parts of the Local Government Areas of Berrigan, Bland, Bogan, Carrathool, Conargo, Coolamon, Coonamble, Corowa, Forbes, Gilgandra, Griffith, Gwydir, Inverell, Jerilderee, Lachlan, Leeton, Lockhart, Moree Plains, Murray, Murrumbidgee, Narrabri, Narranderra, Narromine, Parkes, Urana, Wagga Wagga and Warren, and but may occur elsewhere in these bioregions. **Absent – No vegetation within the subject site is associated with this community**
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	EEC	Sandhill Pine Woodland has been recorded in the far south-western portion of the NSW South Western Slopes bioregion near Urana, extending through the Riverina bioregion, from the Urana – Narranderra district in the east, into the southern part of the Murray-Darling Depression bioregion, as far west as the South Australian border. **Absent – No vegetation within the subject site is associated with this community**
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	CEEC	Box-Gum Woodland is found from the Queensland border in the north, to the Victorian border in the south. It occurs in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions **Absent – No vegetation within the subject site is associated with this community**

APPENDIX D – KEY THREATENING PROCESSES

Key Threatening Processes (KTP) predicted as acting on the study area that may be exacerbated should development proceed.

Name	NSW status	Comm status	Likelihood of Occurrence	Exacerbated by Proposal
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, *Manorina melanocephala* (Latham, 1802)	KTP	KTP	**Likely**	**Potentially** Alteration of woodland structure by removal of understorey may exacerbate this threat.
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		**Unlikely**	**Potentially** Three minor non perennial watercourses occur within the subject site. Provided that measures are implemented to minimise erosion and sedimentation, this KTP should not be exacerbated.
Anthropogenic Climate Change	KTP	KTP	**Likely**	**Yes** Some unavoidable emissions would occur from construction machinery and removal of native vegetation would diminish the carbon storing capacity of the subject site.
Bushrock removal	KTP		**Unlikely**	**Potentially** Although no bushrock was observed during the field survey, it may be uncovered during development. If discovered, it is recommended that rock be left in place, or relocated nearby, to avoid exacerbating this KTP.
Clearing of native vegetation	KTP	KTP	**Very Likely**	**Yes** Native vegetation would be removed if the land is to be developed.
Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus* (L.)	KTP	KTP	**Likely**	**Potentially** The spread of weedy grasses that could result from development could encourage rabbit activity.
Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758	KTP	KTP	**Very unlikely**	**No** Development would not exacerbate this threat.
Competition from feral honeybees, *Apis mellifera* L.	KTP		**Likely**	**Yes** Habitat trees containing hollows were recorded during field survey. Should these be removed, this would exacerbate this KTP.
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		**Very unlikely**	**No** Development would not exacerbate this threat.
Herbivory and environmental degradation caused by feral deer	KTP		**Very unlikely**	**No** Development would not exacerbate this threat.

Name	NSW status	Comm status	Likelihood of Occurrence	Exacerbated by Proposal
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		**Very unlikely**	**No** Development would not exacerbate this threat.
Importation of Red Imported Fire Ants *Solenopsis invicta* Buren 1972	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks. Implementation of the mitigation measures in Section 6 should reduce this risk.
Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	**Likely**	**Potentially** Habitat trees containing hollows were recorded during field survey. Should these be removed, this would exacerbate this KTP.
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	**Likely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks. Implementation of the mitigation measures in Section 6 should reduce this risk.
Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	**Likely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks. Implementation of the mitigation measures in Section 6 should reduce this risk.
Introduction of the Large Earth Bumblebee *Bombus terrestris* (L.)	KTP		**Very unlikely**	**No** This species only occurs in Tasmania. It is unlikely that the proposal will result in the importation of this species to the mainland.
Invasion and establishment of exotic vines and scramblers	KTP		**Unlikely**	**Potentially** No exotic vines or scramblers were recorded on the subject site, however, machinery used on site can potentially act as a transport for biosecurity risks.
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		**Unlikely**	**Potentially** As there are few records as far west as the subject site, it is unlikely that a population would establish at the subject site. However, machinery used on site can potentially act as a transport for biosecurity risks.
Invasion and establishment of the Cane Toad (*Bufo marinus*)	KTP	KTP	**Unlikely**	**Potentially** This species is primarily confined to wetter subtropical and tropical sites, however, isolated populations can survive close to water inland (e.g., near Longreach). Should the cane toad be introduced to the subject site it could potentially survive within freshwater dams. Machinery used on site can potentially act as a transport for biosecurity risks.

