



BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

BURROWAY SOLAR FARM

NARROMINE SHIRE LOCAL GOVERNMENT AREA

APRIL 2024

Report prepared by
OzArk Environment & Heritage
for Edify Energy Pty Ltd



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CERTIFICATION

I certify that I have prepared this BDAR and, to the best of my knowledge, it is in accordance with the NSW *Biodiversity Conservation Act* 2016 and the Biodiversity Assessment Method 2020 (BAM 2020). The information it contains is neither false nor misleading. It addresses, to the fullest extent possible, all matters affecting or likely to affect biodiversity as a result of the proposed activity.

BDAR prepared by	Dr David Orchard
Signed	
Date	17 April 2024
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Executive summary

Edify Energy Pty Ltd (the proponent) proposes to develop a hybrid solar-plus-battery energy storage system on Lot 70 DP1251856, near Burroway, NSW, with access to the site via Eumungerie Rd. OzArk Environment & Heritage (OzArk) was engaged by Edify to prepare the biodiversity assessment for the proposal. The proposal would occupy up to 395.97 ha, of which only 0.11 ha, wholly located within the Eumungerie Rd corridor, possesses any remnant vegetation. The remaining extent of the subject land has been cleared for cropping. The proposal triggers entry into the NSW Biodiversity Offsets Scheme (BOS) by virtue of its status as a State Significant Development (SSD); consequently, the proponent is required to prepare a Biodiversity Development Assessment Report (BDAR) and to offset impacts to biodiversity. This report documents the assessment, which has been completed in accordance with the Biodiversity Assessment Method 2020 (BAM 2020) and details the proponent's biodiversity offset requirement (measured by the number of ecosystem and species credits). Owing to the small area of impact to native vegetation, the proposal has been assessed using the streamlined small-area module.

The native vegetation present in the disturbance footprint consists of a single Plant Community Type (PCT):

- PCT 55 – Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

The proposal would avoid impacts to remnant woodlands; instead, all impacts would be to a native grassland likely to have been derived from a former Belah (*Casuarina cristata*) woodland. All vegetation within the impact footprint was assigned to the zone 55_Derived. The proposal would impact a small number of juvenile trees.

Zone 55_Derived did not meet the thresholds to be considered an example of any Threatened Ecological Community (TEC) listed under the NSW *Biodiversity Conservation Act* 2016 (BC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

In total, 16 ecosystem credit species were generated by the Biodiversity Assessment Method Calculator (BAM-C). The habitat suitability of the subject land for these species was assessed. One species was removed from the list due to habitat constraints; consequently, 15 species were assumed present as ecosystem credit species, generating a total of two Ecosystem Credits.

Application of the small-area assessment module in the BAM-C returned two species credit species considered to be at risk of a Serious and Irreversible Impact (SAII). Both species could be excluded from consideration due to habitat or geographical constraints; consequently, the

proposal would not attract a species credit obligation. Targeted surveys were conducted for four threatened species prior to the application of the small-area module. These species were not detected on site.

The proponent intends to satisfy their offset obligations by buying and retiring the necessary credits from the open market or, if appropriate credits are not available, by paying directly into the Biodiversity Conservation Fund.

The significance of the proposed impact to EPBC Act-listed threatened, migratory, wetland and marine species, populations and communities predicted to occur within a 10 km search area was assessed. No significant impact to any threatened entity likely to result in the extinction of a local population was identified. The residual ecological impacts of the proposal would be adequately mitigated and offset using the management actions recommended and the offset requirements detailed within this BDAR. Therefore, a referral of the proposal to the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW) for these matters is not required.

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment.

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Abbreviations

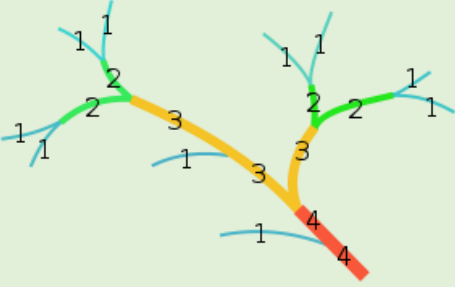
Term	Description
°C	Degrees Celsius
AOBV	Areas of Outstanding Biodiversity Value
ASL	Above Sea Level
BAM	Biodiversity Assessment Method 2020
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BOS	NSW Biodiversity Offsets 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
DPE	Department of Planning and 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 <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and Sediment Control Plan
FM Act	NSW <i>Fisheries Management Act 1994</i>
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

Term	Description
KFH	Key Fish Habitat
KTP	Key Threatening Process
LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
mm/cm/m/m²/km	Millimetre/centimetre/metre/square metre/kilometre
MNES	Matters of National Environmental Significance
NPW Act	NSW <i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type
PMST	Protected Matters Search Tool
PRL	Protected Riparian Land
PW	Priority Weed
RAMSAR	Convention on Wetlands of International Importance
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
SSD	State Significant Development
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
VIS	Vegetation Information System
VRZ	Vegetated Riparian Zone
WoNS	Weeds of National Significance

Glossary of terms

Term	Description
Areas of outstanding biodiversity	<p>An area of outstanding biodiversity value is:</p> <ul style="list-style-type: none"> ❖ 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: <ul style="list-style-type: none"> ○ 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. <p>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).</p>
Cumulative impact	<p>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.</p>
Direct impacts	<p>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).</p>
Habitat	<p>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).</p>
Important population	<p>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:</p> <ul style="list-style-type: none"> ❖ 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	<p>Occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject land. 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).</p>
Invasive species	<p>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.</p>
Local occurrence (EEC)	<p>The ecological community present within the study area. However, the local occurrence 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.</p>

Term	Description
Local population (in regard to a threatened or migratory species)	<p>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.</p> <p>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.</p> <p>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).</p>
Low condition (vegetation)	<p>Either:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> ❖ 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: <ul style="list-style-type: none"> ❖ less than 50% of ground cover vegetation is indigenous species, or ❖ more than 90% of ground cover vegetation is cleared. <p>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.</p>
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 land 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.
Search area	Is considered to 'include the lands that surround the subject land for a distance of 10 km' (DECC 2007). The search area has been used to search information sources to establish the landscape context of the subject land.
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 land 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). In this instance, the study area extends 1,500 m from the site.
Subject land	Means the area directly affected by the proposal. The subject land 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 Background

Edify Energy Pty Ltd (Edify, the proponent) proposes to develop a hybrid solar plus battery energy storage system on Lot 70 DP1251856 (**Figure 1-1**), near Burroway, NSW. The proposal will also require clearing to facilitate access via Eumungerie Rd. The proposal would occupy up to 395.97 ha of land, of which only 0.11 ha possesses any remnant vegetation. The remaining area has been cleared for cropping. The proposal takes place in the Narromine Shire Local Government Area. The regional context of the proposal is shown in **Figure 1-2**.

OzArk Environment & Heritage (OzArk) was engaged by Edify to prepare the biodiversity assessment for the proposal. The proposal triggers entry into the NSW Biodiversity Offsets Scheme (BOS) under the NSW *Biodiversity Conservation Act* 2016 (BC Act) as it constitutes a State Significant Development. Therefore, a Biodiversity Development Assessment Report (BDAR) must be prepared for this proposal. This report documents the assessment, which has been completed in accordance with the Biodiversity Assessment Method 2020 (BAM 2020) and details the proponent's biodiversity offset requirement (measured by the number of ecosystem and species credits). Owing to the small area of impact to native vegetation, the small-area assessment module has been applied.



Figure 1-1. Proposed site layout for the Burroway Solar Power Station.

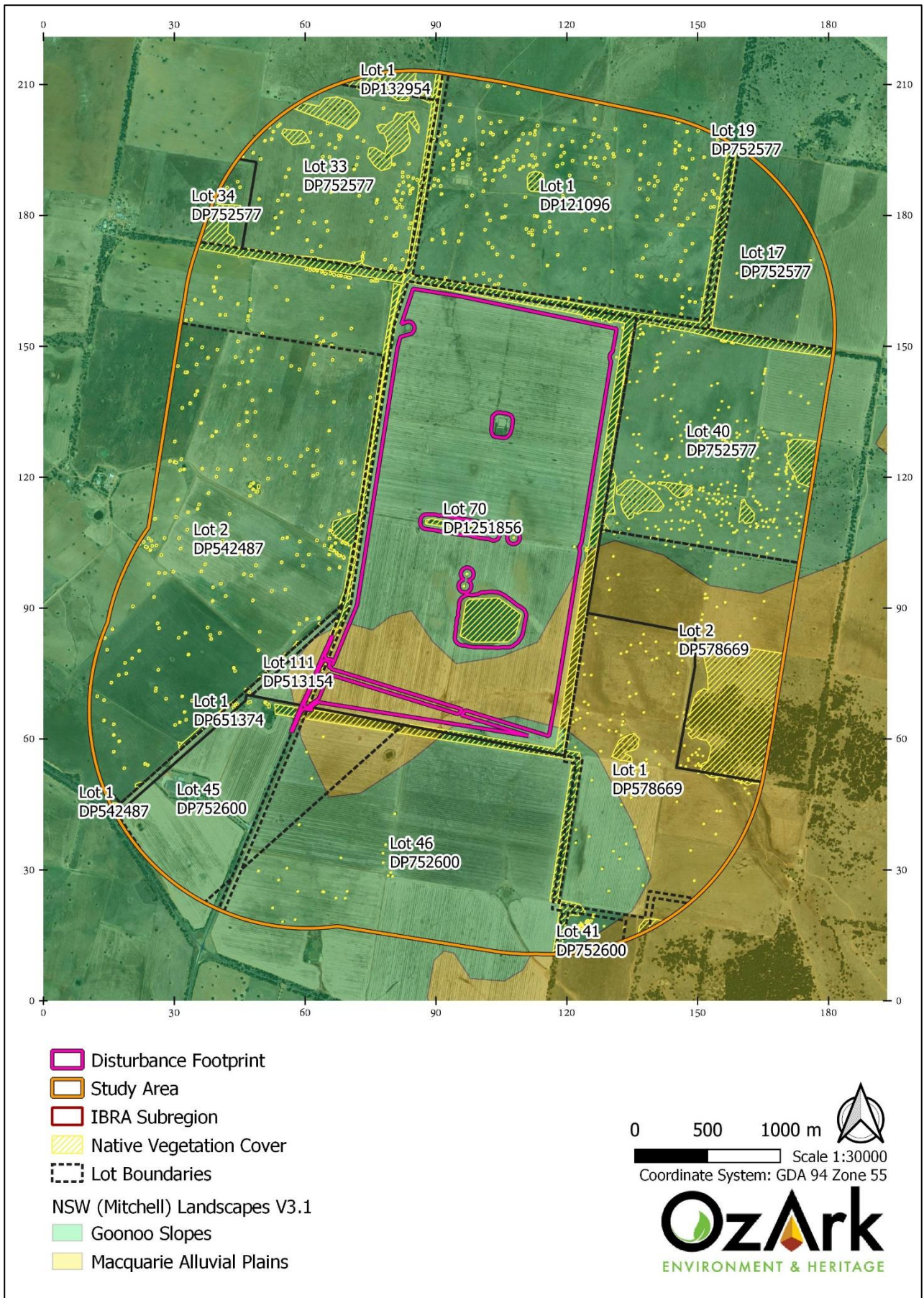


Figure 1-2. Location map showing the disturbance footprint, subject land, study area and key features required by the BAM (2020).

1.2 Relevant Terms

The following terms and definitions are used to describe the land assessed in this study.

Subject land – In a development assessment, the land proposed for development and related activities.

Disturbance footprint – The area of land that is directly impacted by the proposed development (including cable routes and construction compound/stockpile/laydown areas).

Study area – Land within a 1,500 m buffer from the outside edge of the subject land. The study area is assessed for the purpose of establishing landscape context including native vegetation cover and associated threatened species.

10 km search area – The area within a 10 km radius of the subject land. This 10 km buffer has been used to search information sources, including the Protected Matters Search Tool (PMST) (Department of Climate Change, Energy, the Environment and Water, 2022) and BioNet Atlas (DPE, 2022) threatened species sightings.

1.3 Site Identification

The site is identified under the *Narromine Local Environment Plan 2011* and on the NSW Planning Portal as follows.

- **Lot/Section/Plan No:** 70/-/DP1251856 and Eumungerie Rd corridor.
- **Land Zoning:** RU1 Primary Production and SP2 Classified Road.
- **Minimum Lot Size:** 400 ha
- **Terrestrial Biodiversity:** The road corridor includes areas that have been mapped as possessing terrestrial biodiversity values under the *Narromine Local Environmental Plan 2011* (see figure in **Appendix A**).

The location of the proposal is shown on the location map (**Figure 1-2**).

1.4 Regulatory Context

The proposal constitutes a State Significant Development. In the case of an SSD, entry into the BOS is automatic. Consequently, it has been determined that the BOS applies to this proposal irrespective of the extent of clearing necessitated by the works.

1.5 Report Purpose

The purpose of the BDAR is to determine the biodiversity assets, including flora, fauna, threatened species, threatened communities and habitat values, of the subject land.

The BDAR also identifies any constraints on the proposal according to relevant Federal and NSW environmental legislations and includes the calculation of ecosystem and/or species credits requiring offset.

1.6 Legislation

1.6.1 International legislation

- Japan-Australia Migratory Bird Agreement (JAMBA)
- China-Australia Migratory Bird Agreement (CAMBA)
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
- Ramsar Convention on Wetlands (Ramsar).

1.6.2 Commonwealth legislation

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including EPBC Act Environmental Offsets Policy and Significant Impact Guidelines Version 1.1, 2013.

1.6.3 NSW legislation

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

The EP&A Act provides the legal framework for the assessment and approval of the proposed activities. 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 by reason of that activity.

Biodiversity Conservation Act 2016 (BC Act)

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). Entry to the BOS is triggered automatically for State Significant Developments (SSDs), as in the present case.

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.

Biosecurity Act 2015

Schedule 1 of the *Biosecurity Act 2015* contains the special provisions relating to weeds and duty to control weeds which pose a biosecurity risk. The Department of Primary Industries (DPI) maintains a list of 'Priority Weeds' (previously referred to as noxious weeds) in NSW for the State and each region which impose an obligation on landholders to prevent, eliminate or minimise, so far as is reasonably

practicable, any biosecurity risk they may pose. In addition, Local Government Areas may include their own priority weeds.

Fisheries Management Act 1994 (FM Act)

The objects of the FM Act are to:

- Conserve fish stocks and key fish habitats.
- Conserve threatened species, populations and ecological communities of fish and marine vegetation.
- Promote ecologically sustainable development, including the conservation of biological diversity.

Section 201 of the FM Act states that a person other than a government authority must seek a permit from NSW Department of Primary Industries – Fisheries (DPI – Fisheries) for dredging or reclamation in a waterway. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

As no watercourses would be impacted by the proposal, the FM Act does not apply in this case. Matters relating to watercourses are discussed in detail in **Section 3.10** of this report.

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 hospitals, schools, energy, water, transport and telecommunications. It permits development with consent for electricity-generating facilities including solar power stations. Solar energy systems may only be developed without consent if they are ancillary to an existing infrastructure establishment or an educational establishment within the meaning of *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017*.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *SEPP (Biodiversity and Conservation) 2021* is the collation of biodiversity and conservation related SEPPs. Chapters 3 and 4 aim 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’.

The Narromine LGA is listed in Schedule 2 of the *SEPP (Biodiversity and Conservation) 2021*; consequently, the provisions of Chapter 3 of the SEPP apply to rural land within the site and the provisions of Chapter 4 apply to the remaining land.

Assessment of the land zoned RU1 (namely, all of Lot 70 DP1251856) according to the provisions of Chapter 3 of the SEPP determined that the site does not constitute potential Koala habitat as it lacks any Koala feed trees. No further consideration is required for this area.

Assessment of the land zoned SP2 (namely, the Eumungerie Rd corridor) according to the provisions of Chapter 4 of the SEPP determined that there is a requirement to consider whether impacts to the

Koala are likely to result from the proposed activities. Under Section 4.9 of the SEPP, a council may grant consent to a development if it is satisfied that a proposal is likely to have “low or no impact on koalas or koala habitat.” This does not require a formal Koala Assessment Report. In the present case, as the extent of the proposed impact is minimal (0.11 ha), Koala feed trees within the proposed impact area are scarce and consist mainly of juvenile regrowth of Poplar Box (*Eucalyptus populnea* subsp. *bimbil*), and there are no records of the Koala within 10 km of the subject land, it is considered in this case that there is little risk of any impact to the Koala. In light of this, a Koala Assessment Report should not be required.

The proposal’s potential impacts to Koalas have been further considered in this BDAR under the BC and EPBC Acts.

1.6.4 Narromine Local Environmental Plan (2011)

A Local Environmental Plan (LEP) is a legal document prepared by Council and approved by the State Government to regulate 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 key aims of the Narromine LEP (2011) are as follows:

- (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 economic development through tourism activities, business, employment initiatives and fostering industry growth,*
- (b) to protect and conserve the natural environment including surface and ground water, soil, air and native vegetation by encouraging sustainable development,*
- (c) to encourage sustainable agricultural practices, including intensive agriculture, by minimising land use conflicts and facilitating farm adjustments.*

Sections of the road corridor have been mapped as possessing terrestrial biodiversity values under the Narromine LEP (see figure in **Appendix A**).

2 Methods

The ecological assessment was carried out in three stages:

1. Desktop searches and review of ecological databases and information to identify threatened species, populations or ecological communities listed in the BC Act, FM Act or the EPBC Act that have the potential to occur in the study area.
2. Field survey of the subject land to conduct BAM plots, identify vegetation communities and habitat features present and target predicted threatened species and ecological communities. Where a threatened species or community or habitat feature is identified, document the nature and extent of the protected matter and describe its 'viable local population' or occurrence.
3. Preparation of a BDAR that describes the impacts of the proposed activity on native vegetation and threatened species, populations and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts. The BDAR also includes a biodiversity credit summary that identifies the number of ecosystem credits and species credits required to offset the development.

2.1 Personnel

OzArk Environment & Heritage Pty Ltd (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 role and key details of personnel involved in the project are provided in **Table 2-1**.

Table 2-1. Summary of OzArk personnel qualifications and roles in the assessment.

Name	Position	Role	CV Details
Dr David Orchard	Ecologist	Initial survey, BAM plots, vegetation mapping, BAM calculations, targeted flora surveys, reporting	<ul style="list-style-type: none"> • Accredited BAM assessor – Accreditation # BAAS21028 • Doctor of Philosophy – Charles Sturt University • Graduate Diploma in Science (Botany) – University of New England • Bachelor of Arts – Australian National University • 4WD Training • First aid training • WH&S Induction Training for Construction Work
Lucca Brozler	Ecologist	Initial survey including assistance with BAM plots, reporting	<ul style="list-style-type: none"> • Masters in Conservation Biology – The University of Queensland • Bachelor of Biological Science – The University of Queensland • WH&S Induction Training for Construction Work
Dr Crystal Graham	Senior Ecologist	Reporting, quality control, technical review	<ul style="list-style-type: none"> • Accredited BAM assessor – Accreditation # BAAS22024 • Doctor of Philosophy – Biology – University of Sydney • Honours 1 – Biology – University of Sydney • Bachelor of Advanced Science – University of Sydney • 4WD Training • WH&S Induction Training for Construction Work

2.2 Desktop Review

Existing information sources were reviewed to contextualise the study area, identify entities for targeted surveys, predict possible constraints, refine field survey methodology and assist with assessing the impacts of the proposal. Information sources consulted included:

- NSW Government Web Map Service (WMS) layers for NSW Imagery (compiled imagery, NSW Property, NSW Base Map and NSW Topographic Map) (<http://spatialservices.finance.nsw.gov.au>).
- EPBC Protected Matters Search Tool (<https://www.environment.gov.au/epbc/protected-matters-search-tool>)
- NSW State Vegetation Type Map C1.1.M1.1 (<https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>)
- NSW DPI threatened fish indicative distribution maps (www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps)
- NSW BioNet Wildlife Atlas Vegetation classification (<https://www.environment.nsw.gov.au/research/Visclassification.htm>)
- NSW BioNet Threatened Biodiversity Data Collection (www.bionet.nsw.gov.au/)
- NSW BioNet Atlas (www.bionet.nsw.gov.au/)
- Register of Declared Areas of Outstanding Biodiversity Value (www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/about-threatened-species/critical-habitats)
- PlantNET, NSW Flora Online (www.plantnet.rbg Syd.nsw.gov.au/)
- Department of Environment and Planning *Biodiversity Values Map* (<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>)
- Mapping of Vulnerable Lands – Steep and Highly Erodible (NSW Office of Environment and Heritage, 2011)
- Acid Sulphate Soils Risk mapping (NSW Office of Environment and Heritage, 1998)
- Directory of Important Wetlands of Australia (DIWA) (<https://www.environment.gov.au/water/wetlands/australian-wetlands-database/directory-important-wetlands>)
- NSW wetlands mapping (NSW Office of Environment and Heritage, 2010)

- Important area mapping for Regent Honeyeater and draft important area mapping for Swift Parrot available from the Biodiversity Offsets and Agreement Management System (BOAMs).

All databases were searched prior to conducting initial fieldwork in October 2022 and reviewed (and updated where applicable) in June 2023 prior to final submission.

Results of the database searches are provided in **Appendix A**.

2.3 Field Survey

2.3.1 BAM Survey Methodology

Vegetation communities are identified in accordance with the online NSW Master Plant Community Type Classification (OEH, 2018b), which is the current state-wide vegetation classification system for Plant Community Types (PCTs). 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 the vegetation communities into vegetation Class and Formation / Sub-formation as per Keith (2004).

In this study, PCTs were identified on the basis of the following inputs:

- NSW State Vegetation Map C1.1.M1.1 (DPE 2022), which provides predictive mapping of PCTs in and around the subject land. This mapping is indicative only. It is not necessarily accurate at a fine scale for the purposes of the current study.
- 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 to confirm the flora species present, vegetation structure, landscape position and soil type on the subject land and the extent and condition of native vegetation.
- The BioNet Vegetation Classification database, this being 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 present. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstorey species,

weed cover, number and type of native species including whether certain 'important' native species are present.

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

In total, 13 BAM plots were completed on 27 and 28 October 2022 and an additional plot was completed on 24 February 2023. As the likely final impact footprint was unknown at the time of the initial survey, plots were conducted with a view to sampling all communities within the local landscape, irrespective of whether those communities were ultimately impacted. Only one plot (BUX01) was required in the final analysis (see **Figure 4-3** and **Appendix B**).

Initial plot locations were randomly selected while on site to minimise bias in sampling while ensuring adequate survey effort within each vegetation zone (**Table 2-2**; **Figure 4-3**). The sole plot retained in the analysis was situated directly within the impact footprint. According to the BAM (2020), a minimum of one plot would be required for this site, as the single mapped zone is <2 ha in size (see **Section 4.3.1** for zone descriptions).

Table 2-2. Minimum number of plots and transects required per zone area (DPIE, 2020a).

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

Plots were surveyed according to the BAM (2020) as follows:

- The survey plots consisted of nested 20 m x 50 m and 20 m x 20 m plots, except where the dimensions of the vegetation patch did not allow for these plot dimensions. In particular, small roadside vegetation patches typically required narrower or shorter plots.
- Species composition and structure (species and percent cover) data were collected from within 20 m x 20 m plot (or 10 m x 40 m as required).
- Vegetation function data (size and number of trees, presence of hollow-bearing trees and woody debris) were collected from within 20 m x 50 m plot.
- Percent litter cover data were collected within five 1 m x 1 m squares positioned at 5 m, 15 m, 25 m, 35 m and 45 m points of the 50 m plot.
 - Allowances were made where shorter plots were used. This generally involved collecting the same number of data points but from more closely spaced locations.
- The plots were positioned within the subject land and their GPS locations were recorded (GDA 94 / MGA Zone 55).

The remainder of the subject land was traversed by foot to confirm the nature of vegetation (i.e. native or non-native) and search for habitat features such as hollow bearing trees, rock outcrops, and nests.

2.3.2 Incidental Surveys

Incidental flora and fauna sightings were recorded while undertaking the BAM plots and searching the subject land for hollow-bearing trees and other potential habitat features. Potential habitat such as rock, loose bark and coarse woody debris was recorded and examined for signs of cryptic species. Tracks and other areas of suitable substrate were searched for animal tracks. Other evidence of fauna presence on the subject land, such as scats, feathers and sloughed skins were also recorded.

2.3.3 Targeted Surveys

Targeted surveys were undertaken in February 2023 for three flora species and one fauna species (**Table 2-3**). A summary of field survey methods is provided in **Table 2-4**, depicted in **Figure 5-2** and **Figure 5-3**, and described in further detail in **Section 5.3.1** of this report.

Table 2-3. Species targeted in February 2023 surveys.

Species	Survey Window	Survey Timing
Australian Bustard / <i>Ardeotis australis</i>	All year	February 24, 2023
Bluegrass / <i>Dichanthium setosum</i>	November to May	February 24, 2023
Finger Panic Grass / <i>Digitaria porrecta</i>	January to February	February 24, 2023
Spiny Peppergrass / <i>Lepidium aschersonii</i>	November to April	February 24, 2023

Table 2-4. Summary of targeted survey methods and effort undertaken.

Survey date	Method	Effort
February 24, 2023	<ul style="list-style-type: none"> • Diurnal bird surveys. 	<ul style="list-style-type: none"> • 20 min morning bird survey • Foot traverse across all native vegetation within and immediately adjacent to the disturbance footprint.
February 24, 2023	<ul style="list-style-type: none"> • Flora transects 	<ul style="list-style-type: none"> • Parallel transects at 5-10 m spacings across all native vegetation within and immediately adjacent to the disturbance footprint (448 metres).

Two additional flora species that were not generated by the BAM-C but which are known or predicted to occur locally, and which are listed under the EPBC Act, were also targeted during flora transects:

- *Androcalva procumbens* (syn. *Commersonia procumbens*).
- *Vincetoxicum forsteri* (syn. *Tylophora linearis*).

2.4 Habitat Suitability

The suitability of the subject land as habitat for all species credit species generated by the BAM-C was assessed (**Appendix D**).

