



BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

TRANSGRID SUBSTATION CONNECTION - DARLINGTON POINT

MURRUMBIDGEE COUNCIL - LOCAL GOVERNMENT AREA

JULY 2022

Report prepared by
OzArk Environment & Heritage
for Edify Energy

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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.

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Signed	
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Executive summary

Edify Energy (the proponent) proposes to develop new cable routes from the new Riverina Battery Energy Storage System (BESS) to the existing TransGrid Darlington Point Substation at Darlington Point, New South Wales as well as establish temporary construction areas for laydowns, stockpiles and a compound within the substation (the proposal). OzArk Environment & Heritage (OzArk) was engaged by Edify Energy to prepare the biodiversity assessment for the proposal. The proposal will clear up to 0.92 ha of native vegetation on Lot 2 DP628785, surrounding the TransGrid Darlington Point Substation. The native vegetation clearing threshold for the relevant lot is 1 ha; as such, the proposal in itself would not ordinarily trigger entry into the NSW Biodiversity Offsets Scheme (BOS). However, as the proposal is part of a larger action (the Darlington Point Solar Farm development, SSD-8392), the BOS has already been triggered and therefore a Biodiversity Development Assessment Report (BDAR) is required. 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 (number of ecosystem and species credits).

The native vegetation present on the subject land consists of two Plant Community Types (PCTs):

- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion.
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion.

PCT 26 was confined to a small area (0.04 ha) with a single mature tree and diffuse patches of regrowth. This area was assigned to a single vegetation zone (26_Regrowth). PCT 26 is associated with the following Threatened Ecological Communities (TECs):

- *Biodiversity and Conservation Act 2016* (BC Act)-listed Endangered Ecological Community (EEC): *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions*.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)-listed EEC: *Weeping Myall Woodlands*.

The occurrence of PCT 26 fitted the criteria for listing under the BC Act, but not the EPBC Act, therefore 0.04 ha of the BC Act-listed EEC will be impacted by this proposal.

PCT 45 occupied the majority of the subject land (0.88 ha) and was recorded in three distinct condition classes (45_Remnant, 45_Slashed, and 45_Plantings).

PCT 45 is associated with the following TECs:

- BC Act-listed Critically Endangered Ecological Community (CEEC): *Artesian Springs Ecological Community in the Great Artesian Basin*.
- EPBC Act-listed CEEC: *Natural Grasslands of the Murray Valley Plains*.

The occurrence of PCT 45 on the subject land could be excluded from consideration as either CEEC.

In total, 23 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. Two species were removed from the list due to habitat constraints; therefore, 21 species are assumed present, generating a total of 28 Ecosystem Credits.

In total, 21 species credit species were generated by the BAM-C. After consideration of geographical and habitat constraints, nine species could be discounted due either to distribution or to the absence of features necessary for breeding. Twelve species credit species were not discounted due to constraints. Targeted surveys were conducted for two of these twelve species: the Australian Bustard (*Ardeotis australis*) and the Bindweed (*Convolvulus tedmoorei*) and neither species was detected; however, following revisions to the proposal footprint, *C. tedmoorei* was necessarily assumed present for a small area (0.40 ha) of unsurveyed habitat. The remaining ten species were assumed present for the entire subject land as it was not the appropriate time of year to conduct targeted surveys for them. Species credits for the species assumed present total 285 Species Credits.

The proponent intends to satisfy their Ecosystem and Species credit obligations by buying and retiring the necessary Ecosystem 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 Agriculture, Water and the Environment 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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1 Introduction

1.1 Background

Edify Energy (the proponent) proposes to develop new cable routes (**Figure 1-1**) from the new Riverina Battery Energy Storage System (BESS) to the existing TransGrid Darlington Point Substation at Darlington Point, New South Wales as well as establish temporary construction areas for laydowns, stockpiles and a compound within the substation (the proposal). The proposal occupies up to 1.13 ha of land (0.92 ha of native vegetation and 0.21 ha of non-native vegetation/gravel/bare ground) on Lot 2 DP628785 in the Murrumbidgee Council Local Government Area (LGA; **Figure 1-2** to **Figure 1-3**).

OzArk Environment & Heritage (OzArk) was engaged by Edify Energy to prepare the biodiversity assessment for the proposal. Although the proposal would not trigger the NSW Biodiversity Offsets Scheme (BOS) under the *NSW Biodiversity Conservation Act 2016* (BC Act) as a standalone project, the cumulative impacts of this proposal and the Darlington Point Solar Farm development (SSD-8932) that preceded it do trigger the BOS, 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 (number of ecosystem and species credits).