Name	NSW status	Comm status	Likelihood of Occurrence	Exacerbated by Proposal
Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata* (Wall. ex G. Don) Cif.	KTP		**Unlikely**	**Potentially** This species has not been recorded near this subject site, however, machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		**Unlikely**	**Potentially** This species has not been recorded near the subject site, however, machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by exotic perennial grasses	KTP		**Very likely**	**Yes** These species already occur on the subject site and will likely spread further into the adjacent native vegetation during and after the proposal.
Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW	KTP		**Unlikely**	**Potentially** This species is not known within the area, however machinery used on site can potentially act as a transport for biosecurity risks.
Invasion, establishment and spread of Lantana (*Lantana camara* L. *sens. La*t)	KTP		**Unlikely**	**Potentially** This species has not been recorded near the subject site, however, machinery used on site can potentially act as a transport for biosecurity risks.
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	**Unlikely**	**Potentially** Many former garden plants have now become significant weeds. The proliferation of these species may be encouraged by proposal activities.
Loss of Hollow-bearing Trees	KTP		**Very likely**	**Yes** Hollow-bearing trees were recorded during field survey. Should these be removed, this would exacerbate this KTP.
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		**Very unlikely**	**No** No sites known or suspected to be present.
Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		**Unlikely**	**No** Development would not exacerbate this threat.
Predation by *Gambusia holbrook*i Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		**Very unlikely**	**No** Development would not exacerbate this threat.
Predation by the European Red Fox *Vulpes Vulpes* (Linnaeus, 1758)	KTP	KTP	**Unlikely**	**No** Development would not exacerbate this threat.
Predation by the Feral Cat *Felis catus* (Linnaeus, 1758)	KTP	KTP	**Unlikely**	**No** Development would not exacerbate this threat.

Name	NSW status	Comm status	Likelihood of Occurrence	Exacerbated by Proposal
Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa* Linnaeus 1758	KTP	KTP	**Unlikely**	**No** Development would not exacerbate this threat.
Removal of dead wood and dead trees	KTP		**Very Likely**	**Yes** Some dead trees and dead wood are likely to be removed if the land were to be developed. It is recommended that this wood be relocated to retained areas of habitat, where possible, to avoid exacerbating this KTP.

APPENDIX E – KOALA HABITAT ASSESSMENT TOOL

Table 4: Koala habitat assessment tool

Attribute	Score	Inland	Coastal
Koala occurrence	+2 (high)	Evidence of one or more koalas within the last 5 years.	Evidence of one or more koalas within the last 2 years.
	+1 (medium)	Evidence of one or more koalas within 2 km of the edge of the impact area within the last 10 years.	Evidence of one or more koalas within 2 km of the edge of the impact area within the last 5 years.
	0 (low)	None of the above.	None of the above.
Vegetation composition	+2 (high)	Has forest, woodland or shrubland with emerging trees with 2 or more known koala food tree species, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	Has forest or woodland with 2 or more known koala food tree species, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.
	+1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known koala food tree present.	Has forest or woodland with only 1 species of known koala food tree present.
	0 (low)	None of the above.	None of the above.
Habitat connectivity	+2 (high)	Area is part of a contiguous landscape ≥ 1000 ha.	Area is part of a contiguous landscape ≥ 500 ha.
	+1 (medium)	Area is part of a **contiguous landscape** < 1000 ha, but ≥ 500 ha.	Area is part of a contiguous landscape < 500 ha, but ≥ 300 ha.
	0 (low)	None of the above.	None of the above.
Key existing threats	+2 (high)	Little or no evidence of koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence. Areas which score 0 for koala occurrence and have no dog or vehicle threat present	
	+1 (medium)	Evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence, **OR** Areas which score 0 for koala occurrence and are likely to have some degree dog or vehicle threat present.	
	0 (low)	Evidence of frequent or regular koala mortality from vehicle strike or dog attack in the study area at present, **OR** Areas which score 0 for koala occurrence and have a significant dog or vehicle threat present.	
Recovery value	+2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	
	+1 (medium)	Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	

Koala occurrence: No sightings occur within 10km of the subject site.

Vegetation composition: One primary koala food tree species (*Eucalyptus camaldulensis*) and three secondary food trees (*E. macrocarpa, E. melliodora, E. polyanthemos*) are present.

Habitat connectivity: The subject site offers only limited connectivity between patches of remnant vegetation, and not to an area greater than 500 hectares.

Key existing threats: Given that the site is near a growing urban environment and next to a railway line, there is also a possibility of dog attacks and vehicle strikes.