The presence / absence of threatened species was categorised as follows:

- 'Assumed present' – the species was predicted to occur by the BAM-C, suitable habitat features occur on the subject land for that species and no targeted survey or expert report was commissioned.
- 'Absent' constraint – None of the habitat constraints or geographic limitations are present, the habitat is degraded or the species is a vagrant.
- 'Absent' surveyed – Targeted surveys undertaken during the time period specified for the species in the Threatened Biodiversity Data Collection (TBDC) and following DPIE threatened species survey guidelines (DEWHA, 2010b). Where no relevant published guidelines exist, the survey must be undertaken using best practice methods.

EPBC Act-listed fauna that were predicted to occur within 10 km of the subject land were also assessed for their presence or absence on site (**Appendix E**).

2.5 Limitations

This study is based upon the species data available at the time of the study, and the environmental conditions, season, and time constraints imposed by the project for the field survey. Specific limitations on this study include the following:

- The retained BAM plot was completed in late summer and may not have captured all species that would be present in a more favourable season (i.e. spring).

- Specific targeted survey methods for bats, amphibians, and reptiles were not employed; consequently, the species list is likely to underrepresent these classes of animal.

To overcome some of these limitations, a 'precautionary approach' for species presence has been adopted where required. For example, if suitable habitat for a particular threatened species is present on the site and conditions were not suitable for detecting the species at the time of the targeted survey, then the species is assumed to be present.

The above-mentioned constraints were also considered when preparing the recommendations of avoiding, minimising and mitigating potential impacts.

3 Landscape Features

3.1 Overview

A series of background searches were performed to comply with legal standards (**Table 3-1**).

Table 3-1. Environmental protection areas within the study area.

Environmental Protection Areas	Presence in the Study Area
Land identified on the Biodiversity Values Map under the NSW <i>BC Act 2016</i>	No (Appendix A).
Area of Outstanding Biodiversity Value (AOBV) under the NSW <i>BC Act 2016</i>	No.
Watercourse mapped as Key Fish Habitat (KFH) and/or within the extent of an aquatic Endangered Ecological Community, listed under the <i>Fisheries Management Act 1994</i> .	No.
An area reserved or dedicated under the <i>National Parks and Wildlife Act 1974</i> or <i>Wilderness Act 1987</i> .	No.
Is the proposal located within land reserved or dedicated within the meaning of the <i>Crown Lands Act 1989</i> for preservation of other environmental protection purposes?	No.
A World Heritage Area.	No.
Environmental Protection Zones in environmental planning instruments.	No.
Lands protected under <i>NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	Yes. (See Section 1.6.3).
Aquatic reserves dedicated under the <i>Fisheries Management Act 1994</i> .	No.
Wetland areas dedicated under the Ramsar Wetlands Convention.	No.
Land subject to a conservation agreement under the <i>National Parks and Wildlife Act 1974</i> .	No.
Land identified as State Forest under the <i>Forestry Act 1916</i> .	No.
Acid sulphate area.	No.

3.2 Bioregion

The subject land falls within the Pilliga subregion of the Brigalow Belt South Bioregion (**Figure 1-2**) as per the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway & Cresswell, 1995). The subregion is characterised by geology, landforms, soil types and vegetation as described in **Table 3-2**. The search area also extends into the Bogan-Macquarie subregion of the Darling Riverine Plains.

Table 3-2. Description of the Pilliga subregion (NSW NPWS 2003).

Bioregion	Brigalow Belt South
Subregion	Pilliga
Geology	Horizontal Jurassic quartz sandstones, limited shales, Tertiary basalt caps and plugs plus the sediments derived from these rocks.
Landforms	Stepped sandstone ridges with low cliff faces and high proportion of rock outcrop. Long gentle outwash slopes intersected by sandy stream beds and prior stream channels. A few patches of heavy clay. Includes the spectacular mountain landscape of volcanic domes, plugs and dykes in the Warrumbungles.
Soils	Shallow black earths and red loams on basalts. Extensive harsh texture contrast soils, linear patterns of deep yellow sand, stony red brown earths.
Vegetation	White Box with White Cypress-pine and Kurrajong on the basalt hills. Blue-leaved Ironbark, White Gum, Black Cypress-pine, Whitewood, and Rough-barked Apple on stony sandstone plateaux and streams. Narrow-leaved Ironbark, White Cypress-pine, Red Stringybark, patches of mallee and broom heath on gentler sandstone slopes. Pilliga Box with Grey Box, Wilga, and Budda on heavier soils in the west and north. River Red Gum lines all streams.

3.3 NSW (Mitchell) Landscapes

Landscapes with relatively homogenous geomorphology, soils and broad vegetation types in NSW have been classified and mapped at a 1:250,000 scale. These landscapes are referred to as NSW (Mitchell) Landscapes (Mitchell, 2002).

The subject land falls largely within the Goonoo Slopes landscape, with the southern limit of the disturbance footprint extending into the Macquarie Alluvial Plains (**Figure 1-2**). The impacts to native vegetation are situated entirely within the Macquarie Alluvial Plains and this landscape has been used in the BAM-C. The characteristics of these landscapes are described below.

Goonoo Slopes

Extensive undulating to stepped low hills with long slopes on sub-horizontal Triassic/Jurassic quartz sandstone, conglomerates, siltstone, shale and some coal. General elevation 300 to 500m with overall westerly slope, poorly defined drainage network, local relief to 30m. Stony yellow earths with sandstone outcrop on ridgelines to yellow harsh texture-contrast soils in shallow valleys. Broad-leaved ironbark (*Eucalyptus fibrosa* subsp. *fibrosa*) and black cypress pine (*Callitris endlicheri*) on ridges, broad-leaved ironbark, narrow-leaved ironbark (*Eucalyptus crebra*), red ironbark (*Eucalyptus sideroxylon*), fringe myrtle (*Calytrix tetragona*), spur-wing wattle (*Acacia triptera*), dainty phebalium (*Phebalium obcordatum*), daphne heath (*Brachyloma daphnoides*) on slopes with patches of green mallee (*Eucalyptus viridis*), Dwyer's mallee gum (*Eucalyptus dwyeri*) and broombush (*Melaleuca uncinata*). Grey box (*Eucalyptus microcarpa*), red ironbark (*Eucalyptus sideroxylon*), red stringybark (*Eucalyptus macrorhyncha*), fuzzy box (*Eucalyptus conica*) and Blakely's red gum (*Eucalyptus blakelyi*) with knob sedge (*Carex inversa*), and tall sedge (*Carex appressa*) along streams.

Over-clearing status: Not over-cleared. In total, 66% of this landscape is estimated to have been cleared.

Macquarie Alluvial Plains

Holocene fluvial sediments of backplain facies of the Marra Creek Formation associated with the Macquarie River main alluvial fan and distributary stream system, relief 1 to 3m. Dark yellow-brown silty clay with patches of sand and carbonate nodules deposited from suspended sediments in floodwater, often with gilgai. Slightly elevated areas with red-brown texture-contrast soils. Open grasslands with scattered coolibah (*Eucalyptus coolabah*), black box (*Eucalyptus largiflorens*), river cooba (*Acacia stenophylla*), bumble box (*Eucalyptus populnea*), belah (*Casuarina cristata*), lignum (*Muehlenbeckia cunninghamii*) and myall (*Acacia pendula*).

Over-clearing status: Over-cleared. In total, 78% of this landscape is estimated to have been cleared.

3.4 Geology, Cave, Karst and Soil Features

The underlying geology and soil typical of the subject land and wider study area has been described in **Table 3-2** and above. No outcropping rock, surface rock, caves or karst formations were detected on the subject land.

3.5 Climate and Weather Data

The nearest weather station is located at the Dubbo Airport (station 065070), which is approximately 44 km from the subject land. Records commenced at this station in 1960.

The area experiences hot summers, with the highest average maximum temperature of 33.6°C experienced in January (**Figure 3-1**). Temperatures in winter are cool to mild with the coldest temperatures being recorded in July, having an average minimum of 3.0°C and an average maximum of 15.7°C.

The average annual rainfall at this station is 589.6 mm. Rainfall occurs regularly all year round, with March recording the highest average rainfall of 68.0 mm, followed by November (61.8 mm) and December (59.8 mm). The lowest monthly rainfall occurs in April (36.4 mm), followed by August (37.1 mm) and May (39.5 mm).

Prior to and during the initial survey period, the weather station received well above average rainfall, with more than 400 mm recorded between August and October 2022. During the targeted surveys in February, the station received average rainfall, with 104.0 mm recorded in January and February 2023 against a long-term average of 103.7 mm.

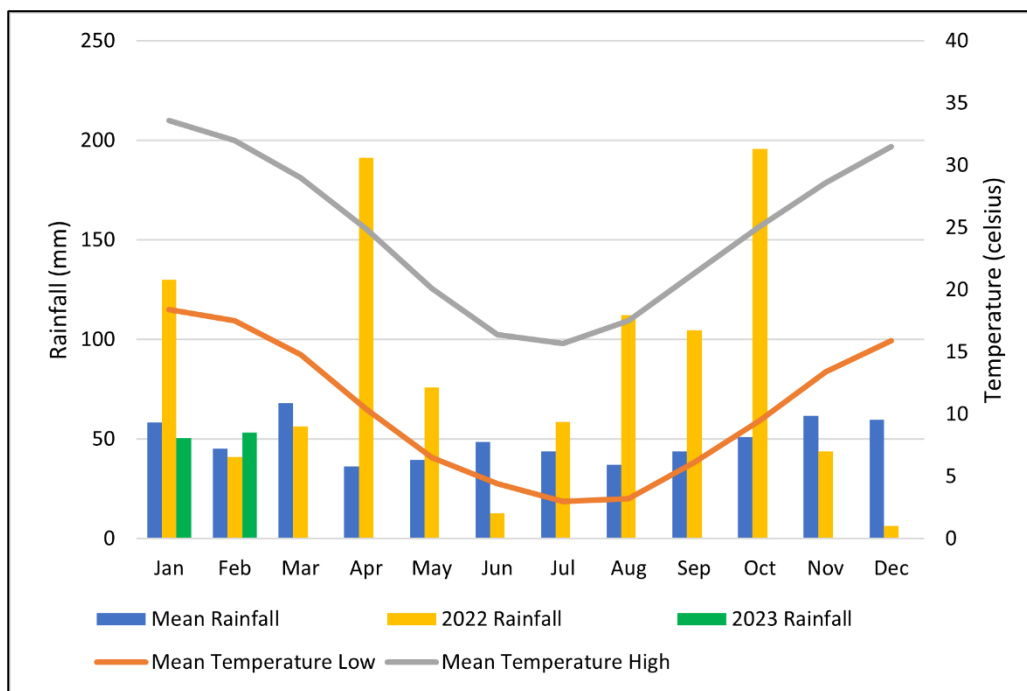


Figure 3-1. Climate statistics for Dubbo Airport Weather Station (ID 065070) showing mean minimum and maximum temperatures, mean rainfall, and rainfall during the survey period in 2022 and 2023 (Bureau of Meteorology, 2023).

3.6 Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The subject land does not contain land identified on the BV Map (**Appendix A**).

3.7 Areas of Outstanding Biodiversity Value

The site does not contain any currently listed Areas of Outstanding Biodiversity Value (AOBV).

3.8 SEPP (Biodiversity and Conservation) 2021

The Narromine LGA is listed in Schedule 2 of the *SEPP (Biodiversity and Conservation) 2021*; consequently, Chapter 3 of the SEPP applies to areas zoned RU1 within the proposal footprint and Chapter 4 of the SEPP applies to land zoned SP2.

As indicated in **Section 1.6.3**, no potential Koala habitat (as defined in Chapter 3 of the SEPP) occurs within the site. Consequently, no further consideration should be required under the provisions of this SEPP.

The proposal's potential impacts to Koalas have been separately considered in this BDAR under the BC and EPBC Act. As these instruments define habitat suitability differently to the SEPP, the outcomes of these assessments may differ.

3.9 Native vegetation cover

Native vegetation cover, assessed as the proportion of the study area retaining native vegetation, was assessed by consulting aerial imagery of the surrounding landscape and ground-truthing this where possible to determine whether native vegetation persists. Native vegetation is defined to include woody vegetation and non-woody vegetation, including regrowth and plantations, comprised of plants native to New South Wales. Native cover is mapped in **Figure 1-2** and **Figure 3-2**. Areas excluded from the estimate of cover include built infrastructure (chiefly roads and residences) and cropped land. A summary of the vegetation cover estimate is provided in **Table 3-3**. For the purposes of the BAM, the native vegetation cover class has been determined as 0-10%.

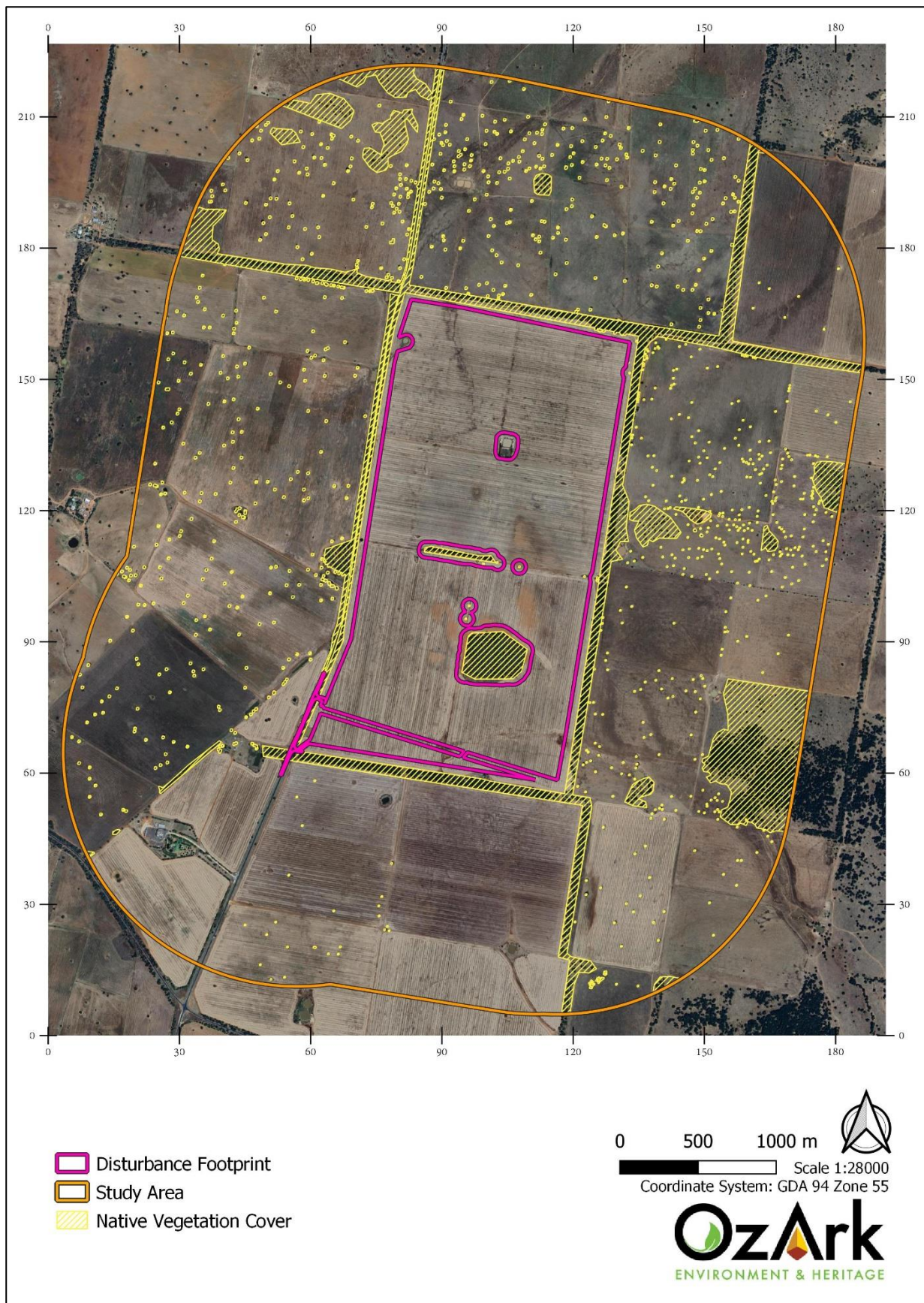


Figure 3-2. Native vegetation cover within the study area.

Table 3-3. Native vegetation cover estimates in the study area.

Vegetation Cover Type	Description	Cover Within Study Area (ha)	Total Area of Study Area (ha)	Native Cover within Study Area (%)
Native vegetation	Remnant woodland and associated derived grassland.	222.73	2481.88	8.97

3.10 Rivers, Streams, Wetlands and Key Fish Habitat

No watercourses are mapped as occurring on the subject land. Two watercourses occur within the study area (**Figure 3-3**). Both are Strahler 1st order minor, non-perennial streams. No streams mapped as Key Fish Habitat by the Department of Primary Industries – Fisheries occur within the study area.

Artificial dams occur within the subject land. These were not observed to possess native flanking vegetation and are likely to offer only limited habitat for wetland flora and fauna.

3.11 Groundwater Dependent Ecosystems

Groundwater plays an important ecological role in directly and indirectly supporting terrestrial and aquatic ecosystems. Groundwater sustains terrestrial and aquatic ecosystems by supporting vegetation and providing discharge to channels, lacustrine and palustrine wetlands, and both the estuarine and marine environment.

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 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.

Groundwater dependent 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 Dependent Ecosystems identifies a single low-potential terrestrial GDE within the subject land (**Figure 3-3**; BOM, 2017). As this low-potential GDE is imperfectly aligned with the remaining vegetation, this may constitute an error in the mapping. No moderate- or high-potential GDEs are predicted to occur within the site. The Groundwater Vulnerability Map associated with the Narromine LEP (2011) also identifies areas of sensitivity within the paddock (Appendix A); however, these do not appear to correspond to any areas of native vegetation.

The proposal does not include the extraction of groundwater; however, contamination from construction operations could impact on the quality of groundwater if adequate mitigation measures are not taken. Mitigation measures to reduce the impacts of erosion and runoff, which may adversely affect groundwater, have been provided in **Section 6.7**.

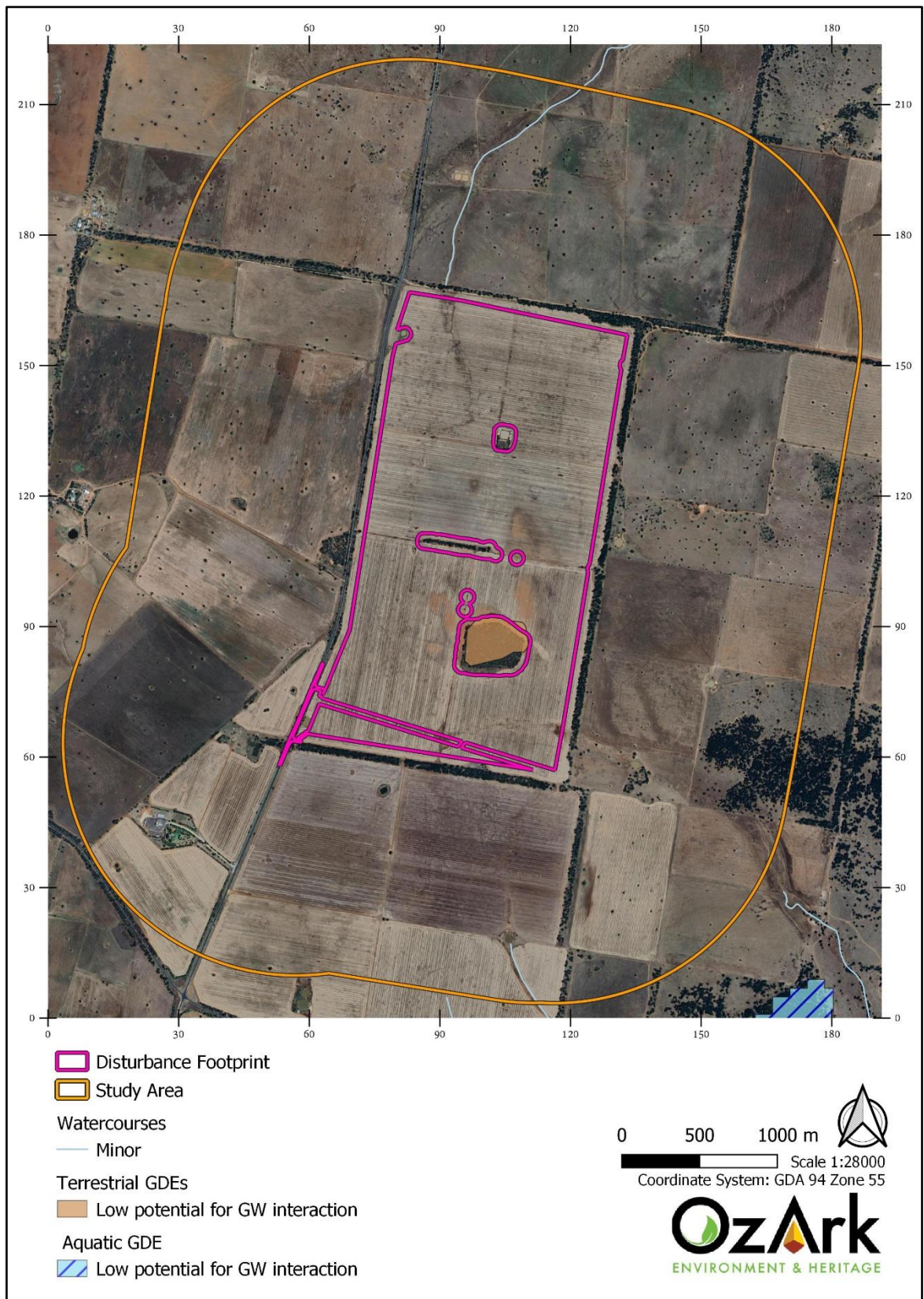


Figure 3-3. Watercourses and groundwater-dependent ecosystems within the study area.

3.12 Connectivity Features

The footprint of the proposal consists almost entirely of cropped land and is situated in a landscape in which a large proportion of the former vegetation has been cleared for agricultural purposes. Connectivity, where it exists, is confined to narrow bands of remnant woody vegetation in road corridors and along fenced paddock boundaries. The vegetation persisting in the road corridor and along the paddock margins was assessed during the initial field survey and remains in relatively good condition, with numerous hollows in some areas and evidence of nesting. It also forms part of an extensive network of wooded corridors which may facilitate gene flow and the movement of fauna species between larger remnants. Minor impacts to the road corridor totalling c. 0.11 ha, or around 30 m of linear disruption, would result from this proposal; however, as this impact has been situated entirely within an area of derived grassland, impacts to woodland-dependent fauna are likely to be minimal.

4 Native Vegetation

4.1 Land Category Assessment

According to section 6.8(3) of the BC Act, land defined as Category 1 – Exempt Land (within the meaning of Part 5A of the LLS Act) is to be excluded from assessment under the BAM. Category 1 exemption applies to rural land (zoned RU1, RU2, or RU3) that was cleared of native vegetation as of 1 January 1990 or lawfully cleared of vegetation between 1 January 1990 and 25 August 2017. At present, mapping of Category 1 land is not available; however, the likely categorisation of land can be determined by consulting the following sources of information:

- Land zoning maps in the applicable Local Environment Plan.
- Public land use mapping (DPIE, 2017).
- NSW woody vegetation extent mapping (DPIE, 2011).
- The Transitional Native Vegetation Regulatory Map (DPE, 2022).
- Historical aerial photographs accessed via the NSW Government Spatial Services platform (Spatial Services, 2022).
- Vegetation surveys conducted during the field assessment.
- Determining native vegetation land categorisation for application in the Biodiversity Offsets Scheme (DPE, 2023).

4.1.1 Land Zoning

The subject land is largely zoned RU1 – Primary Production, which is compatible with Category 1 classification. This excludes the road corridor, which is zoned SP2 – Classified Road; this zoning is not compatible with Category 1 classification. For this reason, the road corridor has been excluded from further consideration.

4.1.2 Land Use

Most of the subject land is mapped to 3.3.0 Cropping. This land use is compatible with Category 1 listing. A small area of the subject (c. 0.07 ha) has been mapped to 2.1.0 Grazing native vegetation, which is not compatible with Category 1 listing; however, the reason for this mapping is unclear, as the mapped area comprises a cleared track within a cropped paddock.

4.1.3 Transitional Native Vegetation Regulatory Map (TNVRM)

The most recent version of the Transitional Native Vegetation Regulatory Map (TNVRM) does not identify any regulated land within the assessed area.

4.1.4 Historical Aerial Photography

Historical aerial imagery shows that the site appeared to host significantly more woody vegetation in 1995 (**Figure 4-1**). Category 1 exemption applies to land that was cleared prior to 1990 or lawfully cleared between 1 January 1990 and 25 August 2017. It is not known when the vegetation visible on the aerial photographs was cleared and under what circumstances.

4.1.5 Vegetation Surveys

Much of the site is now used for cropping and only very minor occurrences of native plant species – typically ‘weedy’ native annuals – were noted within the cropped areas, and then only around the margins of the crops. Native vegetation accounted for $\leq 0.2\%$ of total vegetative cover, based on two plots. This area can be considered non-native but, excluding areas that hosted paddock trees in 1995, is likely to constitute Category 1 – exempt land.

4.1.6 Conclusion

Much of the cropped area is likely to constitute Category 1 – exempt land. This excludes areas in which woody vegetation is visible in aerial photographs dating to 1995. However, as this area has already been mapped as non-native, there is no additional benefit to mapping it as Category 1 land.