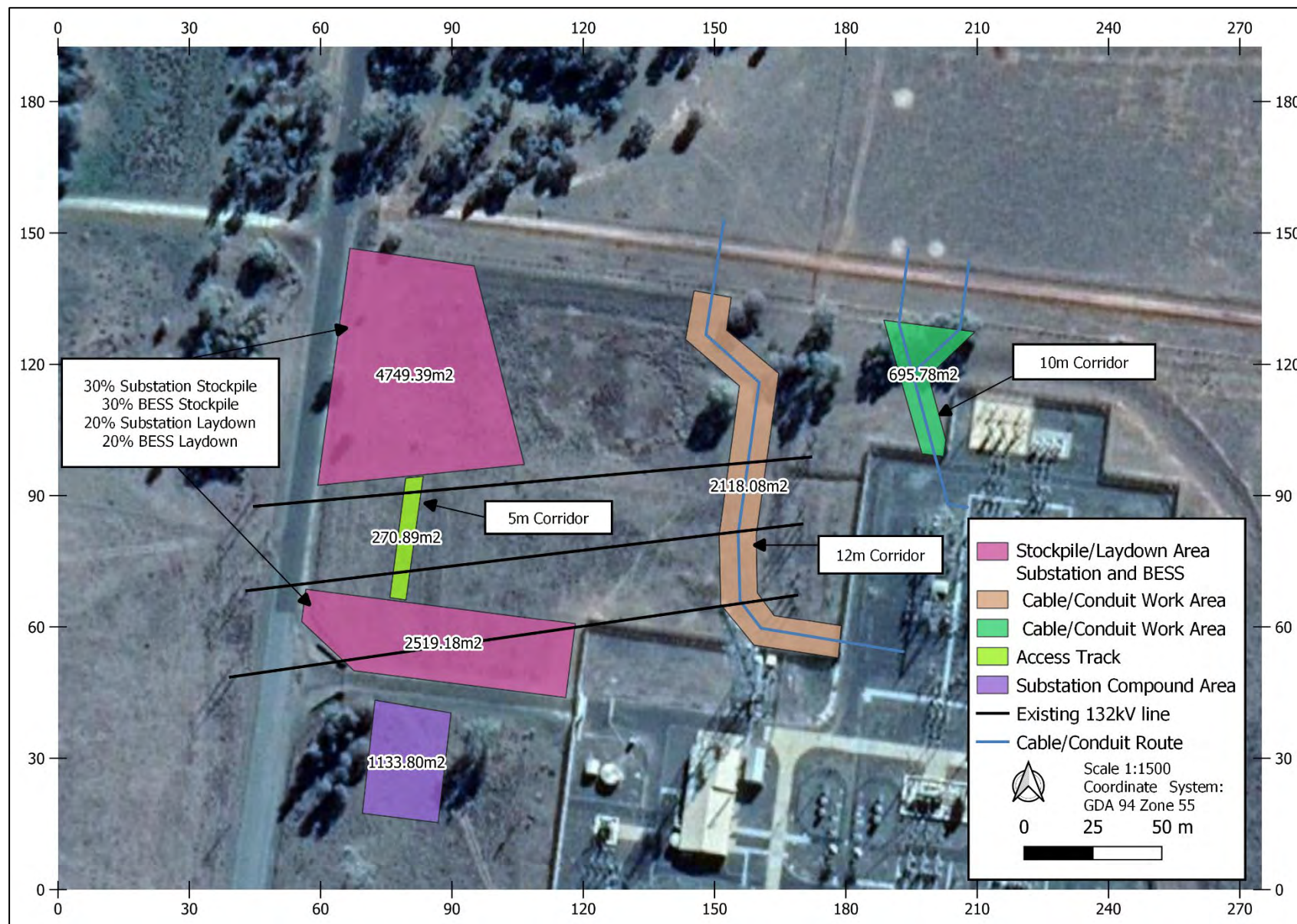


Figure 1-1. Site map of the subject land adjacent to the existing Darlington Point Substation.