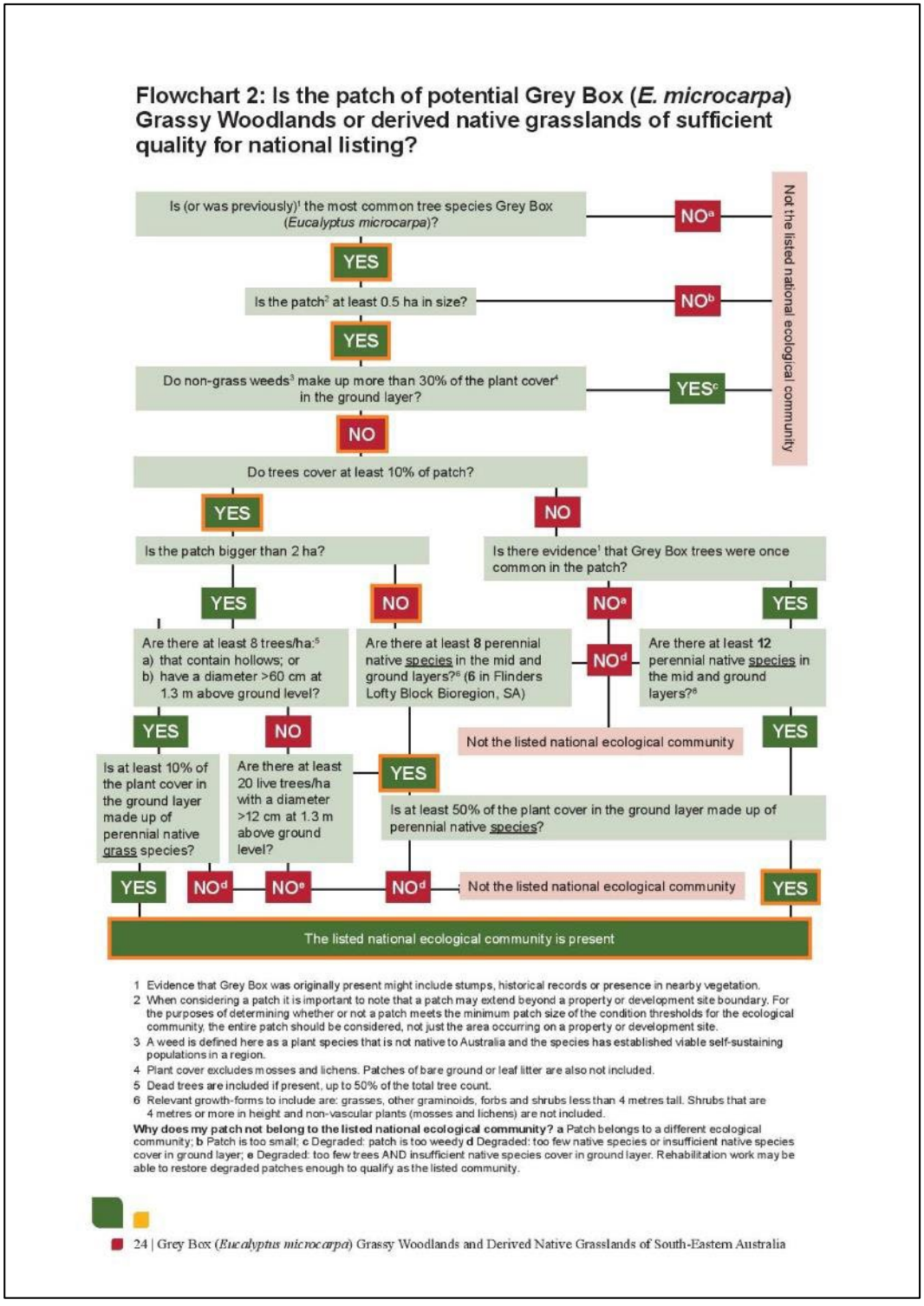
Recovery value: Although there is a lack of recent koala records, the habitat may be important for achieving the interim recovery objectives given the presence of feed tree species.

Total score: The subject site fails to qualify as critical Koala habitat (score = 4).

Note: although this Koala Assessment Tool is now outdated as the Koala listing status has been elevated to Endangered, from Vulnerable, there are no new tools yet available, as such, this tool has been retained here.

APPENDIX F – TEC DETERMINATIONS

Determination for the EPBC Act-listed EEC: *Grey Box* (Eucalyptus microcarpa) *Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia*



Note that the above determination applies only to the section of PCT 76 identified as belonging to the EPBC Act-listed community in **Figure 5-8**. The remaining sections of PCT 76 were excluded from consideration owing variously to woody weed cover exceeding 30%, small patch size (<0.5 ha), scarcity of mature or hollow-bearing trees, or insufficient number of live Grey Box trees.

Determination for the BC Act-listed EEC: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregions.*

Key indicators for presence of the Fuzzy Box Woodland	Results
Is the site on the South Western Slopes, Darling Riverine Plains or Brigalow Belt South Bioregion of NSW?	Yes, site occurs within the Brigalow Belt South Bioregion
Is the site on a prior stream, abandoned channel, slight depression, undulating plain or flat with alluvial or colluvial soils?	Yes, it is within a slight depression on alluvial soils.
Is the site a woodland dominated by fuzzy box with a sparse shrubby understorey and/or open forb and grassy groundcover?	Yes, Fuzzy box is the dominant tree with grassy groundcover
Does the site contain a combination of the diagnostic tree species	Yes, Fuzzy box was the present
Is the site situated on an upper floodplain above the level of frequent inundation and upslope from a River Red Gum community, or on a lower slope or valley flat with other tree species, such as inland grey box, yellow box, white box or Blakely's red gum?	Yes, on a lower slope with inland grey box nearby
Are there any plant species present at the site from those listed?	The understory was in poor condition with limited native cover.
Does this community fit the criteria for listing?	**Yes, the non-derived form of PCT 201 fits the criteria for listing (Figure 5-8).**

APPENDIX G – SITE PHOTOS

PCT	Image
201	

76 – BC and EPBC-listed EEC	

53	

76 partially planted	

Disused buildings