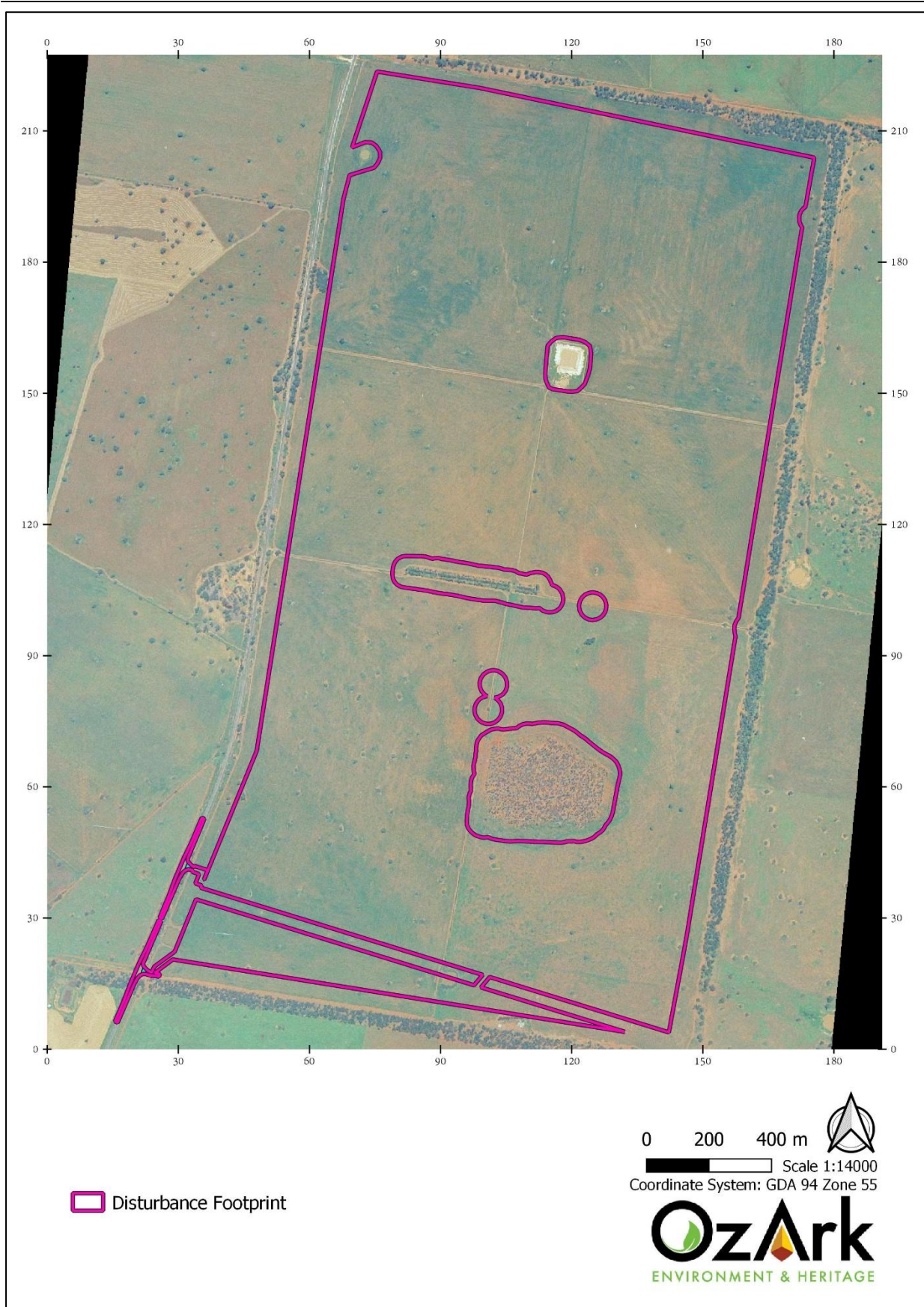


Figure 4-1. View of the subject land in 1995, showing large number of remnant paddock trees that no longer exist.

4.2 Plant Community Types (PCTs)

The majority of the subject land is comprised of cropped agricultural land and does not support native vegetation. The proposal has been designed in such a way as to avoid impacts to remnant vegetation, with the exception of a small section of the road corridor. This impact is necessary to facilitate access by construction and operation vehicles. While aerial photographs show scattered paddock trees within the site, most of these were found to no longer exist and the few extant examples have been avoided.

One PCT was recorded within the disturbance footprint:

- PCT 55 – Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

The impacts of the proposal would be confined to one vegetation zone:

- 55_Derived, in which there is no continuous canopy of Belah (*Casuarina cristata*), though some regrowth of canopy species was noted.

Vegetation zones within the assessed area are described in **Table 4-1** and mapped in **Figure 4-2**. The location of the supporting BAM plot is shown in **Figure 4-3**. As the initial site survey covered a much wider area than the final footprint, this figure illustrates vegetation zones that were excluded from the final footprint. Thirteen BAM plots were conducted during the initial assessment and one additional plot during subsequent targeted surveys. Owing to the small extent of the proposed impact, only one BAM plot (BUX01) was required for this assessment. Additional plots within the non-native vegetation (BU09 and BU12) were conducted to support mapping of this area as non-native. Plot data and site photographs are included in **Appendix B**.

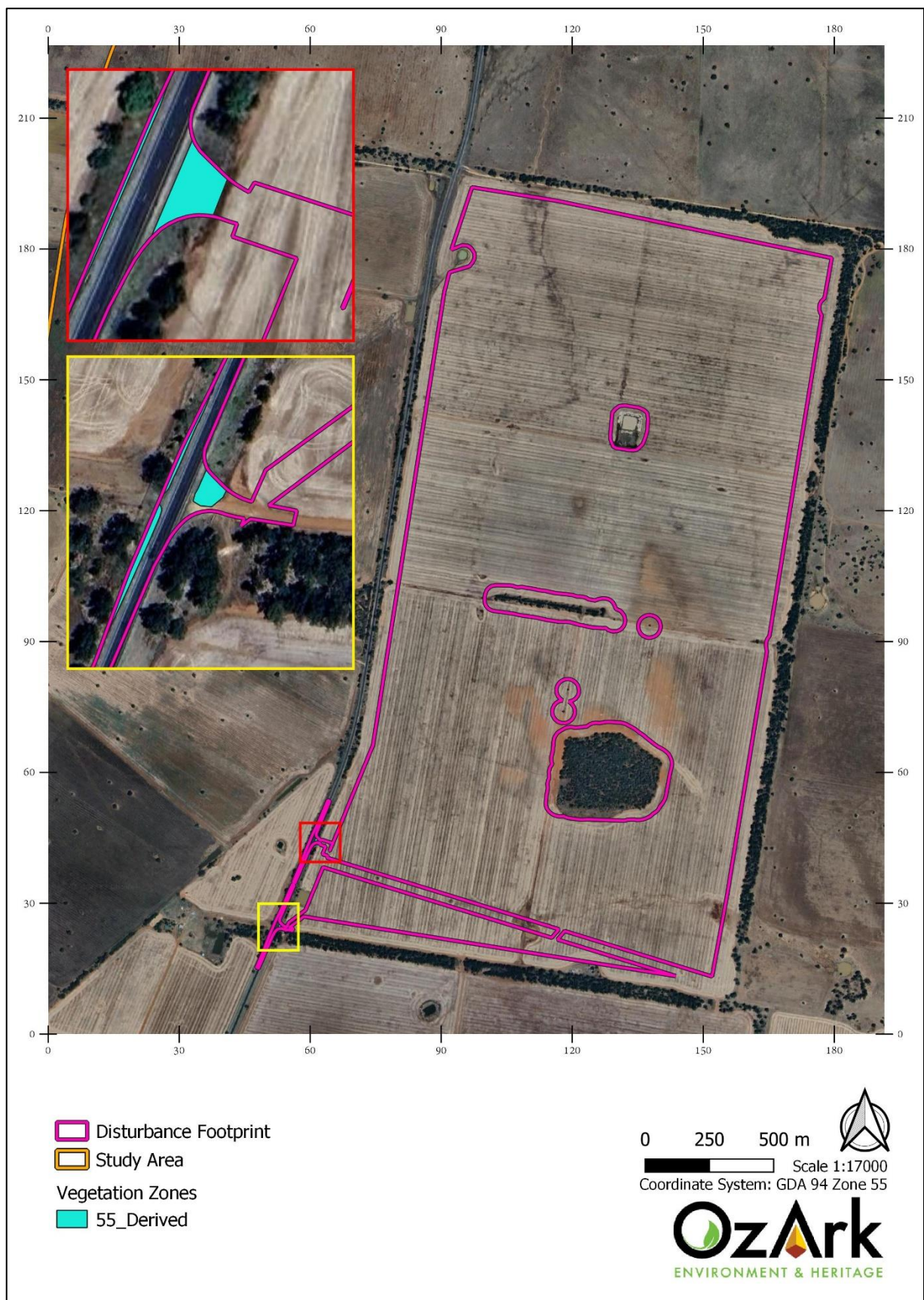


Figure 4-2. Vegetation zones within the proposed disturbance footprint.

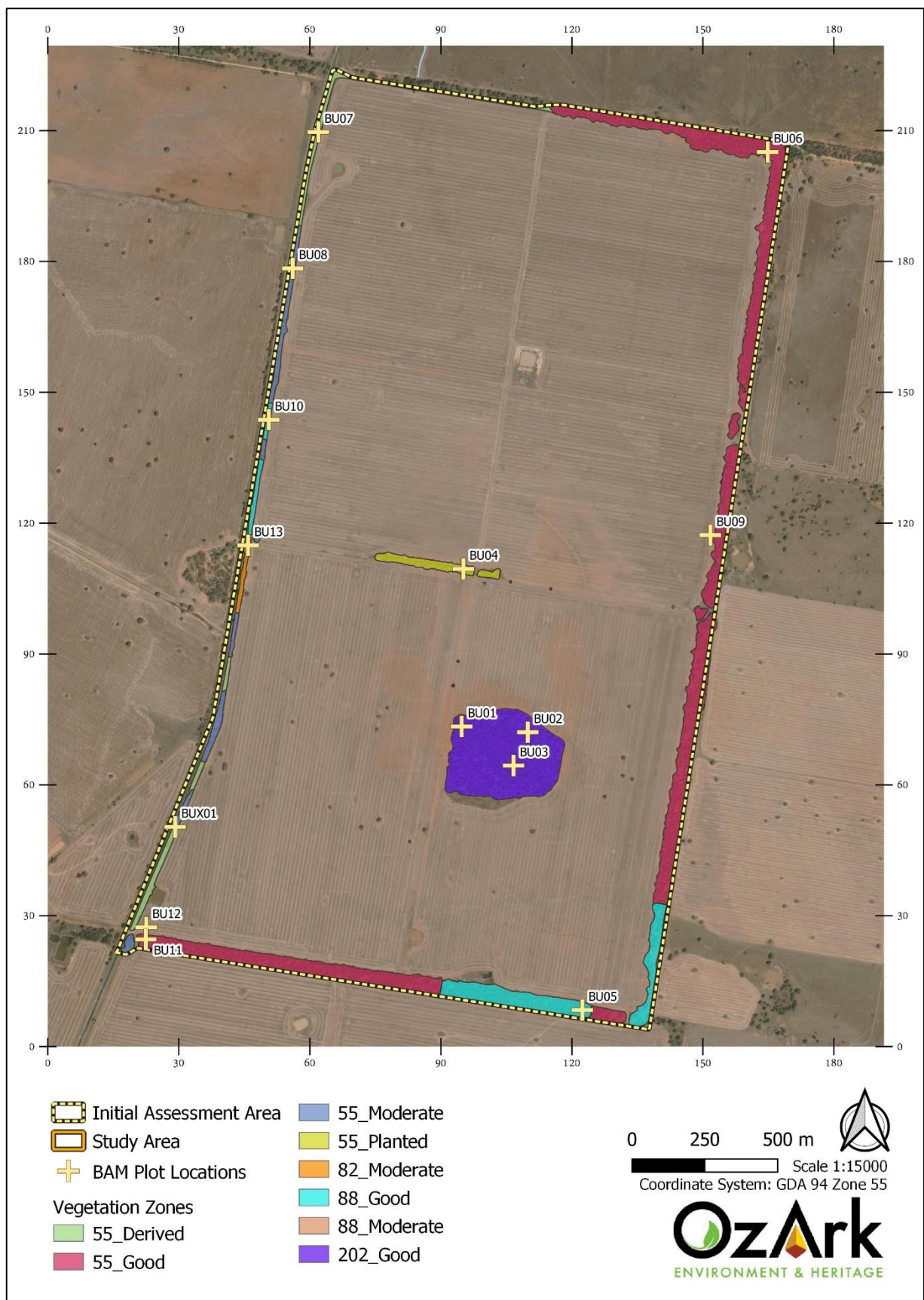


Figure 4-3. Vegetation zones and BAM Vegetation Integrity plots within the assessment area covered by the initial survey.

Table 4-1. Vegetation zones present within the disturbance footprint.

PCT ID	PCT Name	Vegetation Class	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
55	Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions	Inland Floodplain Woodlands	No TEC	No TEC	<p>“Derived” condition:</p> <ul style="list-style-type: none"> A grassland/wetland community bounded by remnant occurrences of PCT 55 – woodlands in which Belah (<i>Casuarina cristata</i>) is the sole or dominant canopy tree – and consequently assumed to derive from that community. Regrowth of Belah and other associated trees, notably Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>), occurs within this zone. Shrub layer almost absent, though some localised Motherumbung was noted. Understorey is dominated by graminoids, including a broad array of native grasses (e.g. <i>Dichanthium sericeum</i>, <i>Austrostipa aristiglumis</i>, <i>Bothriochloa decipiens</i>, <i>Chloris ventricosa</i>, <i>Panicum buncei</i>, <i>Eriochloa pseudoacrotricha</i>, <i>Rytidosperma caespitosum</i>, <i>Eulalia aurea</i>, <i>Bromus arenarius</i>) and dense stands of the rushes <i>Juncus continuous</i> and <i>Juncus subsecundus</i>. Forbs are relatively sparse but include occurrences of species known to favour wet areas or heavy clay soils (e.g. <i>Leiocarpa panaetioides</i>, <i>Rumex brownii</i>, <i>Lobelia concolor</i>) together with more common, opportunistic species (e.g. <i>Oxalis perennans</i>, <i>Dichondra repens</i>, <i>Wahlenbergia communis</i>). The community shows a strong affinity to Plains Grass grasslands (PCT 45); however, the presence of significant regrowth or colonisation by Belah suggests that it is best described as a derived form of the Belah community. 	60,000 ha 83.00% ±50%

					<ul style="list-style-type: none">• This community was assigned to PCT 55 on the basis of proximity to remnant examples of that PCT and the presence of regrowth of the characteristic canopy species within the zone.	
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4.3 Vegetation Zones, Patch Size and Vegetation Integrity

4.3.1 Vegetation Zones

In order to be assessed under the BAM (2020), all native vegetation on the subject land must be assigned to a zone, based on its condition state and the patch to which it belongs.

The sole PCT occurring within the proposed disturbance footprint (PCT 55) was recorded in two distinct states: one possessing a canopy and one lacking a canopy, though some regrowth of the canopy species was present in the latter. Consequently, this PCT could be readily stratified into two vegetation zones. A description of each vegetation zone is provided below:

- **55_Derived** – A grassland or wetland possessing minor regrowth of Belah (*Casuarina cristata*) and Poplar Box (*Eucalyptus populnea* subsp. *bimbi*) but dominated principally by native grasses and rushes (*Juncus* spp.). Native forbs associated with heavy clay soils also occur within this zone.
- **Non-native** – Designation of vegetation as non-native was reserved for cropped paddocks, formed tracks, human-made infrastructure, and dam surfaces lacking native aquatic vegetation.

4.3.2 Patch Size and Vegetation Integrity Score

A patch is defined in the BAM operational manual – Stage 1 (2020) as an area of native vegetation that occurs on the subject land and includes native vegetation that has a gap of less than 100 metres from the next area of native vegetation (or ≤ 30 m for non-woody ecosystems). The patch may extend onto land adjoining the subject land. The patch size should include derived communities (i.e. where one or more of the structural components or strata layers is missing, modified or new) as these are likely to provide suitable habitat for at least some species. The extent of native vegetation was determined from a combination of satellite imagery, ground-truthing and the State Vegetation Type Map (**Figure 4-4**).

The use of a single patch was appropriate for the present assessment. It should be noted that the patch extends well beyond the limits of the study area and it was not considered necessary to map its full extent. For this reason, references to patch size should be taken to refer to the size of the patch within the study area only. Patch size falls into the >100 ha size class for all vegetation zones. Patch size and vegetation integrity score (VIS) are displayed in **Table 4-2**. Patch size is depicted in **Figure 4-4**.

Table 4-2. Vegetation zones and patch sizes of native vegetation in the disturbance footprint.

BAM-C Zone No.	PCT ID	Condition State	VI Score	HBT ¹	Area Impacted (ha)	Patch Number	Patch Size (ha)	BAM Patch Size Class	Vegetation Zone	BAM Plots	Minimum No. Plots
1	55	Derived	33.1	N	0.11	1	168.22	>100 ha	55_Derived	BUX01	1

¹Hollow-bearing trees.

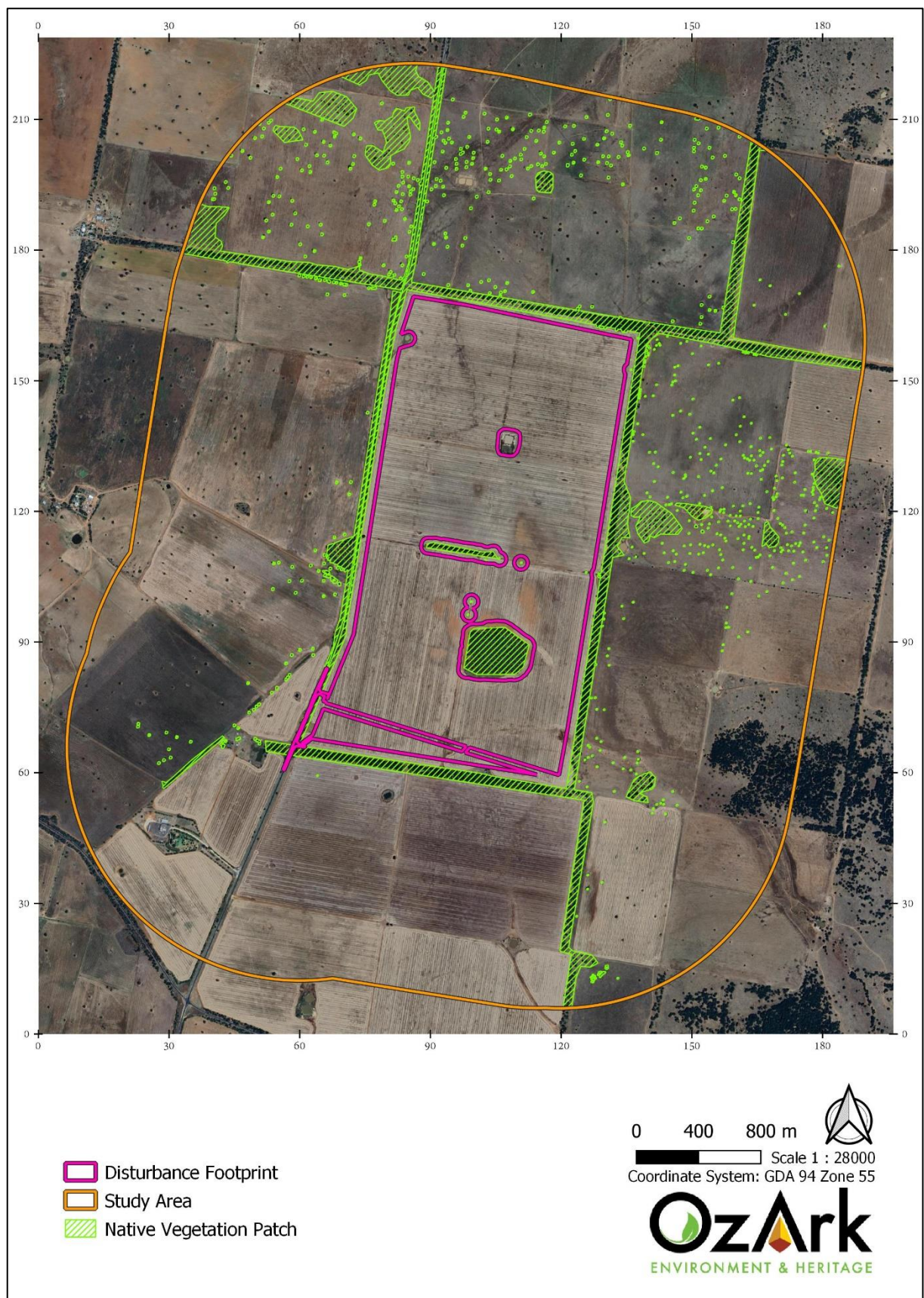


Figure 4-4. Native vegetation patch associated with the vegetation zones.

4.4 Flora Species Observed

The field surveys identified a total of 190 flora species within the initial assessment area (**Appendix C**). Of these, 136 species (71.58%) were native and 55 (28.42%) introduced. Seven of the recorded introduced species are listed as High Threat Exotic (HTE) species under the BAM:

- Great Brome (*Bromus diandrus*)
- Saffron Thistle (*Carthamus lanatus*)
- Rhodes Grass (*Chloris gayana*)
- Umbrella Sedge (*Cyperus eragrostis*)
- African Lovegrass (*Eragrostis curvula*)
- African Boxthorn (*Lycium ferocissimum*)
- Paspalum (*Paspalum dilatatum*)

African Boxthorn is also listed as a Weed of National Significance (WoNS) and as a Priority Weed (PW) for the Central West LLS region, which includes the Narromine LGA.

Most of the species identified during the initial survey were recorded outside of the ultimate disturbance footprint. In total, 31 species were recorded within plot BUX01, which accounts for much of the final impact to native vegetation. Of these, 22 (70.97%) were native and nine (29.03%) introduced. Two HTE species – Umbrella Sedge and Paspalum – occur within this plot.

No threatened flora species were recorded during the surveys. Plot data, plot photographs and a list of all flora species observed during the field assessment are provided in **Appendices B** and **C**.

4.5 Fauna Species Observed

The field surveys identified 25 fauna species within, or adjacent to, the disturbance footprint, comprising 21 birds and four mammals (**Appendix C**). Of these, 22 (88.00%) were native and three (12.00%) introduced. The introduced species comprised two mammals and one bird.

No threatened fauna species were detected.

4.6 Threatened Ecological Communities

The sole PCT recorded within the disturbance footprint (PCT 55) is associated with the following Threatened Ecological Communities (TECs):

- BC Act, Endangered: Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions.
- BC Act, Endangered: Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions.

- BC Act, Endangered: Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions.
- BC Act, Endangered: Native Vegetation on Cracking Clay Soils of the Liverpool Plains.

The occurrence of PCT 55 within the site was assessed against the composition and condition criteria for these Endangered Ecological Communities (EECs). This assessment is demonstrated in **Table 4-3**. No TECs are considered to occur within the impact footprint.

Table 4-3. Assessment of PCT 55 against the criteria for all associated TECs

BAM-C Zone No.	Assessment	Conclusion
Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	This EEC listing describes a low, dry rainforest community dominated by a suite of shrub or small tree species, of which only Wilga (<i>Geijera parviflora</i>) was present. The EEC typically occurs on rocky hills in deep, high-nutrient, basalt-derived soils, which does not describe the subject land, and contains a suite of vine species, of which only Gargaloo (<i>Parsonsia eucalyptophylla</i>) was recorded, and only at low levels. The absence of characteristic rainforest species – e.g. Red Olive Plum (<i>Cassine australis</i> var. <i>angustifolia</i>), Native Olive (<i>Notelaea microcarpa</i> var. <i>microcarpa</i>), or Peach Bush (<i>Ehretia membranifolia</i>) – coupled with the scarcity of vines and the atypical landform together suggest that the present example of PCT 55 does not belong to this EEC.	Not the listed TEC.
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions	Occurrences of this EEC possess a canopy characterised by the presence of Coolibah (<i>Eucalyptus coolabah</i>) and, at least in some cases, Black Box (<i>E. largiflorens</i>). These species were not recorded within PCT 55.	Not the listed TEC.
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	This EEC is defined by the presence of Weeping Myall (<i>Acacia pendula</i>) as a dominant canopy species. This species was not recorded within PCT 55.	Not the listed TEC.
Native Vegetation on Cracking Clay Soils of the Liverpool Plains	Zone 55_Derived contains areas with a similar floristic composition to this community, namely grasslands/wetlands with sparse tree cover and a high proportion of Plains Grass (<i>Austrostipa aristiglumis</i>) and Queensland Blue Grass (<i>Dichanthium sericeum</i>). However, this EEC is confined to the Liverpool Plains catchment, which does not include the subject land.	Not the listed TEC.

5 Threatened Species

For the purpose of credit calculations, threatened species are listed as either ecosystem credit species or species credit species:

- An ecosystem credit species is a species whose likelihood of occurrence can be predicted by vegetation surrogates and landscape features, or for which targeted survey has a low probability of detection. A targeted survey is not required for these species (DPIE, 2020a).
- A species credit species is a species whose likelihood of occurrence cannot be predicted by vegetation surrogates and/or landscape features and can be reliably detected by survey. A targeted survey or expert report is required to confirm presence/absence of these species (DPIE, 2020a).

5.1 Habitat Features Present

The subject land was assessed for its potential to provide habitat for threatened flora and fauna known or predicted to occur in the study area. Habitat features including but not limited to rock outcrops, caves, hollow-bearing trees, nests, wetlands (including dams), and watercourses were searched for and recorded, if present.

The subject land was found to be devoid of caves, outcropping rock and loose surface rock. No hollow-bearing trees were recorded within the disturbance footprint. No stags (standing dead trees) were located. No watercourses occur within the subject land. No natural wetlands were observed within the site, though farm dams occur within the paddock. The proposal has been designed to avoid the largest of these dams; however, impacts to a smaller dam towards the southern limit of the site may occur. This dam lacked any native aquatic or fringing vegetation and is likely to be of limited value as fauna or flora habitat.

The disturbance footprint excludes all significant habitat features detected during the initial field assessment.

Habitat features are mapped in **Figure 5-1**.



Figure 5-1. Habitat features recorded within the initial assessment area.

Note that this mapping was selective as the duration of the survey did not allow for a comprehensive assessment of habitat features. No habitat features of note were recorded within the final disturbance footprint.

5.2 Ecosystem Credit Species

In total, 16 ecosystem credit species were generated by the BAM-C (**Table 5-1**). The habitat suitability of the subject land for these species was assessed. One species was removed from the list due to habitat constraints:

- According to the Threatened Biodiversity Data Collections, the White-bellied Sea-eagle (*Haliaeetus leucogaster*) is confined to habitat within 1 km of “rivers, lakes, large dams or creeks, wetlands and coastlines.” These landscape features do not occur within 1 km of the site.

After the exclusion of this species, 15 ecosystem credit species were assumed present (see **Table 5-1**). A habitat assessment summary for each species listed below is detailed in **Appendix D**.

Table 5-1. Ecosystem credit species predicted to occur and the nature of their presence within, or absence from, the subject land.

Scientific Name	Common Name	Presence
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Assumed Present
<i>Calyptorhynchus lathami</i>	Glossy Black-cockatoo	Assumed Present
<i>Chthonicola sagittata</i>	Speckled Warbler	Assumed Present
<i>Falco hypoleucos</i>	Grey Falcon	Assumed Present
<i>Falco subniger</i>	Black Falcon	Assumed Present
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	Assumed Present
<i>Hirundapus caudacutus</i>	White-throated Needletail	Assumed Present
<i>Lathamus discolor</i>	Swift Parrot	Assumed Present
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (foraging)	Assumed Present
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	Assumed Present
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Assumed Present
<i>Polytelis swainsonii</i>	Superb Parrot (foraging)	Assumed Present
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Assumed Present
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Assumed Present
<i>Stagonopleura guttata</i>	Diamond Firetail	Assumed Present
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (foraging)	Absent (constraint)

5.3 Species Credit Species

In total, two species credit species were generated by the BAM-C under the small-area assessment module. Both species could be excluded from consideration due to geographical or habitat constraints:

1. The Large Bent-winged Bat (*Miniopterus orianae oceanensis*) requires caves, tunnels, mines, culverts or similar structures, none of which occur on site.

2. The subject land does not fall within areas included on the Important Habitat Map for the Swift Parrot (*Lathamus discolor*).

Prior to the adoption of the small-area method, targeted surveys were conducted for four species credit species identified by the BAM-C (**Table 5-2**).

Following these exclusions, six species credit species were retained in the assessment. Surveys were conducted for four of these species. Targeted surveys followed relevant and approved BAM survey methodologies (**Section 5.3.1**). The remaining species were assumed present (**Table 5-2**).

Table 5-2. Species credit species identified prior to the implementation of the small-area module and subject to targeted surveys.

Scientific Name	Common Name	Species presence
<i>Ardeotis australis</i>	Australian Bustard	Absent Surveyed (targeted surveys conducted in February)
<i>Dichanthium setosum</i>	Bluegrass	Absent Surveyed (targeted surveys conducted in February)
<i>Digitaria porrecta</i>	Finger Panic Grass	Absent Surveyed (targeted surveys conducted in February)
<i>Lepidium aschersonii</i>	Spiny Peppergrass	Absent Surveyed (targeted surveys conducted in February)

5.3.1 Species credit species targeted surveys

Targeted species surveys were conducted according to the methodologies outlined in **Table 5-3**, which were based on the BAM and its associated guidelines and documents. The BioNet species records from within 20 km of the subject land are also displayed in **Table 5-4** for site context.

Surveys failed to detect any of the relevant species credit species. In addition, the surveys did not detect the additional EPBC Act-listed species discussed in **Section 2.3.3.**, namely *Androcalva procumbens* (syn. *Commersonia procumbens*) and *Vincetoxicum forsteri* (syn. *Tylophora linearis*).

Table 5-3. Threatened Species Targeted Survey Methodology and Results.

Species	Survey requirements (TBDC)	Primary reference material	Survey timetable (BAM-C)	Survey Period (see also Table 2-4)	Results of survey
Australian Bustard <i>(Ardeotis australis)</i>	<ol style="list-style-type: none"> Where a PCT associated with the target species is recorded OR the surveyor determines that habitat present on the subject land is likely to support the target species then a targeted survey must be conducted using the methodology detailed below. (a) The survey must take place within the appropriate survey window and (b) Appropriate habitat must be identified on the subject land. There are no specific targeted survey guidelines for the Australian Bustard. Therefore, the standard approach for birds of searching for 20 minutes per hectare of suitable habitat was utilized. Searches were undertaken by walking slowly through the subject land and searching for or attempting to flush the species. Tracks were recorded on a GPS device. 	DEWHA, 2010	January-December	Surveys were conducted on 24 February 2023 .	<ol style="list-style-type: none"> The species is associated with PCT 55. (a) The targeted surveys took place in February, within the survey window for this species. (b) The entire subject land was searched (Figure 5-2 and Figure 5-3). One 20-minute dedicated search was conducted, and additional searches were conducted during flora transects. As the species is large and conspicuous, it is assumed that these surveys would have detected the species if present. As there is only 0.11 ha of associated native vegetation within the subject land, this exceeds the standard of 20-minutes per hectare. Tracks were recorded using a handheld GPS device (Figure 5-2 and Figure 5-3). No Australian Bustards were observed. All fauna species observed are recorded in Appendix C. <p>Result: Absent (surveyed).</p>
Bluegrass <i>(Dichanthium setosum)</i>	<ol style="list-style-type: none"> Where a PCT associated with the target species is recorded OR the surveyor determines that habitat 	DPIE, 2020b	November- May	Surveys were conducted on	<ol style="list-style-type: none"> The target species is associated with PCT 55.

	<p>present on the subject land is likely to support the target species then a targeted survey must be conducted using the methodology detailed below such that the following conditions can be met.</p> <p>2. (a) The survey must take place within the appropriate survey window and (b) within abiotic conditions under which the target species is likely to be detected if present. (c) Appropriate habitat must be identified on the subject land.</p> <p>3. (a) Parallel transects must be conducted at a prescribed distance based on the growth form of the target species and (b) the density of the surrounding vegetation. (c) Transects must be walked at a reasonable speed based on the density of the surrounding vegetation to maximise the potential of detection by the surveyor. (d) All potential habitat on the subject land must be searched for the species and (e) tracks of the walked transects should be recorded using a suitable GPS device.</p>			<p>24 February 2023.</p>	<p>2. (a) The targeted surveys took place in February, within the survey window for this species. (b) January and February received average rainfall (Figure 3-1), and the site was still wet during the survey period following heavy rains in 2022. This is likely to have encouraged growth by this species, which would increase the likelihood of detection. (c) The entire extent of PCT 55 within the disturbance footprint was searched (Figure 5-2 and Figure 5-3).</p> <p>3. (a) Targeted surveys were undertaken using 5 to 10 m transects, depending on vegetation density and ground visibility, as is recommended for grass species in open habitats. (b) The vegetation was variably open and dense and transect width was varied to accommodate this. (c) A suitable walking speed was maintained for observation of flora, and was varied according to the density of the vegetation. (d) All associated habitat was searched. (e) Tracks were recorded using a handheld GPS device (Figure 5-2 and Figure 5-3).</p> <p>This survey did not detect <i>Dichanthium setosum</i>. The survey did detect the closely related species Queensland Blue Grass (<i>Dichanthium sericeum</i>) and the more distantly related but structurally similar species <i>Bothriochloa decipiens</i> and <i>Eulalia aurea</i>. The latter two species are readily distinguished from <i>D. setosum</i> by details of coarse morphology. Queensland Blue Grass was distinguished from the threatened Bluegrass on the basis of its larger average number of racemes, shorter racemes, smaller spikelets, sterile pedicellate spikelets, and pale spikelet colour, as opposed to the dark purple spikelets of <i>D. setosum</i>.</p> <p>Result: Absent (surveyed).</p>
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<p>Finger Panic Grass <i>(Digitaria porrecta)</i></p>	<ol style="list-style-type: none"> 1. Where a PCT associated with the target species is recorded OR the surveyor determines that habitat present on the subject land is likely to support the target species then a targeted survey must be conducted using the methodology detailed below such that the following conditions can be met. 2. (a) The survey must take place within the appropriate survey window and (b) within abiotic conditions under which the target species is likely to be detected if present. (c) Appropriate habitat must be identified on the subject land. 3. (a) Parallel transects must be conducted at a prescribed distance based on the growth form of the target species and (b) the density of the surrounding vegetation. (c) Transects must be walked at a reasonable speed based on the density of the surrounding vegetation to maximise the potential of detection by the surveyor. (d) All potential habitat on the subject land must be searched for the species and (e) tracks of the walked transects 	<p>DPIE, 2020b</p>	<p>January-February</p>	<p>Surveys were conducted on 24 February 2023.</p>	<ol style="list-style-type: none"> 1. The target species is associated with PCT 55. 2. (a) The targeted surveys took place in February, within the survey window for this species. (b) January and February received average rainfall (Figure 3-1), and the site was still wet during the survey period following heavy rains in 2022. This is likely to have encouraged growth by this species, which would increase the likelihood of detection. (c) The entire extent of PCT 55 within the disturbance footprint was searched (Figure 5-2 and Figure 5-3). 3. (a) Targeted surveys were undertaken using 5 to 10 m transects, depending on vegetation density and ground visibility, as is recommended for grass species in open habitats. (b) The vegetation was variably open and dense and transect width was varied to accommodate this. (c) A suitable walking speed was maintained for observation of flora, and was varied according to the density of the vegetation. (d) All associated habitat was searched. (e) Tracks were recorded using a handheld GPS device (Figure 5-2 and Figure 5-3). <p>This survey did not detect <i>Digitaria porrecta</i> or any member of the genus <i>Digitaria</i>. <i>Digitaria divaricatissima</i> occurs elsewhere in the initial assessment area but was not recorded within the impact footprint.</p> <p>Result: Absent (surveyed).</p>
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	should be recorded using a suitable GPS device.				
Spiny Peppergrass (<i>Lepidium aschersonii</i>)	<ol style="list-style-type: none"> Where a PCT associated with the target species is recorded OR the surveyor determines that habitat present on the subject land is likely to support the target species then a targeted survey must be conducted using the methodology detailed below such that the following conditions can be met. <ol style="list-style-type: none"> The survey must take place within the appropriate survey window and (b) within abiotic conditions under which the target species is likely to be detected if present. (c) Appropriate habitat must be identified on the subject land. <ol style="list-style-type: none"> Parallel transects must be conducted at a prescribed distance based on the growth form of the target species and (b) the density of the surrounding vegetation. (c) Transects must be walked at a reasonable speed based on the density of the surrounding vegetation to maximise the potential of detection by the surveyor. (d) All potential habitat on the subject land must be searched for the species and (e) 	DPIE, 2020b	November-April	Surveys were conducted on 24 February 2023 .	<ol style="list-style-type: none"> The target species is associated with PCT 55. <ol style="list-style-type: none"> The targeted surveys took place in February, within the survey window for this species. (b) January and February received average rainfall (Figure 3-1), and the site was still wet during the survey period following heavy rains in 2022. This is likely to have encouraged growth by this species, which would increase the likelihood of detection. (c) The entire extent of PCT 55 within the disturbance footprint was searched (Figure 5-2 and Figure 5-3). <ol style="list-style-type: none"> Targeted surveys were undertaken using 5 to 10 m transects, depending on vegetation density and ground visibility, as is recommended for grass species in open habitats. (b) The vegetation was variably open and dense and transect width was varied to accommodate this. (c) A suitable walking speed was maintained for observation of flora, and was varied according to the density of the vegetation. (d) All associated habitat was searched. (e) Tracks were recorded using a handheld GPS device (Figure 5-2 and Figure 5-3). <p>This survey did not detect <i>Lepidium aschersonii</i> or any member of the genus <i>Lepidium</i>. Two non-native peppergrass species – <i>L. africanum</i> and <i>L. bonariensis</i> – occur in disturbed areas of the site. The absence of spines in these species allow them to be readily distinguished from <i>L. aschersonii</i>.</p> <p>Result: Absent (surveyed).</p>

	tracks of the walked transects should be recorded using a suitable GPS device.				
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Figure 5-2. Targeted flora surveys: Parallel transects conducted for fauna and flora in February 2023 (1 of 2).

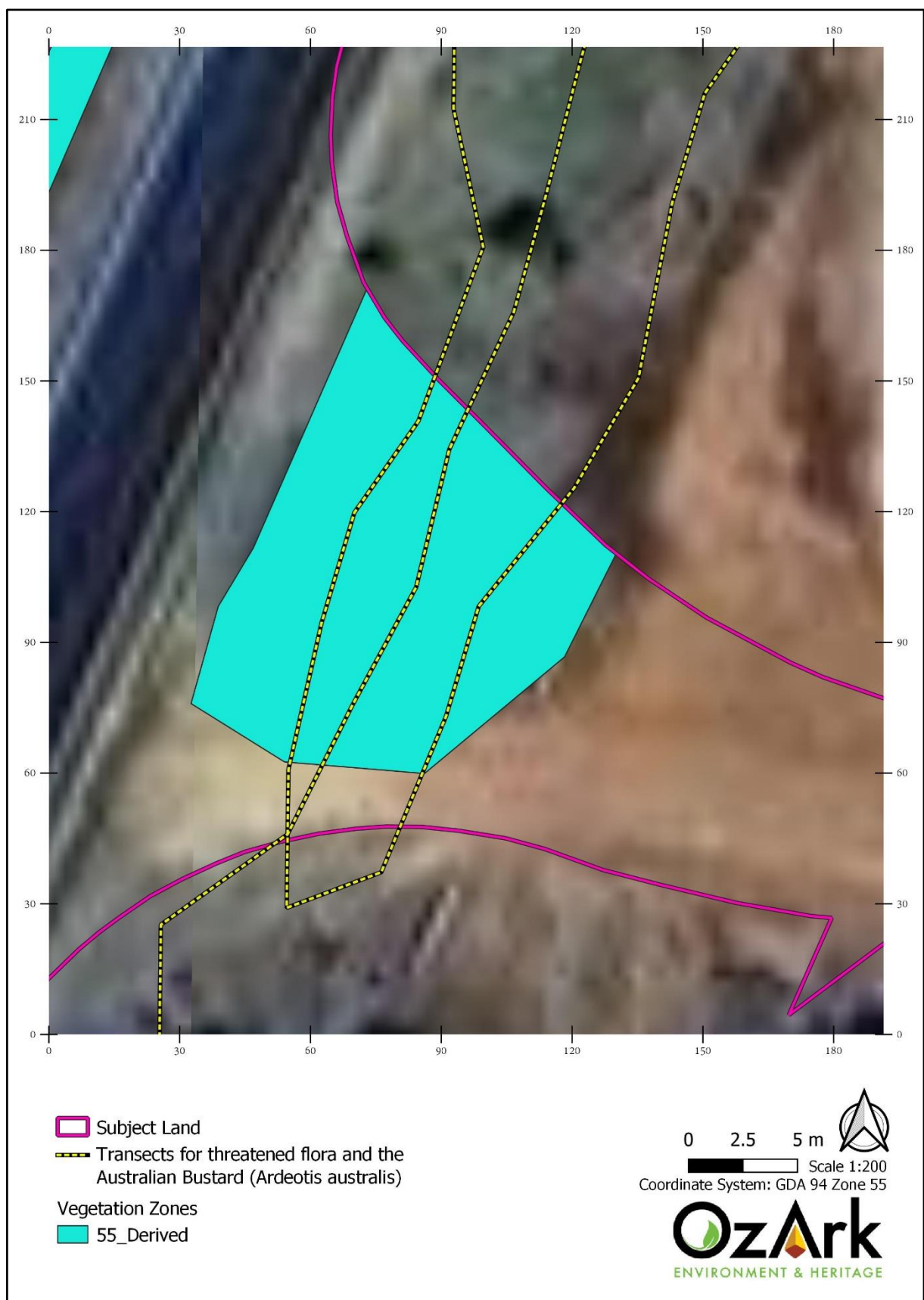


Figure 5-3. Targeted flora surveys: Parallel transects conducted for fauna and flora in February 2023 (2 of 2).

Table 5-4. BioNet records of threatened species within 10 km of the subject land.

Scientific Name	Common Name	*NSW Status	+Comm. Status	No. records
<i>Commersonia procumbens</i>		V	V	1
<i>Chalinolobus picatus</i>	Little Pied Bat	V		2
<i>Tylophora linearis</i>		V	E	1
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V		1
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		3
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	V		5
<i>Polytelis swainsonii</i>	Superb Parrot	V,3	V	2
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	V		9
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V		2
<i>Hieraaetus morphnoides</i>	Little Eagle	V		1

*V=Vulnerable, 3=Category 3 sensitive species

+V=Vulnerable, E=Endangered

5.3.2 Species credit species assumed present

Under the small-area assessment module, and following the exclusion of two species due to habitat or geographic constraints, no species credit species remain in the assessment and no species credit obligation accrues.

6 Impact Summary

6.1 Impacts to Native Vegetation

There is one PCT (PCT 55) within the disturbance footprint, with up to 0.11 ha of native vegetation to be removed, comprising no more than one mature tree, a small amount of woody regrowth, and an area of native grassland. No vegetation zones were found to meet the condition criteria for any BC Act- or EPBC Act-listed TEC. As such, no Threatened Ecological Communities will be impacted by the current proposal.

6.2 Serious and Irreversible Impacts

The Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE 2019) and the NSW threatened species data collection have been used to determine which threatened entities require further assessment for Serious and Irreversible Impacts (SAIL). An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species (including endangered populations) or ecological community becoming extinct based on following 4 principles (set out in clause 6.7 of the *Biodiversity Conservation Regulation 2017*):

- **Principle 1:** The impact will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline
- **Principle 2:** The impact will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size
- **Principle 3:** The impact is made on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution
- **Principle 4:** The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity, and therefore its members are not replaceable.

No SAIL entities were identified as being relevant to this proposal.

6.3 Cumulative Impacts

The potential impacts of this proposal must be regarded as a contribution to the wider loss of biodiversity in the local area and across NSW. The incremental effects of multiple impacts – past, present, and future – are referred to as cumulative impacts. This BDAR provides an opportunity to consider the impacts associated with this proposal within a wider context.

The subject land is situated in a landscape which has undergone extensive historical clearing for the purposes of agriculture. Much of the land within the study area has been converted to cropping, with native vegetation now largely confined to road corridors and fencelines, scattered paddock trees, and scattered larger remnants. The impacts of this proposal are, by themselves, very small; however, considering the scarcity of native cover within the local landscape (c. 9% of the study area retains native vegetation) and the marked historical reduction in extent of PCT 55 (estimated at 83%), these impacts are not inconsequential. Considered individually, this proposal is highly unlikely to result in significant adverse impacts to biodiversity at either local or state level. Taken cumulatively, however, the impacts of this and other local development activities contribute to the ongoing decline in biodiversity values across the state.

6.4 Prescribed Impacts

The *Biodiversity Conservation Regulation 2017* lists certain impacts as prescribed impacts that must be avoided, minimised and mitigated. These prescribed impacts and their relevance to the proposal are described in **Table 6-1**.

Table 6-1. Prescribed impacts of the proposal.

Prescribed Impacts	Site Assessment	Mitigation Measure
Impacts on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance.	No karsts, caves, crevices, cliffs or other features of geological significance present on the subject land or within the study area.	None required.
Impacts of development on the habitat of threatened species or ecological communities associated with rocks.	No areas of loose surface rock or outcropping rock occur within the disturbance footprint.	None required.
Impacts of development on the habitat of threatened species or ecological communities associated with human made structures.	No human-made structures exist within the footprint. It is not expected that any impacts to these structures would result from the proposal.	None required.
Impacts of development on the habitat of threatened species or ecological communities associated with non-native vegetation.	The majority of the subject land supports non-native vegetation, specifically agricultural crops. Non-native vegetation on the subject land may provide habitat for species or ecosystem credit species, and mitigations associated with fauna interactions still apply.	Table 6-3.
Impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range.	Minor impacts to connectivity in the road corridor would result from the clearing of a c. 50 m extent required for access into the property.	Table 6-3.

Impacts of the development on movement of threatened species that maintains their life cycle.	Minor impacts to connectivity in the road corridor would result from the clearing of a c. 50 m extent required for access into the property.	Table 6-3.
Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities.	No waterways are mapped as occurring within the subject land and no impacts to watercourses or hydrological processes are anticipated.	None required. Table 6-3.
Impacts of wind turbine strikes on protected animals.	None associated with the proposal.	None required.
Impact of vehicle strikes on threatened species of animals or on animals that are part of a TEC.	An increase in overall traffic movement is anticipated due to construction and maintenance works associated with the proposal. Maintaining suitably low speed limits on site will help to mitigate impacts that arise from this increase.	Table 6-3.

6.5 Indirect Impacts

Potential indirect impacts associated with the proposal are explored further in **Table 6-2**. The main impacts of the proposal are expected to be contained within the disturbance footprint, provided there is adequate demarcation between operational and non-operational areas. Disturbance from machinery and operational activities will occur, such as noise and dust. However, these impacts will be minimised by following the environmental safeguards proposed in **Table 6-3**.

Table 6-2. Potential indirect impacts of the proposal

Nature of impact	Timing	Frequency	PCTs, threatened species and/or TECs impacted	Consequence of impact on biodiversity
Inadvertent impacts on adjacent habitat or vegetation	Construction phase	Possible	<ul style="list-style-type: none"> Native vegetation surrounding the disturbance footprint Threatened species assumed present 	Increased edge effects, loss of foraging habitat, potential mortality to neighbouring fauna
Reduced viability of adjacent habitat due to edge effects	Construction phase	High	<ul style="list-style-type: none"> Native vegetation surrounding the disturbance footprint Threatened species assumed present 	Degradation (possibly temporary) of a small area of native vegetation and habitat for threatened flora and fauna.
Reduce viability of adjacent habitat due to noise, dust or light spill	Construction phase	Medium	<ul style="list-style-type: none"> Threatened species assumed present 	Minor foraging and breeding habitat for fauna may be altered or removed.
Transport of weeds and pathogens from the site to adjacent vegetation	Construction phase	Possible	<ul style="list-style-type: none"> Native vegetation surrounding the disturbance footprint 	Degradation (possibly temporary) of native vegetation.
Increased risk of starvation or exposure, and loss of shade or shelter	Construction phase	Low	<ul style="list-style-type: none"> Threatened species assumed present 	Minor loss of foraging and refuging habitat
Loss of breeding habitat	Construction and Operation phase	Possible	<ul style="list-style-type: none"> Threatened species assumed present 	Minor potential loss of potential breeding habitat, chiefly for grassland species.
Trampling of threatened flora species	Construction and Operation phase	Low	<ul style="list-style-type: none"> Threatened species assumed present 	Possible minor loss of threatened flora
Inappropriate Waste Management	Construction and Operation phase	Possible	<ul style="list-style-type: none"> Native vegetation surrounding the disturbance footprint 	Degradation of native vegetation

			<ul style="list-style-type: none"> Threatened species assumed present 	and habitat for threatened species.
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6.6 Impacts to Wetlands, Watercourses, and Aquatic Habitat

There are no watercourses or wetlands on the subject land and minimal risk of impacts to aquatic habitat via erosion or sedimentation.

6.7 Avoidance, Minimisation and Mitigation

The following avoidance measures have been integrated into the design and/or are suggested for the implementation of the project:

- The proposed impact area has been designed in the planning phase to avoid most native vegetation identified within the initial assessment area. The impact footprint is situated almost entirely within non-native (cropped) vegetation, the only exception being a small area of roadside vegetation.
- Where impacts to vegetation have been deemed necessary, these impacts have been situated within relatively degraded vegetation (derived grassland).
- Significant habitat features (e.g. hollow-bearing trees and rocky habitat) have been excluded from the development footprint.
- Targeted surveys have been carried out where possible to confirm that specific threatened species do not occur within the site.
- In addition, minimisation and mitigation methods will be implemented.

Table 6-3 outlines recommended environmental safeguards to reduce impacts on vegetation, soil and biodiversity.

Table 6-3. Recommended Environmental Safeguards

Environmental Safeguards	Timing	Frequency	Risk of Failure	Consequences of Failure
Clearing and prevention of over-clearing				
1. No new areas to be cleared without further assessment.	Pre-disturbance	Continuous	Moderate Breaches may result where the below measures are not successfully implemented.	Impacts to unassessed vegetation, which may include threatened species.
2. All personnel are to be inducted to be aware that disturbance of any stand of native vegetation outside the disturbance footprint, or otherwise unauthorised disturbance, could have legislative consequences. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets).	Pre-disturbance	Continuous	Moderate Breaches may result where induction materials are poorly designed or are disregarded, or where personnel are not inducted.	Impacts to unassessed vegetation, which may include threatened species.
3. Before start of work, clearly identify the extent of permitted vegetation clearing and areas to be retained as native vegetation. Fencing or bunting installed to demarcate 'no go zones' where vegetation is to be retained.	Pre-disturbance	Continuous	Low If fencing is properly implemented, risk of breaches is low.	Impacts to unassessed vegetation, which may include threatened species.
4. Vegetation will be removed in such a way to avoid unnecessary damage to surrounding vegetation.	During construction	Continuous	Low Impacts may result where vegetation removal is carried out without regard to surrounding vegetation.	Impacts to unassessed vegetation, which may include threatened species.
Bushfire protection				
5. As the subject land is not considered bushfire prone, no additional clearing for fire management is required. Should this requirement change, impacts to vegetation must be assessed according to the BAM.	Pre-disturbance	Identification of requirements: One-off, prior to disturbance.	Low As bushfire management imposes no additional obligations on the development, there is little risk of adverse events.	Requirement for additional impacts and hence additional assessment.
Soil management				

<p>6. An erosion and sediment control plan will be developed and implemented within a Construction Environmental Management Plan (CEMP)</p>	<p>Pre-disturbance / During construction</p>	<p>Development of plan: Prior to disturbance for construction and for operational activities. Implementation of plan: Continuous.</p>	<p>Moderate</p> <p>Should the plan not satisfactorily address the risks of erosion and runoff, adverse environmental impacts may result. Failure to induct workers in the requirements of the plan, failure to emphasise the importance of avoiding environmental impacts associated with runoff, and poor maintenance of controls may lead to breaches.</p>	<p>Impacts to unassessed vegetation, which may include threatened species.</p>
<p>Damage to native vegetation outside of impact zone</p>				
<p>7. Stockpile and compound sites are to be located within the assessed disturbance footprint and preferentially according to the following criteria: (i) At least 40 m away from the nearest waterway. (ii) In areas of low ecological conservation significance (i.e. previously disturbed land). (iii) On relatively level ground. The CEMP must ensure that stockpiling of materials and equipment and parking of vehicles does not occur outside disturbance footprint, and that native vegetation outside the footprint is not otherwise disturbed.</p>	<p>Pre-disturbance / During construction</p>	<p>Identification of sites: One-off, prior to disturbance. Development of CEMP: One-off, prior to disturbance. Use of sites: Continuous. Implementation of plan: Continuous</p>	<p>Moderate</p> <p>Should the CEMP not satisfactorily account for the compound or stockpile requirements of the proposal, adverse environmental impacts may result. Failure to induct workers in the requirement to confine all stockpiling of materials to designated sites or to emphasise the importance of avoiding environmental impacts associated may lead to breaches.</p>	<p>Impacts to unassessed vegetation, which may include threatened species.</p>
<p>Introduction and spread of significant weeds and pathogens</p>				
<p>8. Construction machinery (bulldozers, excavators, trucks, loaders and graders) must be clean and free from soil or weeds before entry to the work site.</p>	<p>Pre-disturbance / During construction</p>	<p>Continuous</p>	<p>Moderate</p> <p>Inadequate cleaning of machinery may result from failure to provide appropriate facilities or failure to emphasise the requirement for proper biosecurity hygiene.</p>	<p>Proliferation of weeds, which may include High-threat Exotic species</p>

9. Weed-free fill only to be used for on-site earthwork, if required.	During construction	Continuous	Low It is likely that displaced material will be available for use as fill. If this material proves inadequate, it is possible that alternative material may carry weed propagules.	Proliferation of weeds, which may include High-threat Exotic species
10. Any herbicide use is to be in accordance with the requirements on the label. Any person carrying out herbicide application would be appropriately trained and competent in its use.	During construction / During operation	Continuous	Low It is not anticipated that major herbicide application will be required; however, minor amounts will be required, and as such breaches may result where the importance of adequate training is not properly emphasised.	Impacts to unassessed vegetation, which may include threatened species. Chemical spills and consequent environmental damage.
Disturbance to fallen timber, dead wood, bush rock and anthropogenic habitat				
11. Any bush rock encountered on site is to be relocated to the edge of the disturbance area to enhance habitat. Where possible, dead wood and hollow logs should be relocated to the edge of the disturbance area to enhance habitat. No bush rock and little timber should be expected.	During construction	Continuous	Low Negligible quantities of bush rock occur on site. Fallen timber is confined to remnant woodland areas and is unlikely to be impacted by the proposal.	Impacts to fauna habitat, including habitat for threatened species.
12. If fauna is detected, work must be stopped immediately and the area left undisturbed until the individuals have dispersed or suitably qualified personnel are engaged to facilitate their removal.	During construction	Continuous	Moderate Risks to fauna may result where the stop-work procedure is inadequately communicated to workers.	Impacts to fauna, which may include threatened species.
Additional impacts				
13. Emergency spill procedures are to be developed in order to prevent environmental damage associated with chemicals, including fuel and herbicides.	Pre-disturbance / During construction	Development of procedures: One-off, prior to disturbance. Implementation of plan: Continuous	Moderate Uncontained chemical spills may occur where procedures are inadequate or poorly implemented.	Impacts to flora and fauna, which may include threatened species.

6.8 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government.

The EPBC Act protected matters search has identified four wetlands of international importance, six TECs, 41 threatened species, nine migratory species and 16 marine species that could possibly occur in the 10 km search area (**Appendix A**). Of these, 13 species, comprising 12 threatened species and one both threatened and migratory species, were assessed as potentially occurring on the subject land, based on available habitat within the site (**Table 6-4**; **Appendix E**). An assessment of impact significance has been undertaken for each of these threatened and migratory species following EPBC guidelines, as detailed in **Appendix E**.

A summary of these matters and whether the proposal is likely to impact them is provided in **Table 6-5**. It is concluded that no MNES will be significantly impacted by the proposal.

Table 6-4. EPBC-listed threatened or migratory species detected on site, or with moderate-high likelihood of occurring on the subject land.

Scientific Name	Common Name	+Comm. Status	# Bionet Records <10 km	Likelihood of Occurrence
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	V	9	Moderate
<i>Falco hypoleucos</i>	Grey Falcon	V	0	Moderate
<i>Grantiella picta</i>	Painted Honeyeater	V	0	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needletail	V	0	Moderate
<i>Lathamus discolor</i>	Swift Parrot	CE	0	Moderate
<i>Lophochroa leadbeateri leadbeateri</i>	Major Mitchell's Cockatoo	E	0	Moderate
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	E	0	Moderate
<i>Polytelis swainsonii</i>	Superb Parrot	V	2	High
<i>Stagonopleura guttata</i>	Diamond Firetail	V	0	Moderate
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V	0	Moderate
<i>Phascolarctos cinereus</i>	Koala	E	0	Moderate
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	0	Moderate
<i>Swainsona murrayana</i>	Slender Darling Pea	V	0	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needletail	V,C,J,K	0	Moderate

+V=Vulnerable, C=CAMBA, J=JAMBA, K= ROKAMBA E=Endangered, CE=Critically Endangered

Table 6-5. Impacts to Matters of National Environmental Significance and Commonwealth land.

Consideration	Potential impact?
Any impact on a listed threatened species or communities?	Yes (non-significant, Appendix E)
Any impacts on listed migratory species?	Yes (non-significant, Appendix E)
Any impacts on a Ramsar wetland of international importance?	No
Any impacts on a Commonwealth marine environment?	No
Any impacts on a World Heritage property?	No
Any impacts on a National Heritage place?	No
Any impacts on the Great Barrier Reef Marine Park?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No

7 Biodiversity Credit and Offset Report

7.1 Management Zones

The BAM considers future vegetation condition of different areas of the disturbance footprint when calculating biodiversity credits and offsets. It has been assumed that all vegetation within the disturbance footprint will be cleared (i.e., its future Vegetation Integrity [VI] Score will be 0). Therefore, offset requirements have been assessed assuming only one management zone.

7.2 Vegetation Integrity Assessment

VI Scores have been calculated for each vegetation zone based on patch size, area to be impacted, vegetation composition, structure and function, as defined below.

Patch size – Area in hectares of total vegetation zone patch (i.e. the connected woody and non-woody vegetation). See **Section 4.3.2**.

Area – Area within the property that will be subject to clearing, modification or other treatment by the Proposal. There is only one management zone as described above.

Composition (Comp.) – Score calculated based on species richness, i.e. the number of native species present.

Structure (Struct.) – Score calculated based on the cover (%) of each native species growth form.

Function (Funct.) – Score calculated based on habitat features, i.e. presence of tree sizes, hollow trees, coarse woody debris, litter cover (%) and high threat weed cover (%). The function score does not apply to grassland PCTs.

Benchmark data for the PCTs is also used in this calculation.

Data required for the calculation was collected in the field using the methodology specified in the BAM, as described above. The VI assessment for each vegetation zone, including the loss of VI due to the proposal, is shown in **Table 7-1**.

Table 7-1. Vegetation Integrity (VI) assessment.

Vegetation Zone	PCT	Area	Comp.	Struct.	Funct.	Current VIS	Management Zone	Future VIS	Change in VIS
55_Derived	55	0.11	65.1	34.8	16	33.1	Disturbance footprint	0	-33.1

7.3 Ecosystem Credit Summary

Based on the VI score and area of PCT impacted, two (2) Ecosystem Credits are required to be offset for the proposal. The ecosystem credits required for the proposal are summarised in **Table 7-2**. The full biodiversity credit summary report is provided in **Appendix F**.

Table 7-2. Ecosystem credits requiring offsetting (copied from BAM-C).

Vegetation zone name	BAM-C Zone	Current VIS	Change in VIS	Area (ha)	BC Act listing status	EPBC Act listing status	TEC name	Species sensitivity to gain class	Biodiversity risk weighting	Potential SAI	Ecosystem credits
55_Derived	1	33.1	-33.1	0.11	Does not fit listing	Does not fit listing	Not a TEC	High Sensitivity to Gain	2	False	2
TOTAL											2

7.4 Species Credit Summary

This proposal would not attract a species credit obligation.

7.5 Offset Requirement

Offsetting is required for the two (2) Ecosystem Credits listed above.

The proponent intends to purchase and retire the necessary number of credits on the open market or, if not available, offset credits through a direct payment into the Biodiversity Conservation Fund.

8 Summary and Conclusions

Edify Energy Pty Ltd (the proponent) proposes to develop a hybrid solar-plus-battery energy storage system on Lot 70 DP1251856, near Burroway, NSW, with access to the site via Eumungerie Rd. OzArk Environment & Heritage (OzArk) was engaged by Edify to prepare the biodiversity assessment for the proposal. The proposal would clear up to 0.11 ha of native vegetation in the corridor of Eumungerie Rd. The proposal triggers entry into the NSW Biodiversity Offsets Scheme (BOS) by virtue of its status as an SSD; consequently, the proponent is required to prepare a BDAR and to offset impacts to biodiversity. This report documents the assessment, which has been completed in accordance with the BAM (2020) and details the proponent's biodiversity offset requirement (measured by the number of ecosystem and species credits). The proposal has been assessed using the streamlined small-area module.

The native vegetation present in the disturbance footprint consists of a single PCT:

- PCT 55 – Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

All impacts of the proposal would be to derived grassland likely to have formerly hosted woodlands of Belah (*Casuarina cristata*). A single vegetation zone was mapped, designated 55_Derived. No mature trees would be impacted by the proposal, though some juvenile regrowth does fall within the disturbance footprint. No impacts are expected to any TEC listed under the BC Act or the EPBC Act.

In total, 16 ecosystem credit species were generated by the BAM-C. The habitat suitability of the subject land for these species was assessed. One species was removed from the list due to habitat constraints; consequently, 15 species were assumed present as ecosystem credit species, generating a total of two Ecosystem Credits.

In total, following application of the small-area module, two species credit species were generated by the BAM-C. After consideration of geographical and habitat constraints, both species could be discounted due to distribution or to the absence of features necessary for breeding. No species credit obligation would be generated by the proposal.

The proponent intends to satisfy their offset obligations by buying and retiring the necessary credits from the open market or, if appropriate credits are not available, by paying directly into the Biodiversity Conservation Fund.

The significance of the proposed impact to EPBC Act-listed threatened, migratory, wetland and marine species, populations and communities predicted to occur within a 10 km search area was assessed. No significant impact to any threatened entity likely to result in the extinction of a local population was identified. The residual ecological impacts of the proposal would be

adequately mitigated and offset using the management actions recommended and the offset requirements detailed within this BDAR. Therefore, a referral of the proposal to DCCEEW for these matters is not required.

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment.

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Appendix A: Database Search Results

NSW Biodiversity Values Map



Department of Planning and Environment

Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to a consent authority to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under [the Biodiversity Conservation Regulation 2017 \(Cl. 7.2 & 7.3\)](#).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether or not a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report	
Date of Report Generation	16/06/2023 2:32 PM
Biodiversity Values (BV) Map Threshold - Results Summary	
1	Does the development Footprint intersect with BV mapping? no
2	Was ALL of the BV Mapping within the development footprinted added in the last 90 days? (dark purple mapping only, no light purple mapping present) no
3	Date of expiry of dark purple 90 day mapping* N/A
4	Is the Biodiversity Values Map threshold exceeded? no
Area Clearing Threshold - Results Summary	
5	Size of the development or clearing footprint 4,407,912.8 sqm
6	Native Vegetation Area Clearing Estimate (NVACE) 145,174.6 sqm
7	Method for determining Minimum Lot Size LEP
8	Minimum Lot Size (10,000sqm = 1ha) 4,000,000 sqm
9	Area Clearing Threshold (10,000sqm = 1ha) 10,000 sqm
10	Is the Area Clearing Threshold exceeded? yes
Is the proposed development assessed above the Biodiversity Offsets Schema (BOS) threshold? Exceeding the BOS threshold will require completion of a Biodiversity Development Assessment Report (BDAR). More details provided on page 2.	
yes	

Page 1 of 3



Department of Planning and Environment

What do I do with this report?

- If the result above indicates a BDAR is required, a Biodiversity Development Assessment Report **may be required** with your development application. Go to <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor> to access a list of accredited assessors. An accredited assessor can apply the Biodiversity Assessment Method and prepare a **BDAR**.
- If the result above indicates a BDAR is not required, you have not exceeded the BOS threshold. This report can be provided to Council to support your development application. You may still require a permit from your 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 Section 7.3 of the Biodiversity Conservation Act 2016. You may also be required to review the area where no vegetation mapping is available.
- If all Biodiversity Values mapping within your development footprint are less than 90 days old, i.e. mapping is displayed as dark purple on the map, a BDAR may not be required if your Development Application is submitted within that 90 day period. *Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 3 above.

For more detailed advice about actions required, refer to the **Interpreting the evaluation report** section of the [Biodiversity Values Map Threshold Tool User Guide](#).

Review Options:

- If you believe the Biodiversity Values mapping is incorrect please refer to our [BV Map Review webpage](#) for further information.
- If you disagree with the NVACE result for Line Item 6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared) you can undertake a self-assessment. For more information about this refer to the **Guide for reviewing BMAT Tool area clearing threshold results**.

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.

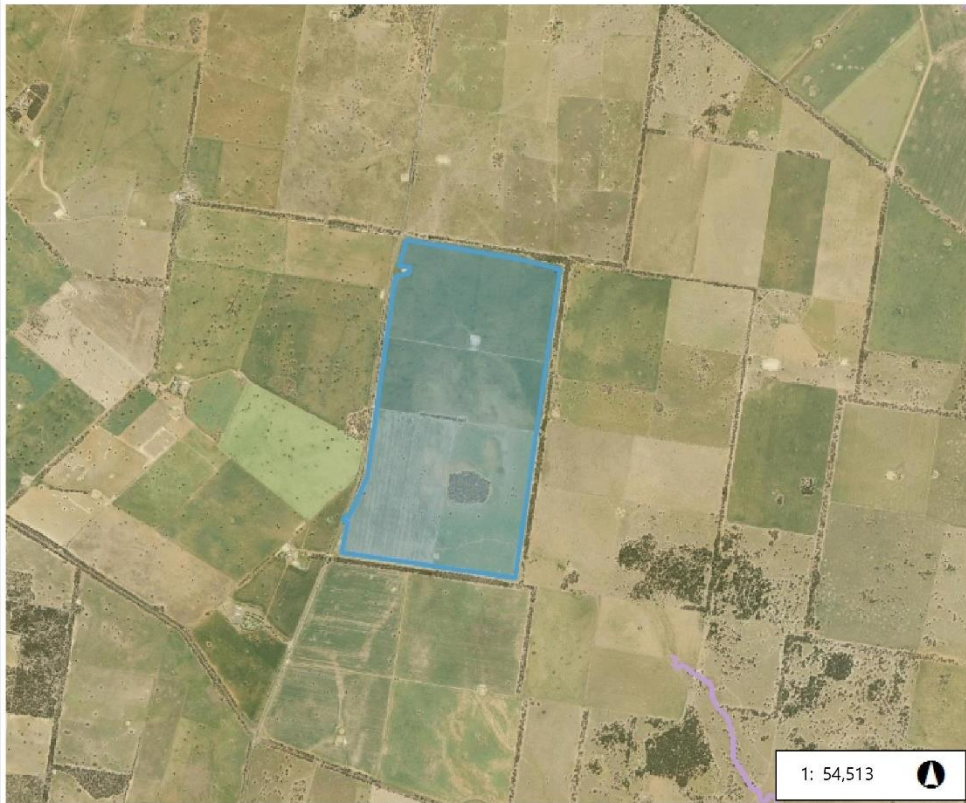
Signature: _____

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

Date: _____

16/06/2023 02:32 PM

Biodiversity Values Map



2,769.3 0 1,384.64 2,769.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

Legend

- Biodiversity Values that have been mapped for more than 90 days
 - Biodiversity Values added within last 90 days
 - Native Vegetation Area Clearing Estimate (NVACE)
 - Development area selected by proponent
- 16/06/2023 02:32 PM

This map is a user generated static output from an internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Imagery © Airbus DS/Spot Image 2016

© NSW Department of Customer Service, Basemaps 2019

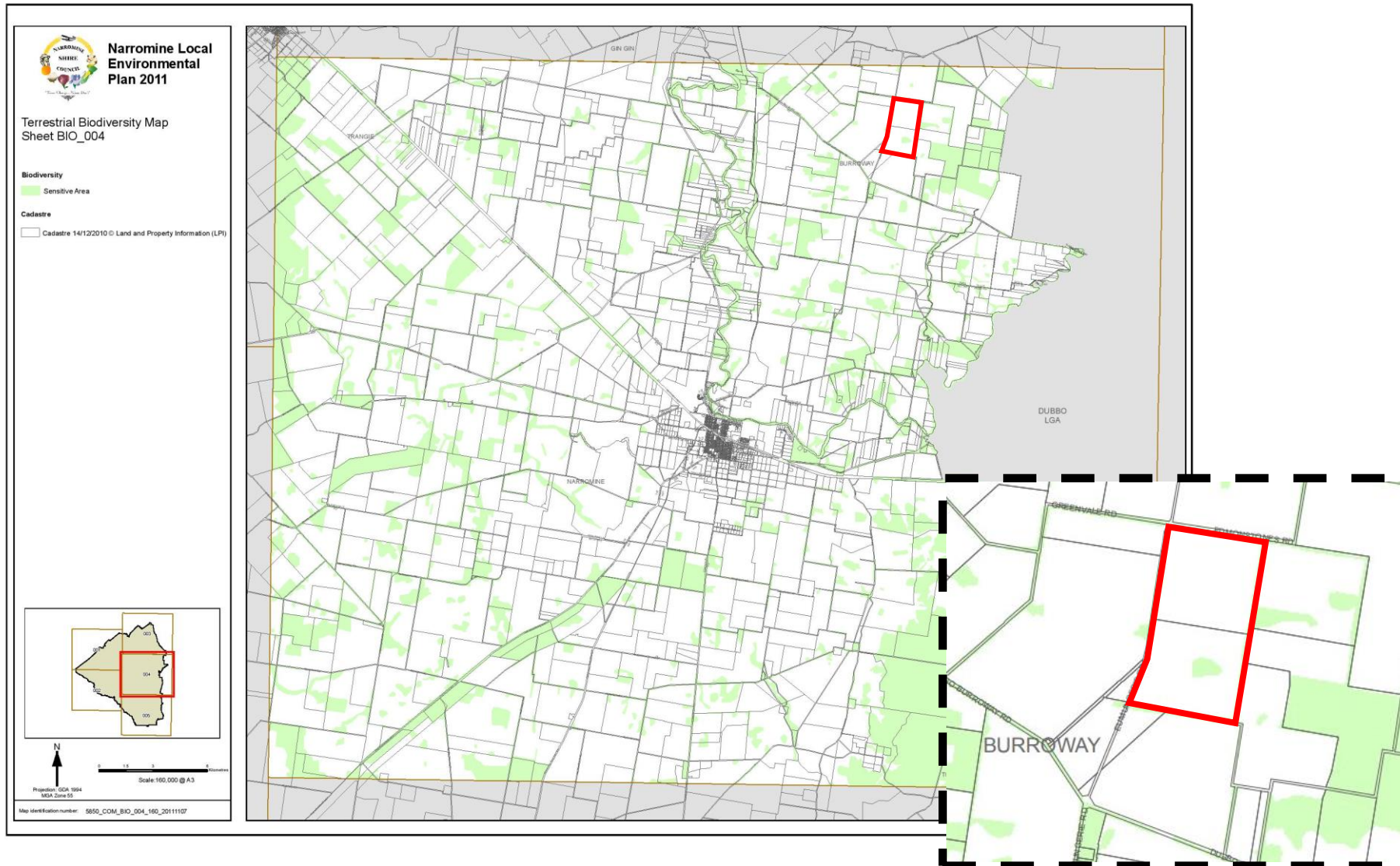
© NSW Department of Planning and Environment

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the [Biodiversity Values Map viewer](#) for mapping updates is recommended.

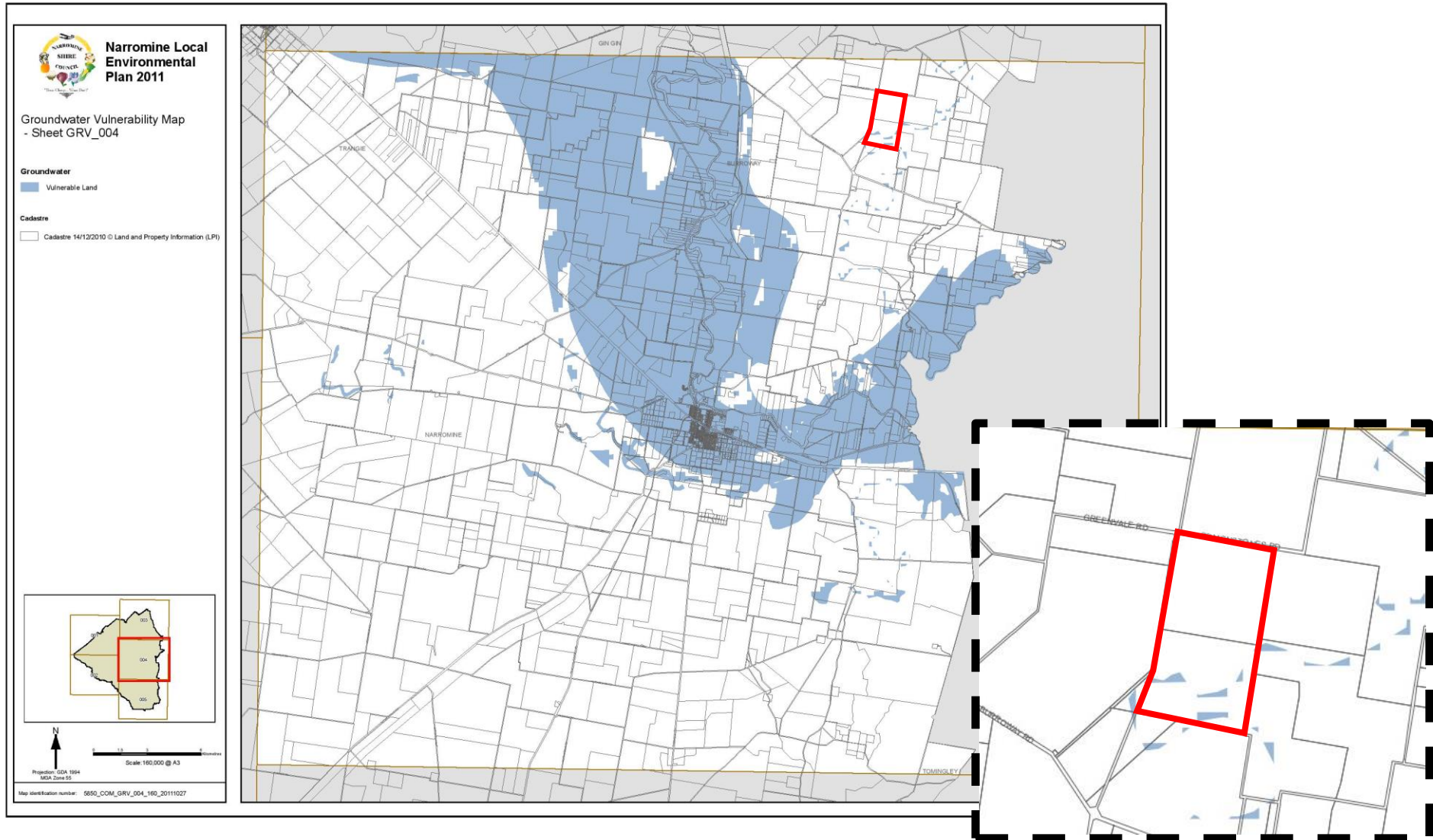
Narrromine Local Environmental Plan 2011 – Terrestrial Biodiversity Values Mapping.

The red polygon shows the location of the subject land.



Narrromine Local Environmental Plan 2011: Groundwater Vulnerability.

The red polygon shows the location of the subject land.



EPBC Act Protected Matters Report



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 31-Oct-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	41
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	16
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:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	700 - 800km upstream from Ramsar site	In feature area
Riverland	700 - 800km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site	In feature area
The macquarie marshes	100 - 150km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

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

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

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

Community Name	Threatened Category	Presence Text	Buffer Status
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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may 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 likely 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 may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lophochroa leadbeateri leadbeateri Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo [82926]	Endangered	Species or species habitat may occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
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 likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may 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			
Androcalva procumbens [87153]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Austrostipa wakoolica [66623]	Endangered	Species or species habitat may occur within area	In buffer area only
Homoranthus darwinioides [12974]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidium aschersonii Spiny Peppercross [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
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically 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 feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may 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			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area	In feature area
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
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
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

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 [14060]NSW		In buffer area only

Listed Marine Species

[\[Resource Information \]](#)

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In 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
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]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Central West	Northern Inland Catchments	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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BioNET Atlas search – threatened species predicted to occur within Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-Macquarie subregion of the Darling Riverine Plains bioregion

*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.

'Records: Number of records, P = predicted to occur, K = known to occur.

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Amphibia	<i>Crinia sloanei</i>	Sloane's Froglet	V,P	E	157
Amphibia	<i>Litoria booroolongensis</i>	Booroolong Frog	E1,P	E	34
Amphibia	<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	12
Aves	<i>^Calyptorhynchus banksii samueli</i>	Red-tailed Black-Cockatoo (inland subspecies)	V,P,2		5
Aves	<i>^Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P,2		1093
Aves	<i>^Falco hypoleucos</i>	Grey Falcon	E1,P,2		8
Aves	<i>^Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V,P,2		57
Aves	<i>Actitis hypoleucos</i>	Common Sandpiper	P	C,J,K	8
Aves	<i>Anseranas semipalmata</i>	Magpie Goose	V,P		167
Aves	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE	229
Aves	<i>Apus pacificus</i>	Fork-tailed Swift	P	C,J,K	56
Aves	<i>Ardeotis australis</i>	Australian Bustard	E1,P		24
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		2803
Aves	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	68
Aves	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		27
Aves	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	C,J,K	102
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	6
Aves	<i>Calidris ruficollis</i>	Red-necked Stint	P	C,J,K	7
Aves	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3	E	376
Aves	<i>Certhionyx variegatus</i>	Pied Honeyeater	V,P		9
Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		2553
Aves	<i>Circus assimilis</i>	Spotted Harrier	V,P		209
Aves	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		6078
Aves	<i>Cuculus optatus</i>	Oriental Cuckoo	P	C,J,K	1
Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		846
Aves	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		12
Aves	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		148
Aves	<i>Falco subniger</i>	Black Falcon	V,P		155
Aves	<i>Gallinago hardwickii</i>	Latham's Snipe	P	J,K	176

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Aves	<i>Gelochelidon nilotica</i>	Gull-billed Tern	P	C	11
Aves	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	V,P,3		9
Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		743
Aves	<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	136
Aves	<i>Grus rubicunda</i>	Brolga	V,P		218
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		257
Aves	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V,P,3		6
Aves	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		521
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	191
Aves	<i>Hydroprogne caspia</i>	Caspian Tern	P	J	23
Aves	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		2
Aves	<i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	239
Aves	<i>Leipoa ocellata</i>	Malleefowl	E1,P	V	72
Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	P	C,J,K	1
Aves	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	2
Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		87
Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		912
Aves	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V,P		683
Aves	<i>Neophema pulchella</i>	Turquoise Parrot	V,P,3		927
Aves	<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	E1,P		2
Aves	<i>Ninox connivens</i>	Barking Owl	V,P,3		232
Aves	<i>Ninox strenua</i>	Powerful Owl	V,P,3		26
Aves	<i>Oxyura australis</i>	Blue-billed Duck	V,P		60
Aves	<i>Pachycephala inornata</i>	Gilbert's Whistler	V,P		147
Aves	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		2
Aves	<i>Petroica boodang</i>	Scarlet Robin	V,P		778
Aves	<i>Petroica phoenicea</i>	Flame Robin	V,P		710
Aves	<i>Petroica rodinogaster</i>	Pink Robin	V,P		2
Aves	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	V,P	C,J	1
Aves	<i>Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	4653
Aves	<i>Pomatostomus halli</i>	Hall's Babbler	V,P		1
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		3093
Aves	<i>Pycnoptilus floccosus</i>	Pilotbird	P	V	1
Aves	<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	21
Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		1851

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Aves	<i>Stictonetta naevosa</i>	Freckled Duck	V,P		80
Aves	<i>Thalasseus bergii</i>	Crested Tern	P	J	1
Aves	<i>Tringa glareola</i>	Wood Sandpiper	P	C,J,K	5
Aves	<i>Tringa nebularia</i>	Common Greenshank	P	C,J,K	68
Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	C,J,K	20
Aves	<i>Turnix maculosus</i>	Red-backed Button-quail	V,P		P
Aves	<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3		1
Aves	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		19
Mammalia	<i>Aepyprymnus rufescens</i>	Rufous Bettong	V,P		2
Mammalia	<i>Antechinomys laniger</i>	Kultarr	E1,P		2
Mammalia	<i>Bettongia lesueur graii</i>	Boodie, Burrowing Bettong (mainland)	E4,P	X	2
Mammalia	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		45
Mammalia	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	46
Mammalia	<i>Chalinolobus picatus</i>	Little Pied Bat	V,P		76
Mammalia	<i>Conilurus albipes</i>	White-footed Tree-rat	E4,P	X	2
Mammalia	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	53
Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		20
Mammalia	<i>Leporillus apicalis</i>	Lesser Stick-nest Rat	E4,P	X	1
Mammalia	<i>Leporillus conditor</i>	Greater Stick-nest Rat	E4,P	V	2
Mammalia	<i>Macropus dorsalis</i>	Black-striped Wallaby	E1,P		676
Mammalia	<i>Macrotis lagotis</i>	Bilby	E4,P	V	3
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		118
Mammalia	<i>Myotis macropus</i>	Southern Myotis	V,P		20
Mammalia	<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V,P	V	107
Mammalia	<i>Petauroides volans</i>	Greater Glider	P	E	97
Mammalia	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	V	2
Mammalia	<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		1818
Mammalia	<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E1,P	V	56
Mammalia	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V,P		K
Mammalia	<i>Phascolarctos cinereus</i>	Koala	E1,P	E	486
Mammalia	<i>Pseudomys novaehollandiae</i>	New Holland Mouse	P	V	8
Mammalia	<i>Pseudomys oralis</i>	Hastings River Mouse	E1,P	E	1
Mammalia	<i>Pseudomys pilligaensis</i>	Pilliga Mouse	V,P	V	173
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	269

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		166
Mammalia	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		P
Mammalia	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart	V,P		1
Mammalia	<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V,P		15
Reptilia	<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V,P	V	152
Reptilia	<i>Aspidites ramsayi</i>	Woma	V,P		P
Reptilia	<i>Delma impar</i>	Striped Legless Lizard	V,P	V	4
Reptilia	<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V,P		3
Reptilia	<i>Tympanocryptis lineata</i>	Canberra Grassland Earless Dragon	E4A,P	E	4
Reptilia	<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V,P		6
Insecta	<i>Keyacris scurra</i>	Key's Matchstick Grasshopper	E1		P
Insecta	<i>Synemon plana</i>	Golden Sun Moth	V	V	50
Flora	<i>Caladenia arenaria</i>	Sand-hill Spider Orchid	E1,P,2	E	6
Flora	<i>Caladenia concolor</i>	Crimson Spider Orchid	E1,P,2	V	504
Flora	<i>Caladenia rosella</i>	Rosella Spider Orchid	E4,P,2	E	1
Flora	<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E1,P,2	V	1
Flora	<i>Cymbidium canaliculatum</i>	Cymbidium canaliculatum population in the Hunter Catchment	E2,P,2		1
Flora	<i>Diuris tricolor</i>	Pine Donkey Orchid	V,P,2		80
Flora	<i>Myriophyllum implicatum</i>		E4A,2		P
Flora	<i>Prasophyllum petilum</i>	Tarengo Leek Orchid	E1,P,2	E	25
Flora	<i>Pterostylis cobarensis</i>	Greenhood Orchid	V,P,2		175
Flora	<i>Acacia ausfeldii</i>	Ausfeld's Wattle	V		3928
Flora	<i>Acacia meiantha</i>		E1	E	P
Flora	<i>Acacia pendula</i>	Acacia pendula population in the Hunter catchment	E2		P
Flora	<i>Acacia phasmoides</i>	Phantom Wattle	V	V	91
Flora	<i>Ammobium craspedioides</i>	Yass Daisy	V	V	823
Flora	<i>Amphibromus fluitans</i>	Floating Swamp Wallaby-grass	V	V	30
Flora	<i>Atriplex infrequens</i>	A saltbush	V	V	1
Flora	<i>Austrostipa wakoolica</i>	A spear-grass	E1	E	P
Flora	<i>Bertya opponens</i>	Coolabah Bertya	V	V	234
Flora	<i>Boronia granitica</i>	Granite Boronia	V,P	E	1

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Flora	<i>Bossiaea fragrans</i>		E4A	CE	55
Flora	<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	1
Flora	<i>Caesia parviflora</i> var. <i>minor</i>	Small Pale Grass-lily	E1		3
Flora	<i>Carex raleighii</i>	Raleigh Sedge	E1		1
Flora	<i>Cheilanthes sieberi</i> subsp. <i>pseudovellea</i>		E1,3		22
Flora	<i>Commersonia procumbens</i>		V	V	181
Flora	<i>Cullen parvum</i>	Small Scurf-pea	E1		7
Flora	<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1	E	P
Flora	<i>Dichanthium setosum</i>	Bluegrass	V	V	11
Flora	<i>Digitaria porrecta</i>	Finger Panic Grass	E1		18
Flora	<i>Eriocaulon australasicum</i>	Austral Pipewort	E1	E	P
Flora	<i>Eucalyptus aggregata</i>	Black Gum	V	V	1
Flora	<i>Eucalyptus alligatrix</i> subsp. <i>alligatrix</i>		V	V	2
Flora	<i>Eucalyptus camaldulensis</i>	Eucalyptus camaldulensis population in the Hunter catchment	E2		P
Flora	<i>Eucalyptus cannonii</i>	Capertee Stringybark	V		8
Flora	<i>Eucalyptus robertsonii</i> subsp. <i>hemisphaerica</i>	Robertson's Peppermint	V	V	P
Flora	<i>Euphrasia arguta</i>		E4A	CE	1
Flora	<i>Euphrasia collina</i> subsp. <i>muelleri</i>	Mueller's Eyebright	E1	E	P
Flora	<i>Grevillea wilkinsonii</i>	Tumut Grevillea	E4A	E	17
Flora	<i>Homoranthus darwinioides</i>	Fairy Bells	V	V	161
Flora	<i>Homoranthus prolixus</i>	Granite Homoranthus	V	V	1
Flora	<i>Indigofera efoliata</i>	Leafless Indigo	E1,3	E	6
Flora	<i>Lepidium aschersonii</i>	Spiny Peppercross	V	V	3
Flora	<i>Lepidium monoplacoides</i>	Winged Peppercross	E1	E	P
Flora	<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray		E	33
Flora	<i>Monotaxis macrophylla</i>	Large-leafed Monotaxis	E1		2
Flora	<i>Muehlenbeckia</i> sp. <i>Mt Norman</i>	Scrambling Lignum	V		1
Flora	<i>Persoonia marginata</i>	Clandulla Geebung	V,P	V	P
Flora	<i>Pilularia novae-hollandiae</i>	Austral Pillwort	E1,3		5
Flora	<i>Pimelea bracteata</i>		E4A		1
Flora	<i>Polygala linariifolia</i>	Native Milkwort	E1		14
Flora	<i>Pomaderris cotoneaster</i>	Cotoneaster Pomaderris	E1	E	P
Flora	<i>Pomaderris queenslandica</i>	Scant Pomaderris	E1		44

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Flora	<i>Prasophyllum sp. Wybong</i>		P	CE	P
Flora	<i>Pultenaea humilis</i>	Dwarf Bush-pea	V		8
Flora	<i>Senecio garlandii</i>	Woolly Ragwort	V		72
Flora	<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	5
Flora	<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	4
Flora	<i>Swainsona recta</i>	Small Purple-pea	E1	E	736
Flora	<i>Swainsona sericea</i>	Silky Swainson-pea	V		233
Flora	<i>Thesium australe</i>	Austral Toadflax	V	V	2
Flora	<i>Tylophora linearis</i>		V	E	199
Flora	<i>Zieria ingramii</i>	Keith's Zieria	E1	E	312
Flora	<i>Zieria obcordata</i>	Granite Zieria	E1	E	26

BioNET Atlas search – threatened ecological communities predicted to occur within the Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-Macquarie subregion of the Darling Riverine Plains bioregion

*NSW Status: E3=Endangered Ecological Community, E4B= Critically Endangered Ecological Community

+Comm. Status: CE=Critically Endangered, E=Endangered.

¹Records: K = known, P= predicted.


TEC	*NSW status	+Comm. status	¹ Records
Alpine Sphagnum Bogs and Associated Fens		E	K
Artesian Springs Ecological Community in the Great Artesian Basin	E4B		K
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3		K
Brigalow-Gidgee woodland/shrubland in the Mulga Lands and Darling Riverine Plains Bioregions	E3		P
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions	E3		K
Central Hunter Valley eucalypt forest and woodland		CE	K
Coolac-Tumut Serpentine Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	E3		K
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	K
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain and Mulga Lands Bioregions	E3		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 Penepplain, Nandewar and Brigalow Belt South Bioregions	E3		K
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3		K
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland		CE	K
Pilliga Outwash Ephemeral Wetlands in the Brigalow Belt South Bioregion	E3		K
Poplar Box Grassy Woodland on Alluvial Plains		E	K
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin		E	K
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion		E	K
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

**BioNET Atlas search – key threatening processes (KTPs) predicted to occur within the
within the Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-
Macquarie subregion of the Darling Riverine Plains bioregion**

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

Common Name	NSW status	Comm status	Records
Predation by the Feral Cat <i>Felis catus</i> (Linnaeus, 1758)	KTP	KTP	P
Predation, habitat degradation, competition and disease transmission by Feral Pigs, <i>Sus scrofa</i> Linnaeus 1758	KTP	KTP	P
Removal of dead wood and dead trees	KTP		P

Appendix B: BAM Plot Locations and Photographs

Plot Name	PCT	Condition	Easting (Zone 55)	Northing (Zone 55)	Photographs
BU09	0	Non-native (cropped)	628197	6449885	

BU12	0	Non-native (cropped)	626259	6448537		
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BUX01	55	Derived	626359	6448882		
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Appendix C: Field Survey Results

Fauna species list

In total, 25 fauna species were detected during the field surveys. Of these, 22 (88.00%) were native and three (12.00%) introduced. Detected fauna species are given in the table below.

Class	Scientific name	Common name	Status ¹	BC Act Status	EPBC Act Status
Aves	<i>Gymnorhina tibicen</i>	Australian Magpie	N	-	-
Aves	<i>Struthidea cinerea</i>	Apostlebird	N	-	-
Aves	<i>Corcorax melanorhamphos</i>	White-winged Chough	N	-	-
Aves	<i>Manorina flavigula</i>	Yellow-throated Miner	N	-	-
Aves	<i>Manorina melanocephala</i>	Noisy Miner	N	-	-
Aves	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	N	-	-
Aves	<i>Aquila audax</i>	Wedge-tailed Eagle	N	-	-
Aves	<i>Phaps chalcoptera</i>	Common Bronzewing	N	-	-
Aves	<i>Pardalotus striatus</i>	Striated Pardalote	N	-	-
Aves	<i>Grallina cyanoleuca</i>	Magpie-lark	N	-	-
Aves	<i>Eolophus roseicapilla</i>	Galah	N	-	-
Aves	<i>Platycercus eximius</i>	Eastern Rosella	N	-	-
Aves	<i>Rhipidura leucophrys</i>	Willie Wagtail	N	-	-
Aves	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	N	-	-
Aves	<i>Cracticus nigrogularis</i>	Pied Butcherbird	N	-	-
Aves	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	N	-	-
Aves	<i>Cacatua galerita</i>	Sulfur-crested Cockatoo	N	-	-
Aves	<i>Ocyphaps lophotes</i>	Crested Pigeon	N	-	-
Aves	<i>Psephotus haematonotus</i>	Red-rumped Parrot	N	-	-
Aves	<i>Hirundo neoxena</i>	Welcome Swallow	N	-	-
Aves	<i>Sturnus vulgaris</i>	Common Starling	I	-	-
Mammalia	<i>Vulpes vulpes</i>	Fox	I	-	-
Mammalia	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	N	-	-
Mammalia	<i>Capra hircus</i>	Goat	I	-	-
Mammalia	<i>Wallabia bicolor</i>	Swamp Wallaby	N	-	-

¹N=Native, I=Introduced.

Flora Species List

In total, 190 plant species were detected during the October 2022 and February 2023 field surveys; these species are given in the table below. Of this number, 136 (71.58%) are native and 54 (28.42%) are introduced. Seven are listed as High-threat Exotic species (HTE) under the BAM. One HTE species – African Boxthorn (*Lycium ferocissimum*) – is also listed as a Weed of National Significance (WoNS) and as a Priority Weed (PW) for the Central West. Note that these species were recorded during the initial survey, which covered a much wider area. Most were not recorded within the final impact footprint.

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
TG	<i>Alectryon oleifolius</i>	Western Rosewood	N	No	No	No
TG	<i>Allocasuarina luehmannii</i>	Buloke	N	No	No	No
TG	<i>Brachychiton populneus</i>	Kurrajong	N	No	No	No
TG	<i>Callitris glaucophylla</i>	White Cypress Pine	N	No	No	No
TG	<i>Casuarina cristata</i>	Belah, Muurrugu	N	No	No	No
TG	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum	N	No	No	No
TG	<i>Eucalyptus camaldulensis</i>	River Red Gum	N	No	No	No
TG	<i>Eucalyptus chloroclada</i>	Dirty Gum	N	No	No	No
TG	<i>Eucalyptus conica</i>	Fuzzy Box	N	No	No	No
TG	<i>Eucalyptus microcarpa</i>	Grey Box	N	No	No	No
TG	<i>Eucalyptus pilligaensis</i>	Narrow-Leaved Grey Box	N	No	No	No
TG	<i>Eucalyptus polyanthemus</i>	Red Box	N	No	No	No
TG	<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>	Poplar Box	N	No	No	No
SG	<i>Acacia deanei</i>	Deane's Wattle	N	No	No	No
SG	<i>Acacia ixodes</i>	Motherumbung	N	No	No	No
SG	<i>Acacia lanigera</i>	Woolly Wattle	N	No	No	No
SG	<i>Acacia spectabilis</i>	Mudgee Wattle	N	No	No	No
SG	<i>Apophyllum anomalum</i>	Warrior Bush	N	No	No	No
SG	<i>Atriplex leptocarpa</i>	Slender-Fruit Saltbush	N	No	No	No
SG	<i>Cassinia laevis</i>	Cough Bush	N	No	No	No
SG	<i>Dodonaea viscosa</i> subsp. <i>spatulata</i>	Sticky Hopbush	N	No	No	No
SG	<i>Enchylaena tomentosa</i>	Ruby Saltbush	N	No	No	No
SG	<i>Eremophila mitchellii</i>	Budda	N	No	No	No
SG	<i>Geijera parviflora</i>	Wilga	N	No	No	No
SG	<i>Indigofera coronillifolia</i>	Native Indigo	N	No	No	No
SG	<i>Lissanthe strigosa</i>	Peach Heath	N	No	No	No
SG	<i>Maireana microphylla</i>	Small-Leaf Bluebush	N	No	No	No

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
SG	<i>Myoporum montanum</i>	Western Boobialla	N	No	No	No
SG	<i>Pittosporum angustifolium</i>	Weeping Pittosporum	N	No	No	No
SG	<i>Pultenaea cinerascens</i>	Sandstone Bush-pea	N	No	No	No
SG	<i>Rhagodia spinescens</i>	Spiny Saltbush	N	No	No	No
SG	<i>Sclerolaena birchii</i>	Galvanized Burr	N	No	No	No
SG	<i>Sclerolaena diacantha</i>	Grey Copperburr	N	No	No	No
SG	<i>Sclerolaena muricata</i>	Black Rolypoly	N	No	No	No
SG	<i>Senna artemisioides</i>	Silver Cassia	N	No	No	No
SG	<i>Solanum cinereum</i>	Narrawa Burr	N	No	No	No
SG	<i>Solanum ferocissimum</i>	Spiny Potato Bush	N	No	No	No
GG	<i>Anthosachne scabra</i>	Common Wheatgrass	N	No	No	No
GG	<i>Aristida leichhardtiana</i>	Wiregrass	N	No	No	No
GG	<i>Aristida ramosa</i>	Purple Wiregrass	N	No	No	No
GG	<i>Austrostipa aristiglumis</i>	Plains Grass	N	No	No	No
GG	<i>Austrostipa blackii</i>	Speargrass	N	No	No	No
GG	<i>Austrostipa densiflora</i>	Foxtail Speargrass	N	No	No	No
GG	<i>Austrostipa elegantissima</i>	Feather Speargrass	N	No	No	No
GG	<i>Austrostipa nodosa</i>	Knotty Speargrass	N	No	No	No
GG	<i>Austrostipa scabra</i>	Speargrass	N	No	No	No
GG	<i>Austrostipa verticillata</i>	Slender Bamboo Grass	N	No	No	No
GG	<i>Bothriochloa decipiens</i>	Red Grass	N	No	No	No
GG	<i>Bromus arenarius</i>	Sand Brome	N	No	No	No
GG	<i>Carex inversa</i>	Knob Sedge	N	No	No	No
GG	<i>Chloris truncata</i>	Windmill Grass	N	No	No	No
GG	<i>Chloris ventricosa</i>	Tall Chloris	N	No	No	No
GG	<i>Dichanthium sericeum</i>	Queensland Bluegrass	N	No	No	No
GG	<i>Digitaria divaricatissima</i>	Umbrella Grass	N	No	No	No
GG	<i>Enteropogon acicularis</i>	Curly Windmill Grass	N	No	No	No
GG	<i>Eragrostis brownii</i>	Brown's Lovegrass	N	No	No	No
GG	<i>Eriochloa pseudoacrotricha</i>	Early Spring Grass	N	No	No	No
GG	<i>Eulalia aurea</i>	Silky Browntop	N	No	No	No
GG	<i>Juncus bufonius</i>	Toad Rush	N	No	No	No
GG	<i>Juncus continuus</i>	Rush	N	No	No	No
GG	<i>Juncus subsecundus</i>	Rush	N	No	No	No
GG	<i>Lomandra multiflora</i>	Many-Flowered Mat-Rush	N	No	No	No

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
GG	<i>Microlaena stipoides</i>	Weeping Grass	N	No	No	No
GG	<i>Panicum buncei</i>	Panic	N	No	No	No
GG	<i>Panicum effusum</i>	Hairy Panic	N	No	No	No
GG	<i>Paspalidium aversum</i>	Paspalidium	N	No	No	No
GG	<i>Paspalidium constrictum</i>	Knottybutt Grass	N	No	No	No
GG	<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	N	No	No	No
GG	<i>Rytidosperma setaceum</i>	Smallflower Wallaby Grass	N	No	No	No
GG	<i>Themeda triandra</i>	Kangaroo Grass	N	No	No	No
GG	<i>Thyridolepis xerophila</i>	Mulga Mitchell Grass	N	No	No	No
GG	<i>Walwhalleya subxerophila</i>	Gilgai Grass	N	No	No	No
FG	<i>Abutilon fraseri</i>	Dwarf Lantern-Flower	N	No	No	No
FG	<i>Arthropodium minus</i>	Small Vanilla-lily	N	No	No	No
FG	<i>Brachyscome chrysoglossa</i>	Yellow-Tongue Daisy	N	No	No	No
FG	<i>Brachyscome ciliaris</i>	Variable Daisy	N	No	No	No
FG	<i>Brachyscome multifida</i>	Cut-Leaved Daisy	N	No	No	No
FG	<i>Brunonia australis</i>	Blue Pincushion	N	No	No	No
FG	<i>Brunoniella australis</i>	Blue Trumpet	N	No	No	No
FG	<i>Bulbine semibarbata</i>	Native Leek	N	No	No	No
FG	<i>Calotis cuneifolia</i>	Purple Burr-Daisy	N	No	No	No
FG	<i>Calotis lappulacea</i>	Yellow Burr-Daisy	N	No	No	No
FG	<i>Cotula australis</i>	Common Cotula	N	No	No	No
FG	<i>Crassula sieberiana</i>	Australian Stonecrop	N	No	No	No
FG	<i>Damasonium minus</i>	Starfruit	N	No	No	No
FG	<i>Daucus glochidiatus</i>	Native Carrot	N	No	No	No
FG	<i>Dianella longifolia</i>	Blue Flax-Lily	N	No	No	No
FG	<i>Dichondra repens</i>	Kidney Weed	N	No	No	No
FG	<i>Einadia nutans</i>	Climbing Saltbush	N	No	No	No
FG	<i>Einadia polygonoides</i>	Climbing Saltbush	N	No	No	No
FG	<i>Einadia trigonos</i>	Fishweed	N	No	No	No
FG	<i>Erodium crinitum</i>	Blue Crowfoot	N	No	No	No
FG	<i>Euchiton sphaericus</i>	Star Cudweed	N	No	No	No
FG	<i>Gonocarpus elatus</i>	Hill Raspwort	N	No	No	No
FG	<i>Goodenia cycloptera</i>	Serrated Goodenia	N	No	No	No
FG	<i>Goodenia pinnatifida</i>	Scrambled Eggs	N	No	No	No
FG	<i>Leiocarpa panaetioides</i>	Wooly Buttons	N	No	No	No

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
FG	<i>Linum marginale</i>	Native Flax	N	No	No	No
FG	<i>Lobelia concolor</i>	Poison Pratia	N	No	No	No
FG	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife	N	No	No	No
FG	<i>Minuria leptophylla</i>	Minnie Daisy	N	No	No	No
FG	<i>Oxalis perennans</i>	Grassland Wood-sorrel	N	No	No	No
FG	<i>Oxytes brachypoda</i>	Large Tick-Trefoil	N	No	No	No
FG	<i>Parietaria debilis</i>	Native Pellitory	N	No	No	No
FG	<i>Portulaca oleracea</i>	Pigweed	N	No	No	No
FG	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	N	No	No	No
FG	<i>Rhodanthe corymbiflora</i>	Small White Sunray	N	No	No	No
FG	<i>Rumex brownii</i>	Swamp Dock	N	No	No	No
FG	<i>Rumex dumosus</i>	Wiry Dock	N	No	No	No
FG	<i>Rumex tenax</i>	Shiny Dock	N	No	No	No
FG	<i>Schenkia australis</i>	Spike Centaury	N	No	No	No
FG	<i>Sida corrugata</i>	Corrugated Sida	N	No	No	No
FG	<i>Sida trichopoda</i>	Hairy Sida	N	No	No	No
FG	<i>Solanum eremophilum</i>	Nightshade	N	No	No	No
FG	<i>Solanum esuriale</i>	Quena	N	No	No	No
FG	<i>Spergularia brevifolia</i>	Lesser Sea-Spurrey	N	No	No	No
FG	<i>Stuartina muelleri</i>	Spoon Cudweed	N	No	No	No
FG	<i>Triptilodiscus pygmaeus</i>	Common Sunray	N	No	No	No
FG	<i>Velleia paradoxa</i>	Spur Velleia	N	No	No	No
FG	<i>Verbena gaudichaudii</i>	Native Vervain	N	No	No	No
FG	<i>Vittadinia cervicalis</i>	New Holland Daisy	N	No	No	No
FG	<i>Vittadinia cuneata</i>	Fuzzweed	N	No	No	No
FG	<i>Vittadinia pterochaeta</i>	Winged New Holland Daisy	N	No	No	No
FG	<i>Wahlenbergia communis</i>	Tufted Bluebell	N	No	No	No
FG	<i>Wahlenbergia gracilentia</i>	Annual Bluebell	N	No	No	No
FG	<i>Wahlenbergia stricta</i>	Tall Bluebell	N	No	No	No
FG	<i>Xerochrysum bracteatum</i>	Golden Everlasting	N	No	No	No
FG	<i>Xerochrysum viscosum</i>	Sticky Everlasting	N	No	No	No
EG	<i>Cheilanthes sieberi</i>	Poison Rock Fern	N	No	No	No
OG	<i>Convolvulus angustissimus</i>	Bindweed	N	No	No	No
OG	<i>Glycine clandestina</i>	Twining Glycine	N	No	No	No

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
OG	<i>Glycine tabacina</i>	Variable Glycine	N	No	No	No
OG	<i>Grona varians</i>	Slender Tick-Trefoil	N	No	No	No
OG	<i>Jasminum lineare</i>	Desert Jasmine	N	No	No	No
OG	<i>Parsonsia eucalyptophylla</i>	Gargaloo	N	No	No	No
TG	<i>Melia azedarach</i>	White Cedar	N	No	No	No
FG	<i>Arctotheca calendula</i>	Capeweed	E	No	No	No
FG	<i>Aster subulatus</i>	Wild Aster	E	No	No	No
GG	<i>Avena fatua</i>	Wild Oats	E	No	No	No
GG	<i>Avena sativa</i>	Oats	E	No	No	No
FG	<i>Brassica x napus</i>	Canola	E	No	No	No
GG	<i>Bromus diandrus</i>	Great Brome	E	Yes	No	No
GG	<i>Bromus hordeaceus</i>	Soft Brome	E	No	No	No
FG	<i>Carthamus lanatus</i>	Saffron Thistle	E	Yes	No	No
FG	<i>Cerastium glomeratum</i>	Mouse-Ear Chickweed	E	No	No	No
GG	<i>Chloris gayana</i>	Rhodes Grass	E	Yes	No	No
FG	<i>Cirsium vulgare</i>	Spear Thistle	E	No	No	No
FG	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	E	No	No	No
FG	<i>Conyza sumatrensis</i>	Tall Fleabane	E	No	No	No
FG	<i>Cyclospermum leptophyllum</i>	Slender Celery	E	No	No	No
GG	<i>Cyperus eragrostis</i>	Umbrella Sedge	E	Yes	No	No
FG	<i>Echium plantagineum</i>	Paterson's Curse	E	No	No	No
GG	<i>Eragrostis curvula</i>	African Lovegrass	E	Yes	No	No
GG	<i>Eragrostis trichophora</i>	Lovegrass	E	No	No	No
FG	<i>Gamochaeta</i> sp.	Cudweed	E	No	No	No
FG	<i>Hirschfeldia incana</i>	Buchan Weed	E	No	No	No
GG	<i>Hordeum</i> sp.	Barley Grass	E	No	No	No
FG	<i>Hypochaeris radicata</i>	Flatweed	E	No	No	No
FG	<i>Lactuca saligna</i>	Willow-Leaved Lettuce	E	No	No	No
FG	<i>Lactuca serriola</i>	Prickly Lettuce	E	No	No	No
FG	<i>Leontodon rhagadioloides</i>	Cretan Weed	E	No	No	No
FG	<i>Lepidium africanum</i>	African Peppercross	E	No	No	No
FG	<i>Lepidium bonariense</i>	Argentine Peppercross	E	No	No	No
GG	<i>Lolium rigidum</i>	Wimmera Ryegrass	E	No	No	No
SG	<i>Lycium ferocissimum</i>	African Boxthorn	E	Yes	Yes	Yes
FG	<i>Lysimachia arvensis</i>	Scarlet Pimpernel, Blue Pimpernel	E	No	No	No

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
FG	<i>Medicago laciniata</i>	Cut-Leaved Medic	E	No	No	No
FG	<i>Medicago polymorpha</i>	Burr Medic	E	No	No	No
GG	<i>Paspalum dilatatum</i>	Paspalum	E	Yes	No	No
GG	<i>Phalaris paradoxa</i>	Paradoxa Grass	E	No	No	No
FG	<i>Polygonum arenastrum</i>	Wireweed	E	No	No	No
FG	<i>Raphanus raphanistrum</i>	Wild Radish	E	No	No	No
FG	<i>Rumex crispus</i>	Curled Dock	E	No	No	No
FG	<i>Salvia reflexa</i>	Mintweed	E	No	No	No
FG	<i>Sida rhombifolia</i>	Paddy's Lucerne	E	No	No	No
FG	<i>Silybum marianum</i>	Variegated Thistle	E	No	No	No
FG	<i>Sisymbrium erysimoides</i>	Smooth Mustard	E	No	No	No
FG	<i>Sisymbrium irio</i>	London Rocket	E	No	No	No
FG	<i>Sisymbrium orientale</i>	Indian Hedge Mustard	E	No	No	No
FG	<i>Solanum nigrum</i>	Black-Berry Nightshade	E	No	No	No
FG	<i>Soliva stolonifera</i>	Carpet Burweed	E	No	No	No
FG	<i>Sonchus asper</i>	Prickly Sowthistle	E	No	No	No
FG	<i>Sonchus oleraceus</i>	Common Sowthistle	E	No	No	No
FG	<i>Trifolium angustifolium</i>	Narrow-Leaved Clover	E	No	No	No
FG	<i>Trifolium arvense</i>	Haresfoot Clover	E	No	No	No
FG	<i>Trifolium glomeratum</i>	Clustered Clover	E	No	No	No
GG	<i>Triticum aestivum</i>	Common Wheat	E	No	No	No
FG	<i>Verbena bonariensis</i>	Purpletop	E	No	No	No
FG	<i>Verbena officinalis</i>	Vervain	E	No	No	No
FG	<i>Vulpia bromoides</i>	Squirrel Tail Fescue	E	No	No	No

¹Growth form: FG = forb, GG = grass and grass-like, SG = shrub, TG = tree, EG = fern, OG = other. ²Status: N = native, E = exotic. ³High-threat exotic species (Yes/No). ⁴Weed of National Significance (Yes/No). ⁵Priority weed for the Central West (Yes/No).

BAM Data Sheets

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU09	Zone ID	Non-native
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	192	
Easting	628197	Northing	6449885	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Non-native		
Plant Community Type	0	Condition state	Non-native

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	2
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0.2
	Ferns	0
	Other	0
High threat weed cover	0	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		
>80	0	Notes on function attributes:
50 - 79	0	Stem size class records # large trees (cf. benchmark)
30 - 49	-	Record stems for living trees only, and for all species
20 - 29	-	For multistemmed trees, record only the largest stem
10 - 19	-	Presence of <5cm stems records regeneration
5 - 9	-	Record # trees with hollows, not number of hollows
< 5	-	Count as one stem where tree is multistemmed
# Trees with hollows		Hollow bearing stem may be a dead stem (incl. stag)
<20cm		Total #
>20cm**		0
Length of logs		Total (m)
		0

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	1	1	2	1	5	2
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

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

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU12	Zone ID	Non-native
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	77	
Easting	626259	Northing	6448537	Record magnetic bearing along midline from 0 m point		
Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot						
IBRA region	Brigalow Belt South					
Subregion	Pilliga					
Likely Vegetation Class	Non-native					
Plant Community Type	0	Condition state	Non-native			

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0
	Ferns	0
	Other	0
High threat weed cover	0	

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		
>80	0	Notes on function attributes:
50 - 79	0	Stem size class records # large trees (cf. benchmark)
30 - 49	-	Record stems for living trees only, and for all species
20 - 29	-	For multitemmed trees, record only the largest stem
10 - 19	-	Presence of <5cm stems records regeneration
5 - 9	-	Record # trees with hollows, not number of hollows
< 5	-	Count as one stem where tree is multitemmed
		Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		0

*These values summarise the floristic data for input into BAM calculator

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	1	0	2	1	1	1
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

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

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	24/02/2023	Survey Name	Burroway Solar Power Station		
Recorders	David Orchard (DO)	Plot ID #	BUX01	Zone ID	55_Deriv.
Photo #		Plot dimensions	10 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	204
Easting	626359	Northing	6448882	Record magnetic bearing along midline from 0 m point	

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	North-west Floodplain Woodlands		
Plant Community Type	55	Condition state	Derived

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
10 x 40 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	2
	Shrubs	1
	Grasses etc	11
	Forbs	7
	Ferns	0
Cover (sum of cover of natives species)	Other	1
	Trees	0.2
	Shrubs	1
	Grasses etc	44.1
	Forbs	0.7
	Ferns	0
	Other	0.1
High threat weed cover	16	

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
10 x 50 m	10 x 100 m	
Tree stem DBH (cm) Notes on function attributes:		
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	-	For multistemmed trees, record only the largest stem
20 - 29	-	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		0

*These values summarise the floristic data for input into BAM calculator

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)		Litter cover is used for BAM, other attributes are useful for recording site condition in general					
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	5	10	10	5	1	6.2
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

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

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

Appendix D: Habitat Suitability Assessment

The habitat suitability of the subject land was assessed for all ecosystem credit species and species credit species generated by the BAM-C. Unless otherwise indicated, species background information has been sourced from OEH Threatened Biodiversity Profiles, available at <https://www.environment.nsw.gov.au/threatenedSpeciesApp/>.

Ecosystem Credit Species

*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

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		<p>Dusky Woodswallows are widespread in eastern, southern and south western 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 ground-cover 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.</p> <p>No records within 10 km but habitat (farmland with fringing woodland) appropriate for this species – assumed present.</p>
Aves	<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V,P,2	V	<p>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 (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i>, and <i>A. gymnathera</i>. Belah is also utilised and may be a critical food source for some populations. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.</p> <p>No records within 10 km but habitat broadly appropriate for this species (including presence of Belah) – assumed present.</p>
Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		<p>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. The Speckled Warbler lives in a wide range of <i>Eucalyptus</i>-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.</p> <p>No records within 10 km but habitat marginally suitable for this species, though suitable large remnants are scarce – assumed present.</p>

Aves	<i>Falco hypoleucos</i>	Grey Falcon	E1,P,2	V	<p>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.</p> <p>No records within 10 km and the site exceeds the 500 mm rainfall threshold, suggesting that the species is likely to be absent; however, no specific constraints identified in the TBDC – assumed present.</p>
Aves	<i>Falco subniger</i>	Black Falcon	V, P		<p>The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. 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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>
Aves	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V,P,3		<p>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.</p> <p>No records within 10 km, no records within 10 km, and the site exceeds the 500 mm rainfall threshold, suggesting that the species is likely to be absent; however, no specific constraints identified in the TBDC – assumed present.</p>
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	<p>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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>
Aves	<i>Lathamus discolor</i>	Swift Parrot	E1,P	CE	<p>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</p>

					<p>to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i>, Spotted Gum <i>Corymbia maculata</i>, Red Bloodwood <i>C. gummifera</i>, Mugga Ironbark <i>E. sideroxylon</i>, and White Box <i>E. albens</i>. Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i>, Grey Box <i>E. moluccana</i> and Blackbutt <i>E. pilularis</i>. Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum <i>Eucalyptus globulus</i>.</p> <p>No records within 10 km and no favoured feed trees present but habitat may see some limited use by this species – assumed present.</p>
Aves	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (foraging)	V,P,2	E	<p>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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present for foraging.</p>
Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P	E	<p>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 <i>cucullata</i>) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies <i>picata</i>. 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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>
Aves	<i>Polytelis swainsonii</i>	Superb Parrot (foraging)	V,P,3	V	<p>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</p>

					<p>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. 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 South West 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.</p> <p>Two records within 10 km and habitat broadly appropriate for this species – assumed present (foraging).</p>
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		<p>The eastern subspecies (<i>temporalis</i>) occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east 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.</p> <p>Five records within 10 km and habitat broadly appropriate for this species – assumed present.</p>
Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P	V	<p>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 South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. 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 <i>Eucalyptus pauciflora</i> Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (foraging)	V,P	C	<p>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</p>

					<p>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 sea-shore, 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. 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.</p> <p>Habitat lacks key requirements for this species (namely, presence of substantial watercourses or waterbodies within 1 km) – absent (constraint).</p>
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		<p>Large Bent-winged 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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	<p>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.</p> <p>No records within 10 km but habitat broadly appropriate for this species – assumed present.</p>

Species credit species

V = Vulnerable, E = Endangered, CE = Critically Endangered

Scientific Name	Common Name	NSW status	Comm. status	Habitat Assessment	Species presence
<i>Ardeotis australis</i>	Australian Bustard	E		This species could not be eliminated on the grounds of habitat or geographical constraints. Targeted surveys were carried out for this species during the appropriate time of year. No individuals of this species were detected.	Absent (surveyed)
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P,2	V	This species could be eliminated on the grounds of habitat or geographical constraints (absence of hollow-bearing trees).	Absent (habitat constraints)
<i>Dichanthium setosum</i>	Bluegrass	V	V	This species could not be eliminated on the grounds of habitat or geographical constraints. Targeted surveys were carried out for this species during the appropriate time of year. No individuals of this species were detected.	Absent (surveyed)
<i>Digitaria porrecta</i>	Finger Panic Grass	E1		This species could not be eliminated on the grounds of habitat or geographical constraints. Targeted surveys were carried out for this species during the appropriate time of year. No individuals of this species were detected.	Absent (surveyed)
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	C	This species could be eliminated on the grounds of habitat or geographical constraints (no vegetation within 1 km of a suitable watercourse or waterbody).	Absent (habitat constraints)
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V,P,3		This species could be eliminated on the grounds of habitat or geographical constraints (no riparian woodland within 40 m of an inland watercourse or waterbody).	Absent (habitat constraints)
<i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	This species could be eliminated on the grounds of habitat or geographical constraints (subject land is not included in important habitat mapping).	Absent (habitat constraints)
<i>Lepidium aschersonii</i>	Spiny Peppergrass	V	V	This species could not be eliminated on the grounds of habitat or geographical constraints. Targeted surveys were carried out for this species during the appropriate time of year. No individuals of this species were detected.	Absent (surveyed)
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V,P,2	E	This species could be eliminated on the grounds of habitat or geographical constraints (absence of hollow-bearing trees).	Absent (habitat constraints)
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		This species could be eliminated on the grounds of habitat or geographical constraints (absence of caves, tunnels, mines, culverts and similar structures).	Absent (habitat constraints)

<i>Phascolarctos cinereus</i>	Koala (breeding)	V	V	This species could not be eliminated on the grounds of habitat or geographical constraints, and no targeted surveys were conducted.	Assumed present
<i>Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	This species could be eliminated on the grounds of habitat or geographical constraints (absence of hollow-bearing trees).	Absent (habitat constraints)
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	This species could be eliminated on the grounds of habitat or geographical constraints (absence of breeding camps).	Absent (habitat constraints)
<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	This species could not be eliminated on the grounds of habitat or geographical constraints, and no targeted surveys could be conducted within the appropriate timeframe.	Assumed present

Appendix E: EPBC Act Habitat Assessment and Matters of National Environmental Significance

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 policy *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DoE, 2013) forms the basis of determining if impact to protected matters is significant.

The EPBC Act protected matters search has identified four wetlands of international importance, six TECs, 41 threatened species, nine migratory species and 16 marine species that could possibly occur in the 10 km search area (**Appendix A**).

The following tables give an overview of the assessments of these threatened entities and shows that the proposed activity:

1. Is not likely to have a significant impact on a matter of national environmental significance. The matters of national environmental significance are:
 - i. World heritage properties.
 - ii. National heritage places.
 - iii. Wetlands of international importance.
 - iv. Threatened species and ecological communities.
 - v. Migratory species.
 - vi. Commonwealth marine areas.
 - vii. The Great Barrier Reef Marine Park. and;
 - viii. Nuclear actions (including uranium mines).
 - ix. A water resource, in relation to coal seam gas development and large coal mining development.
2. Is not likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

Notes:

Important Population as determined by the *Environment Protection and Biodiversity Conservation Act 1999*, is one that for a vulnerable species:

- a) is likely to be key source populations either for breeding or dispersal
- b) is likely to be necessary for maintaining genetic diversity
- c) is at or near the limit of the species range.

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

Wetlands of International Importance

Name	Proximity	Assessment of significance required (Yes / No)
Banrock station wetland complex	700 – 800 km upstream	No, the proposal does not occur close to the wetland.
Riverland	700 – 800 km upstream	No, the proposal does not occur close to the wetland.
The Coorong, and Lakes Alexandrina and Albert Wetland	900 – 1000 km upstream	No, the proposal does not occur close to the wetland.
The Macquarie Marshes	100 – 150 km upstream	No, the proposal does not occur close to the wetland.

EPBC-Listed Threatened Ecological Communities

Name	Status	Assessment of significance required (Yes / No)
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	No, this community does not occur within the subject land.
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	No, this community does not occur within the subject land.
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	No, this community does not occur within the subject land.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	No, this community does not occur within the subject land.
Weeping Myall Woodlands	Endangered	No, this community does not occur within the subject land.

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
THREATENED BIRDS					
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	0	<p>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. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important. For example, the Lower Hunter Spotted Gum forests have recently been demonstrated to support regular breeding events. Flowering of associated species such as Thin-leaved Stringybark <i>Eucalyptus eugenoides</i> and other Stringybark species, and Broad-leaved Ironbark <i>E. fibrosa</i> can also contribute important nectar flows at times. Nectar and fruit from the mistletoes <i>Amyema miquelii</i>, <i>A. pendula</i> and <i>A. cabbagei</i> are also utilised. When nectar is scarce lerp and honeydew can comprise a large proportion of the diet. Insects make up about 15% of the total diet and are important components of the diet of nestlings. Colour-banding of Regent Honeyeater has shown that the species can undertake large-scale nomadic movements in the order of hundreds of kilometres. It is likely that movements are dependent on spatial and temporal flowering and other resource patterns. There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Also nest in mistletoe haustoria.</p> <p>Low – Subject land is within the known distribution of the species. However, there are no associated vegetation communities present or records from within 10 km.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Aphelocephala leucopsis</i>	Southern Whiteface	V	0	<p>The southern whiteface is typically inhabits arid open woodlands with a shrubby or grassy understory, as well as grass plains throughout much of southern Australia. It prefers <i>Acacia</i> woodlands, particularly those dominated by mulga and drought-resistant chenopod shrub species, including saltbush and bluebush.</p> <p>Low – Subject land is within the known distribution of the species. However, vegetation communities within the site are a poor match for the known preferences of the species and there area no records within 10 km.</p>	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	0	<p>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 (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. 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.</p> <p>Absent - No appropriate marsh habitat present.</p>	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE,C,J,K	0	<p>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 also 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.</p> <p>Absent - No appropriate wetland habitat present.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	V	0	<p>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 (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i>, and <i>A. gymnanthera</i>. 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.</p> <p>Low – Subject land is within the known distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	V	9	<p>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 <i>Climacteris picumnus victoriae</i> 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 <i>Climacteris picumnus picumnus</i> 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 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.</p> <p>Moderate – Subject land falls within the mapped distribution of the western (non-threatened) subspecies; however, nine records of the threatened subspecies occur within 10 km. No</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				associated vegetation communities are present.	
<i>Falco hypoleucos</i>	Grey Falcon	V	0	<p>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. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Grantiella picta</i>	Painted Honeyeater	V	0	<p>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 (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests.</p> <p>Moderate - Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Hirundapus caudacutus</i>	White-throated Needletail	V	0	<p>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.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Lathamus discolor</i>	Swift Parrot	CE	0	<p>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 south west slopes. Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i>, Spotted Gum <i>Corymbia maculata</i>, Red Bloodwood <i>C. gummifera</i>, Mugga Ironbark <i>E. sideroxylon</i>, and White Box <i>E. albens</i>. Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i>, Grey Box <i>E. moluccana</i> and Blackbutt <i>E. pilularis</i>. Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum <i>Eucalyptus globulus</i>.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Leipoa ocellata</i>	Malleefowl	V	0	<p>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. The population in central NSW has been significantly reduced through land clearance and fox predation and now occurs chiefly in Yathong, Nombinnie and Round Hill NRs and surrounding areas, though birds continue to survive in Loughnan NR. 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.</p> <p>Low – Subject land is within the known distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
<i>Lophochroa leadbeateri leadbeateri</i>	Major Mitchell's Cockatoo	E	0	<p>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.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	E	0	<p>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 <i>cucullata</i>) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies <i>picata</i>. 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.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Neophema chrysostoma</i>	Blue-winged Parrot	V	0	<p>The main populations of Blue-winged Parrots are in Tasmania and Victoria, particularly in southern Victoria and the midlands and eastern areas of Tasmania. Sparser populations are found in western New South Wales and eastern South Australia, extending to south-west Queensland and occasionally into the Northern Territory. The species is a partial migrant, with variable numbers of birds migrating across the Bass Strait in winter.</p> <p>Low – Subject land is within the known distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Pedionomus torquatus</i>	Plains-wanderer	CE	0	<p>The core distribution of the Plains-wanderer in NSW is in south-western NSW, with the important habitat mapping confined to an area mainly south of the Murrumbidgee River between Narrandera, Deniliquin and Hay. A small area north of the river, confined to the Hay-Gunbar-Carrathool area, has also been mapped as important habitat. The species is associated with semi-arid grasslands on red-brown soils, in habitat comprising roughly 50% bare ground, 10% litter, and 40% small herbaceous plants (typically <5 cm high, with some larger vegetation for concealment). Denser grasslands are only likely to be suitable in drought years.</p> <p>Low – Subject land is outside the known or predicted distribution in NSW, there are no associated vegetation communities present, and the nearest record (dating from 1984) is more than 120 km from the site.</p>	No
<i>Polytelis swainsonii</i>	Superb Parrot	V	2	<p>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.</p> <p>High – Subject land is within the known distribution of the species, an associated vegetation community (PCT 55) is present, and there are two records within 10 km.</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Rostratula australis</i>	Australian Painted Snipe	E	0	<p>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, 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.</p> <p>Absent - No appropriate wetland habitat present.</p>	No
<i>Stagonopleura guttata</i>	Diamond Firetail	V	0	<p>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 South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. 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.</p> <p>Moderate – Subject land is within the known distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
FISH					
<i>Bidyanus bidyanus</i>	Silver Perch	CE	0	<p>Silver perch are endemic to the Murray-Darling system (including all states and sub-basins). Hatchery-bred silver perch are also stocked out of their range in a number of impoundments on east coast river systems, where they seemingly fail to reproduce. However, a self-sustaining population of silver perch occurs in Cataract Dam in the</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				<p>Hawkesbury-Nepean system.</p> <p>Silver perch formerly utilised a diversity of habitats within the Murray-Darling system. Silver perch are commonly described as a lowland species that are not found in the cooler upper reaches of rivers. However, numerous reliable accounts exist of silver perch penetrating to Cooma (~ 800 metres ASL) on the Murrumbidgee River in large-scale upstream migrations in summer in the early and mid 1900s.</p> <p>Silver perch are consistently reported by anglers and researchers to show a general preference for faster-flowing water, including rapids and races, and more open sections of river, throughout the Murray-Darling Basin. In the upper Murrumbidgee River during the 1960s and 1970s, the species was renowned for migrating into clear fast-flowing rapids in summer.</p> <p>Absent – No suitable aquatic habitat present.</p>	
<i>Macquaria macquariensis</i>	Trout Cod	E	0	<p>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.</p> <p>Absent – No suitable aquatic habitat present.</p>	No
<i>Maccullochella peelii</i>	Murray Cod	V	2	<p>The Murray Cod is the largest freshwater fish in Australia. The species has been measured at up to 1.8 m in length. The Murray Cod was historically distributed throughout the Murray-Darling Basin, with the exception of the upper reaches of some tributaries. The Murray Cod utilises a diverse range of habitats from clear rocky streams, to slow-flowing, turbid lowland rivers and billabongs (McDowall 1996).</p> <p>Murray Cod are frequently found in the main channels of rivers and larger tributaries. Juveniles have been found in main river channels where it appears they settle at a late larval stage (National Murray Cod Recovery Team 2010).</p> <p>Preferred microhabitat consists of complex structural features in streams such as large rocks, snags (pieces of large submerged</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				woody debris), overhanging stream banks and vegetation, tree stumps, logs, branches and other woody structures. Absent – No suitable aquatic habitat present.	
<i>Macquaria australasica</i>	Macquarie Perch	E	0	<p>The Macquarie Perch is a moderate-sized fish with an elongate-oval body which is laterally compressed. In the Murray-Darling Basin the species varies from almost black or dark silvery grey to bluish grey or green-brown above, paler to off-white below, often with a yellowish tinge.</p> <p>Macquarie Perch have declined considerably from their historical distribution within NSW and they are now considered isolated to the upper reaches of the Lachlan and Murrumbidgee Rivers in southern NSW (Ingram et al. 1990). It is also found in low numbers in the Mongarlowe River (Lintermans 2008). Other populations exist in Cataract Dam in the Nepean River catchment, as well as a 2008 record from Georges River near Campbelltown, the first record from the river since 1894 (NSW DPI 2008a). It persists in the Burrinjuck, Cotter (Murrumbidgee) and Wyangala impoundments (McDowall 1996). A breeding population in the Queanbeyan River upstream of the Googong Reservoir exists solely due to a translocation of individuals from the reservoir past a natural barrier (Lintermans 2006). The Googong reservoir population is believed to be effectively extinct. Macquarie perch may occasionally become displaced downstream from the Queanbeyan River into Googong, but they do not form a population in the reservoir (Lintermans pers comm 2009). Hawkesbury and Shoalhaven River populations, seem abundant. Records have also been made in the Dharawal State Conservation Area, the Metropolitan Special Area and in adjacent areas around Appin (Bio-Analysis Pty Ltd 2009).</p> <p>The Macquarie Perch is a riverine, schooling species. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks (Cadwallader & Eden 1979). Spawning occurs just above riffles (shallow running water). Populations may survive in impoundments if able to access suitable spawning sites (Wager & Jackson 1993).</p> <p>Absent – No suitable aquatic habitat present.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
FROGS					
<i>Crinia sloanei</i>	Sloane's Froglet	E	0	<p>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 inundated areas in grassland, woodland and disturbed habitats.</p> <p>Low – Subject land is within the predicted geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
MAMMALS					
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	0	<p>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 North West 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 (<i>Petrochelidon ariel</i>), 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.</p> <p>Low – Subject land is within the known geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	E	0	<p>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,</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				<p>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.</p> <p>Low – Subject land is within the known geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V	0	<p>Overall, the distribution of the south eastern 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, bullock <i>Allocasuarina luehmannii</i> and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.</p> <p>Moderate – Subject land is within the known geographic distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Phascolarctos cinereus</i>	Koala	E	0	<p>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.</p> <p>Moderate – Subject land is within the known geographic distribution of the species and an associated vegetation community (PCT 55) is present. Zone 55_Derived contains small numbers of known Koala use trees, though, in the derived community, these consisted of small, immature regrowth individuals. There are no records within 10 km.</p>	Yes
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	0	<p>Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to</p>	Yes

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				<p>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. 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 <i>Eucalyptus</i>, <i>Melaleuca</i> and <i>Banksia</i>, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.</p> <p>Moderate – Subject land is within the known geographic distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	
PLANTS					
<i>Androcalva procumbens</i> Synonym: <i>Commersonia procumbens</i>		V	1	<p>Endemic to NSW, mainly confined to the Dubbo-Mendooran-Gilgandra region, but also in the Pilliga and Nymagee areas. Recent collections made from the Upper Hunter region, and additional populations found in Goonoo SCA in response to the 2007 fires. Grows in sandy sites, often along roadsides. Recorded in <i>Eucalyptus dealbata</i> and <i>Eucalyptus sideroxylon</i> communities, <i>Melaleuca uncinata</i> scrub, under mallee eucalypts with a <i>Calytrix tetragona</i> understorey, and in a recently burnt Ironbark and <i>Callitris</i> area. Also in <i>Eucalyptus fibrosa</i> subsp. <i>nubila</i>, <i>Eucalyptus dealbata</i>, <i>Eucalyptus albens</i> and <i>Callitris glaucophylla</i> woodlands north of Dubbo.</p> <p>Absent (surveyed) – Targeted flora surveys in February, during the survey window for this species, failed to detect any individuals within the site.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Lepidium aschersonii</i>	Spiny Peppercross	V	0	<p>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 area in the south of the State. The Spiny Peppercross 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.</p> <p>Absent (surveyed) – Targeted flora surveys in February, during the survey window for this species, failed to detect any individuals within the site.</p>	No
<i>Lepidium monolocoides</i>	Winged Peppercross	E	0	<p>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.</p> <p>Low – Subject land is marginally outside the known and predicted distribution of the species, there are no associated vegetation communities present, and no records within 10 km.</p>	No
<i>Prasophyllum</i> sp. Wybong		CE	0	<p>Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. A perennial orchid, appearing as a single leaf over winter and spring. Flowers in spring and dies back to a dormant tuber over summer and autumn. Known to occur in open eucalypt woodland and grassland.</p> <p>Low – Subject land is within the predicted geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Swainsona murrayana</i>	Slender Darling Pea	V	0	<p>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.</p> <p>Moderate – Subject land is within the known geographic distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Thesium australe</i>	Austral Toadflax	V	0	<p>Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.</p> <p>Low – Subject land is within the known geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
<i>Tylophora linearis</i> Synonym: <i>Vincetoxicum forsteri</i>		E	1	<p>Occurs from southern Queensland into central NSW, as far south near Temora with the majority of records occurring in the central western region. Records from Goonoo, Pillaga West, Pillaga 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.</p> <p>Absent (surveyed) – Targeted flora surveys in February, during the survey window for this species, failed to detect any individuals within the site.</p>	No
REPTILES					

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Anomalopus mackayi</i>	Five-clawed Worm-skink	V	0	<p>Five-clawed Worm-skink has a patchy distribution on the North West Slopes and Plains of north-east NSW and south-east Queensland, from the Ashford area west to Mungindi and Walgett in NSW and north to Dalby in Queensland. Close to or on the lower slopes of slight rises in grassy White Box woodland on moist black soils, and River Red Gum-Coolibah-Bimble Box woodland on deep cracking loose clay soils. May also occur in grassland areas and open paddocks with scattered trees. Live in permanent deep tunnel-like burrows and deep soil cracks, coming close to the surface under fallen timber and litter, especially partially buried logs.</p> <p>Low – Subject land is not within the known geographic distribution of the species, there are no associated vegetation communities present, and no records within 10 km.</p>	No
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V	0	<p>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 groundlayers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>).</p> <p>Low – Subject land is within the predicted geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
<i>Hemiaspis damelii</i>	Grey Snake	E	0	<p><i>Hemiaspis damelii</i> is a relatively small snake, on average reaching around 50 cm in length. Records of the grey snake are mostly in south-eastern Queensland and north-central NSW, however populations have also been found in south-western NSW. They tend to favour dry sclerophyll forests and woodlands on clay soils where water bodies or gullies are present. They shelter under rocks, logs and other debris, as well as soil cracks.</p> <p>Low – Subject land is not within the known geographic distribution of the species, there are no associated vegetation communities present, and no records within 10 km.</p>	No
MIGRATORY SPECIES					

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Migratory Marine Birds					
<i>Apus pacificus</i>	Fork-tailed Swift	C,J,K	0	<p>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.</p> <p>Low – Subject land is within the known geographic distribution of the species. However, there are no associated vegetation communities present or records within 10 km.</p>	No
Migratory Terrestrial Species					
<i>Hirundapus caudacutus</i>	White-throated Needletail	V	0	<p>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.</p> <p>Moderate – Subject land is within the known geographic distribution of the species and an associated vegetation community (PCT 55) is present. However, there are no records within 10 km.</p>	Yes
<i>Motacilla flava</i>	Yellow Wagtail	M	0	<p>Widespread wagtail, favoring 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</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				<p>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 gray overall; in central and southwest Europe head blue-gray 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 species presence outside of northern Europe.</p> <p>Low – Subject land is not within the known geographic distribution of the species, there are no associated vegetation communities present, and no records within 10 km.</p>	
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	M	0	<p>The Satin Flycatcher is found along the east coast of Australia from far northern Queensland to Tasmania, including south-eastern South Australia. It is also found in New Guinea. The Satin Flycatcher is not a commonly seen species, especially in the far south of its range, where it is a summer breeding migrant. The Satin Flycatcher is found in tall forests, preferring wetter habitats such as heavily forested gullies, but not rainforests. The Satin Flycatcher takes insects on the wing, foraging actively from perches in the mid to upper canopy. After the breeding season, it may forage in loose groups, usually of adults and their newly-fledged young, in drier, more open forests. The Satin Flycatcher nests in loose colonies of two to five pairs nesting at intervals of about 20 m - 50 m apart. It builds a broad-based, cup-shaped nest of shredded bark and grass, coated with spider webs and decorated with lichen. The nest is placed on a bare, horizontal branch, with overhanging foliage, about 3 m - 25 m above the ground. Both sexes build the nest, incubate the eggs and feed the young. Nests may be parasitised by the Brush Cuckoo and, sometimes, the Pallid Cuckoo, Horsfield's Bronze-Cuckoo or the Golden Bronze-Cuckoo.</p> <p>Low – Subject land is narrowly within the known geographic distribution of the species. However, the site lacks the preferred habitat for this species and there are no records within 10 km.</p>	No
Migratory Wetlands Species					
<i>Actitis hypoleucos</i>	Common Sandpiper	C,J,K	0	<p>Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				<p>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.</p> <p>Absent - No appropriate wetland habitat present.</p>	
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	C,J,K	0	<p>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.</p> <p>Absent - No appropriate wetland habitat present.</p>	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE,C,J,K	0	<p>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 also 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 also 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</p>	No

Scientific Name	Common Name	+Comm. Status	BioNet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
				with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. Absent - No appropriate wetland habitat present.	
<i>Calidris melanotos</i>	Pectoral Sandpiper	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 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. Absent - No appropriate wetland habitat present.	No
<i>Gallinago hardwickii</i>	Latham's Snipe	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 Wales. Absent - No appropriate wetland habitat present.	No

*NSW Status: ^=Sensitive species: location of records generalised, P=Protected, V=Vulnerable, E1=Endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.

+ Comm. Status: V=Vulnerable, E=Endangered, CE=Critically Endangered, C=CAMBA, J=JAMBA, K=ROKAMBA, M=Migratory.

EPBC Act-listed Critically Endangered and Endangered Species

Swift Parrot (<i>Lathamus discolor</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species. This species only breeds in Tasmania, and no favoured forage trees will be impacted by this proposal. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, it is highly unlikely that this proposal would lead to the long-term decrease of any population of this species.
Reduce the area of occupancy of the species	As indicated above it is unlikely that an established population occupies the site. The current area of occupancy will not likely be significantly reduced.
Fragment an existing population into two or more populations	The proposal would result in a gap of c. 50 m within the roadside vegetation, in an area currently largely occupied by derived grassland. This is unlikely to significantly impact a highly mobile species such as this.
Adversely affect habitat critical to the survival of a species	Considering the above, the habitat within the subject land is unlikely critical habitat for the species. Furthermore, suitable habitat within the subject land consists of a thin strip (approximately 50 m x 18 m) of degraded roadside vegetation. The site is more than 118 km from the nearest location included in the important habitat mapping for the species produced at state level under the auspices of the BAM.
Disrupt the breeding cycle of a population	Since no population is known or believed to occur within the area, this proposal will not disrupt the breeding cycle for any population of this species. No hollow-bearing trees or other required habitat features would be impacted by the proposal.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation of foraging habitat for this species, as previously discussed. Any reduction or fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a species becoming established in the species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species	Clearing of woodlands, heavy grazing of feeding areas resulting in the removal of seeding grasses and preventing regeneration of food plants, loss of existing and future hollow-bearing trees, and illegal nest-robbing and trapping are the main threats to this species. Although this proposal will exacerbate clearing of up to 0.11 ha of marginally suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Major Mitchell's Cockatoo (<i>Lophochroa leadbeateri</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species. No hollow bearing trees will be impacted. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, it is highly unlikely that this proposal would lead to the long-term decrease of any population of this species.
Reduce the area of occupancy of the species	As indicated above it is unlikely that an established population exists at the site. The current area of occupancy will not likely be significantly reduced.
Fragment an existing population into two or more populations	The proposal would result in a gap of c. 50 m within the roadside vegetation, in an area currently largely occupied by derived grassland. This is unlikely to significantly impact a highly mobile species such as this.
Adversely affect habitat critical to the survival of a species	The habitat within the subject land is unlikely critical habitat for the species, as no individuals have been found within 10 km, and no hollow bearing trees occur. Furthermore, suitable habitat within the subject land consists of a thin strip (approximately 50 m × 18 m) of degraded roadside vegetation.
Disrupt the breeding cycle of a population	Since no population is known or believed to occur within the area, this proposal will not disrupt the breeding cycle for any population of this species. No hollow-bearing trees or other required habitat features would be impacted by the proposal.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation of foraging habitat for this species, as previously discussed. Any reduction or fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a species becoming established in the species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species	Clearing of woodlands, heavy grazing of feeding areas resulting in the removal of seeding grasses and preventing regeneration of food plants, loss of existing and future hollow-bearing trees, and illegal nest-robbing and trapping are the main threats to this species. Although this proposal will exacerbate the clearing of woodland, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Hooded Robin (south-eastern form, <i>Melanodryas cucullata cucullata</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, it is highly unlikely that this proposal would lead to the long-term decrease of any population of this species.
Reduce the area of occupancy of the species	As indicated above it is unlikely that an established population exists at the site. The current area of occupancy will not likely be significantly reduced.
Fragment an existing population into two or more populations	The proposal would result in a gap of c. 50 m within the roadside vegetation, in an area currently largely occupied by derived grassland. This is unlikely to significantly impact a mobile species such as this.
Adversely affect habitat critical to the survival of a species	The habitat within the subject land is unlikely critical habitat for the species, as no individuals have been found within 10 km. Furthermore, suitable habitat within the subject land consists of a thin strip (approximately 50 m x 18 m) of degraded roadside vegetation.
Disrupt the breeding cycle of a population	Since no population is known or believed to occur within the area, this proposal will not disrupt the breeding cycle for any population of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation of foraging habitat for this species, as previously discussed. Any reduction or fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a species becoming established in the species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species	Clearing of woodlands, resulting in loss and fragmentation of habitat; modification and destruction of ground habitat through heavy grazing and compaction by stock, removal of litter and fallen timber, introduction of exotic pasture grasses and frequent fire; aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners; reduction in resources due to drought; and disturbance and changes to vegetation structure due to forestry activities (e.g. fire and harvesting) are the main threats to this species. Although this proposal will exacerbate the clearing and fragmentation of woodland, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Koala (<i>Phascolarctos cinereus</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a specific priority management area for the species, the species was not detected during the field survey, and no records occur within 10 km. The proposal would impact a small number of Koala use trees – chiefly regrowth of Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>) and Belah (<i>Casuarina cristata</i>). However, considering the extremely small extent of the proposed impact and the scarcity of local records of the species, it is highly unlikely that this proposal would lead to the long-term decrease of any population of this species.
Reduce the area of occupancy of the species	As indicated above it is unlikely that an established population exists at the site. The current area of occupancy will not likely be significantly reduced.
Fragment an existing population into two or more populations	The proposal would result in a gap of c. 50 m within the roadside vegetation, in an area currently largely occupied by derived grassland. This is unlikely to significantly exacerbate the existing fragmentation for this species.
Adversely affect habitat critical to the survival of a species	The habitat within the subject land is unlikely critical habitat for the species, as no individuals have been found within 10 km, and only a small number of immature Koala feed trees will be impacted. Furthermore, suitable habitat within the subject land consists of a thin strip (approximately 50 m x 18 m) of degraded roadside vegetation.
Disrupt the breeding cycle of a population	Since no population is known or believed to occur within the area, this proposal will not disrupt the breeding cycle for any population of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation of foraging habitat for this species, as previously discussed. Any reduction or fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a species becoming established in the species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species	Loss, modification and fragmentation of habitat; vehicle strikes; predation by roaming or domestic dogs; intense prescribed burns or wildfires that scorch or burn the tree canopy; and disease are the main threats for this species. Although this proposal will exacerbate the modification and fragmentation of habitat, due to the clearing/modifying of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

EPBC Act-listed Vulnerable Species

Brown Treecreeper (south-eastern subspecies, <i>Climacteris picumnus victoriae</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The species is not known to make use of the vegetation community recorded within the disturbance footprint; consequently, this proposal would not impact any known habitat for this species. The subject land is not within a priority management area for the species, nor is it at the edge of the species' distribution. The species was not recorded during the field survey and all nine records (from 2003 to 2014) within the 10 km search area are associated with riparian vegetation or with larger remnants. The closest record (from 2003) occurs c. 3.2 km from the subject land. In light of this, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	As indicated above, no important population of this species is likely to occur locally.
Fragment an existing important population into two or more populations	As indicated above, no important population of this species is likely to occur locally.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation of foraging habitat for this species, as previously discussed. Any reduction or fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Historical loss of woodland, forest and mallee habitats as a result of agriculture, forestry, mining and residential development; fragmentation of woodland and forest remnants which isolates populations and causes local extinctions; ongoing degradation of habitat, particularly the loss of tree hollows and fallen timber from firewood collection and overgrazing; and the lack of regeneration of eucalypt overstorey in woodland due to overgrazing and too-frequent fires are the main threats facing this species. Although this proposal will exacerbate the loss of woodland, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Grey Falcon (<i>Falco hypoleucos</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a Priority Management Area for this species. However, it is near the edge of the species' distribution. As such, if a population is present, it would be considered an important population. The species was not detected during the field survey and no records occur within 10 km. The subject land is also likely to be of at most marginal suitability for the species as it does not conform to the preference of the species for wooded watercourses and contains only a very small area of native grassland, likely to be unsuitable for foraging. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Identified threats to this species include grazing and clearing of habitat, secondary poisoning through pest control activities, and collecting of eggs. While the proposal will result in small-scale clearing of potential habitat, this is unlikely to interfere with the recovery of this species.
Conclusion	No significant impact

Painted Honeyeater (<i>Grantiella picta</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species identified at state level, nor is it at the edge of the species' distribution. Furthermore, the species was not detected during the field survey, no records occur within 10 km, and no impacts to the preferred food source of this species – mistletoes – are likely to result from the proposal. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Habitat clearance, disturbance and fragmentation; the removal of large trees with heavy mistletoe infestations; overgrazing of grassy woodlands; habitat incursion by exotic weeds; inappropriate fire regimes; and competition with larger, more aggressive honeyeaters are the main threats to this species. Although this proposal will exacerbate the clearing of vegetation, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

White-throated Needletail (<i>Hirundapus caudacutus</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species, nor is it at the edge of the species' distribution. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Vegetation clearing and windfarms are the main threats for this species. Although this proposal will exacerbate the clearing of vegetation, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Superb Parrot - <i>Polytelis swainsonii</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species, nor is it at the edge of the species' distribution. Furthermore, the species was not detected during the field survey and only two records (from 2003 and 2020) occur within 10 km. The closest record (from 2003) occurs c. 3.2 km from the subject land. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m x 18 m) of heavily modified roadside vegetation. The subject land is outside of the known breeding areas for this species. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Loss or degradation of habitat, loss of or competition for hollows, road kills, illegal collection of wild birds, psittacine beak and feather disease, and climate change are the main identified threats to this species. Some loss of habitat would result from this proposal. However, considering the small area (0.11 ha) of suitable habitat within the subject land, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Diamond Firetail (<i>Stagonopleura guttata</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not at the edge of the species' distribution. Priority sites have not been identified for this species; however, considering the small extent and heavily modified condition of the vegetation within the subject land, it is highly unlikely that the site supports a "key source population" for the species, as per the formal definition of an important population. The species was not detected during the field survey and no records occur within 10 km. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Clearing and fragmentation of woodland, open forest, grassland and mallee habitat for agriculture and residential development, and firewood collection; poor regeneration of open forest and woodland habitats; and the invasion of weeds, resulting in the loss of important food plants are the main threats facing this species. Although this proposal will exacerbate the clearing and fragmentation of woodland, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Corben's Long-eared Bat (<i>Nyctophilus corbeni</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species, nor is it at the edge of the species' distribution. There are no hollow bearing trees within the impact footprint. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m x 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Further, there are no hollow-bearing trees suitable for occupancy by this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Loss of tree hollows and habitat are the main threats for this species. The proposal will not impact hollow-bearing trees. Although the proposal will exacerbate the loss of habitat, due to the clearing of up to 0.11 ha of suitable habitat, this should not significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species; however, it is at or near the western limit of its distribution. The species was not detected during the field survey, the nearest recorded camp is located near Narromine (c. 16 km away), and no records occur within 10 km. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m × 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	As indicated above, no important population of this species is likely to occur locally. Surveys in October and February did not identify any evidence of this species making use of the site either for foraging or for breeding.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Loss of roosting and foraging sites; electrocution on powerlines; entanglement in netting and on barbed-wire; heat stress; and conflict with humans are the main threats to the species. The proposal will only impact possible marginal foraging habitat. Therefore, it is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Slender Darling Pea (<i>Swainsona murrayana</i>)	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The proposal would impact up to 0.11 ha of potential habitat for this species. The subject land is not within a priority management area for the species, nor is it at the edge of the species' distribution. Furthermore, the species was not detected during the field survey and no records occur within 10 km. Therefore, the subject land is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The subject land consists principally of cropped agricultural land. All native habitat is confined to a small patch (approximately 50 m x 18 m) of heavily modified roadside vegetation. Therefore, it is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.11 ha of potential habitat for the species. The proposal will not significantly exacerbate existing fragmentation for this species. Any reduction and fragmentation of available habitat is unlikely to cause the species to decline at a regional scale.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Interfere with the recovery of the species.	Heavy grazing; loss of grassland habitat to cultivation; and invasion of grassland habitat by weeds are the main threats to the species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region. Considering the degraded state of the subject land, the proposal is unlikely to directly interfere with the recovery of the species.
Conclusion	No significant impact

EPBC Act-listed Migratory Species

White-throated Needletail (<i>Hirundapus caudacutus</i>)	
Significant Impact Guideline	Assessment
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.	This species is widespread in eastern Australia, most often observed above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. No records occur within the 10 km search area. The subject land consists of cleared land with scattered paddock trees and a small patch of suitable habitat (approximately 50 m × 18 m), consisting chiefly of low- to moderate-condition roadside vegetation. As such, the proposal is unlikely to substantially modify, destroy or isolate any area of important habitat for this migratory species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species.	While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see Section 6.7).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species
Conclusion	No significant impact

Appendix F: BAM-C Outputs

Credit Summary Report



BAM Credit Summary Report

Proposal Details

Assessment Id 00036365/BAAS21028/23/00044069	Proposal Name Burroway Solar Farm SSD-55968733	BAM data last updated * 14/03/2024
Assessor Name David Orchard	Report Created 16/04/2024	BAM Data version * 67
Assessor Number BAAS21028	BAM Case Status Finalised	Date Finalised 16/04/2024
Assessment Revision 0	Assessment Type Part 4 Developments (Small Area)	BOS entry trigger BOS Threshold: Area clearing threshold

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

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

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

Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.											
1	55_Derived	Not a TEC	33.1	33.1	0.11	PCT Cleared - 83%	High Sensitivity to Gain			2.00	2
										Subtotal	2
										Total	2

Species credits for threatened species

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

Assessment Id
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Proposal Name
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Biodiversity Credit Report (Like-for-like)



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036365/BAAS21028/23/00044069	Burroway Solar Farm SSD-55968733	14/03/2024
Assessor Name	Assessor Number	BAM Data version *
David Orchard	BAAS21028	67
Proponent Names	Report Created	BAM Case Status
	16/04/2024	Finalised
Assessment Revision	Assessment Type	Date Finalised
0	Part 4 Developments (Small Area)	16/04/2024
BOS entry trigger	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BOS Threshold: Area clearing threshold		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Nil		

Additional Information for Approval

Assessment Id	Proposal Name	Page 1 of 4
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BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

Haliaeetus leucogaster / White-bellied Sea-Eagle

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Not a TEC	0.1	0	2	2

Assessment Id

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Proposal Name

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BAM Biodiversity Credit Report (Like for like)

55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	North-west Floodplain Woodlands This includes PCT's: 55	North-west Floodplain Woodlands >=70% and <90%	55_Derived	No	2	Pilliga, Bogan-Macquarie, Castlereagh-Barwon, Inland Slopes, Kerrabee, Liverpool Plains, Liverpool Range, Pilliga Outwash and Talbragar Valley. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

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BAM Biodiversity Credit Report (Like for like)

Assessment Id

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Proposal Name

Burroway Solar Farm SSD-55968733

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Biodiversity Credit Report (Variation Options)



BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id 00036365/BAAS21028/23/00044069	Proposal Name Burroway Solar Farm SSD-55968733	BAM data last updated * 14/03/2024
Assessor Name David Orchard	Assessor Number BAAS21028	BAM Data version * 67
Proponent Name(s)	Report Created 16/04/2024	BAM Case Status Finalised
Assessment Revision 0	Assessment Type Part 4 Developments (Small Area)	Date Finalised 16/04/2024
BOS entry trigger	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BOS Threshold: Area clearing threshold		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Nil		

Additional Information for Approval

PCT Outside Ibra Added
None added

PCTs With Customized Benchmarks

Assessment Id 00036365/BAAS21028/23/00044069	Proposal Name Burroway Solar Farm SSD-55968733	Page 1 of 3
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BAM Biodiversity Credit Report (Variations)

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Haliaeetus leucogaster / White-bellied Sea-Eagle

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Not a TEC	0.1	0	2	2.00

55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	North-west Floodplain Woodlands This includes PCT's: 55	North-west Floodplain Woodlands >=70% and <90%	55_Derived	No	2	Pilliga,Bogan-Macquarie, Castlereagh-Barwon, Inland Slopes, Kerrabee, Liverpool Plains, Liverpool Range, Pilliga Outwash and Talbragar Valley. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Variation options						
Formation	Trading group	Zone	HBT	Credits	IBRA region	

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BAM Biodiversity Credit Report (Variations)

	Semi-arid Woodlands (Grassy sub-formation)	Tier 2 or higher threat status	55_Derived	No	2	IBRA Region: Brigalow Belt South, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
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Species Credit Summary

No Species Credit Data

Credit Retirement Options Like-for-like options

Assessment Id
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Proposal Name
Burroway Solar Farm SSD-55968733

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Vegetation Zones Report



BAM Vegetation Zones Report

Proposal Details

Assessment Id 00036365/BAAS21028/23/00044069	Assessment name Burroway Solar Farm SSD-55968733	BAM data last updated * 14/03/2024
Assessor Name David Orchard	Report Created 16/04/2024	BAM Data version * 67
Assessor Number BAAS21028	Assessment Type Part 4 Developments (Small Area)	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 16/04/2024	BOS entry trigger BOS Threshold: Area clearing threshold

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

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
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Assessment Id 00036365/BAAS21028/23/00044069	Proposal Name Burroway Solar Farm SSD-55968733
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BAM Vegetation Zones Report

1	55_Derived	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Derived	0.11	1
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Assessment Id

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Proposal Name

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Candidate Species Report



BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036365/BAAS21028/23/00044069	Burroway Solar Farm SSD-55968733	14/03/2024
Assessor Name	Report Created	BAM Data version *
David Orchard	16/04/2024	67
Assessor Number	Assessment Type	BAM Case Status
BAAS21028	Part 4 Developments (Small Area)	Finalised
Assessment Revision	Date Finalised	BOS entry trigger
0	16/04/2024	BOS Threshold: Area clearing threshold

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

List of Species Requiring Survey

Name	Presence	Survey Months
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Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Swift Parrot	Lathamus discolor	Habitat constraints

Assessment Id
00036365/BAAS21028/23/00044069

Proposal Name
Burroway Solar Farm SSD-55968733

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Predicted Species Report



BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036365/BAAS21028/23/00044069	Burroway Solar Farm SSD-55968733	14/03/2024
Assessor Name	Report Created	BAM Data version *
David Orchard	16/04/2024	67
Assessor Number	Assessment Type	BAM Case Status
BAAS21028	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
0	BOS Threshold: Area clearing threshold	16/04/2024

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

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

Common Name	Scientific Name	Vegetation Types(s)
Black Falcon	Falco subniger	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Black-breasted Buzzard	Hamirostra melanosternon	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Diamond Firetail	Stagonopleura guttata	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Dusky Woodswallow	Artamus cyanopterus cyanopterus	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Grey Falcon	Falco hypoleucos	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Grey-headed Flying-fox	Pteropus poliocephalus	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Large Bent-winged Bat	Miniopterus orianae oceanensis	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Pink Cockatoo	Lophochroa leadbeateri	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

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BAM Predicted Species Report

South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
South-eastern Hooded Robin	<i>Melanodryas cucullata cucullata</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Speckled Warbler	<i>Chthonicola sagittata</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Superb Parrot	<i>Polytelis swainsonii</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
Swift Parrot	<i>Lathamus discolor</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
White-throated Needletail	<i>Hirundapus caudacutus</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

Threatened species Manually Added

None added

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

Common Name	Scientific Name	Plant Community Type(s)
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.

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

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Refer to BAR