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

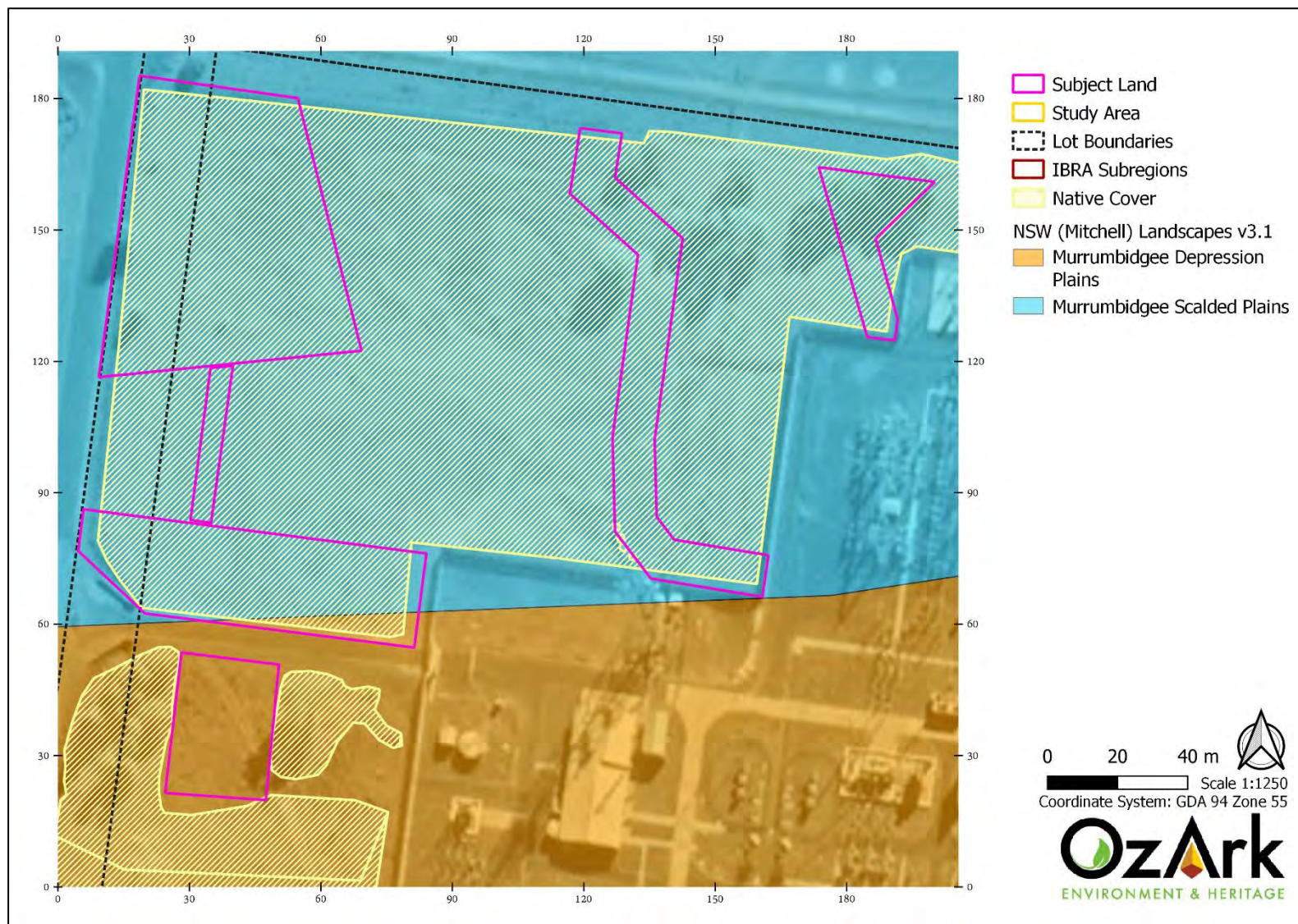


Figure 1-3. Magnified view of the subject land, study area and key features required by the BAM (2020).

Note that published cadastral mapping does not align with the location of property boundaries *in situ*. This is most apparent in the alignment of Donald Ross Drive, which appears to pass through the subject land. In reality, Donald Ross Drive is location to the west of the subject land.

1.2 Relevant Terms

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

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

Property boundary – Lot 2 DP628785, on which the subject land occurs.

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 Agriculture, Water and the Environment 2022) and BioNet Atlas (DPE, 2022) threatened species sightings.

1.3 Site Identification

The site is identified under the *Murrumbidgee Local Environment Plan 2013* and on the NSW Planning Portal as follows.

- **Lot/Section/Plan No:** 2/-/DP628785
- **Land Zoning:** RU1 Primary Production
- **Minimum Lot Size:** 200 ha
- **Terrestrial Biodiversity:** The relevant lot has been mapped as possessing terrestrial biodiversity values (**Appendix A**).

The location of the proposal is shown on the location map (**Figure 1-2**) and site map (**Figure 1-3**).

1.4 Regulatory Context

The Proposal will be assessed under Part 4 (Regional Development) of the EP&A Act. The BC Act requires all Regional Developments to be assessed in relation to the BOS, if entry is triggered by the location and/or size of the development. The *Biodiversity Conservation Regulation 2017* sets out the thresholds for entry into the BOS, which are as follows.

- If the amount of native vegetation proposed to be cleared exceeds the threshold area for the lot size for the LEP zone. In the present case, this is 1 ha.
- When the development is located on land identified in the Biodiversity Value Map (<https://www.lmbc.nsw.gov.au/Maps/>), as defined by Clause 7.3 of the Regulation.

- If, in the absence of the above thresholds, the Proposal is likely to be a significant impact to threatened species, ecological communities or their habitat.

While the proposed works assessed in this BDAR entails the removal of < 1 ha of native vegetation, they are being assessed as a component of the larger Darlington Point Solar Farm development. Consequently, it has been determined that the BOS applies to this proposal irrespective of the extent of clearing necessitated by the works.

The subject land was not identified as occurring on bushfire prone land, according to mapping provided by the NSW Rural Fire Service, and as such, under Section 4.15 of the EP&A Act, the proponent will not be required to address the relevant bushfire protection requirements of the Rural Fire Service Document *Planning for Bush Fire Protection*. As the proposal principally entails excavations associated with cable routes and establishment of temporary construction areas, it is assumed that no permanent Asset Protection Zones are required.

1.5 Report Purpose

Edify has Development Consent for SSD-8392 which includes approval for the construction, installation, and operation of a Battery Energy Storage System (BESS), with a capacity of 200 MW/ 400 MWh, within an approved development footprint on Lot 1 DP1249830. The original Development Application, and a further Modification (SSD-8392-MOD-1), accounted for the cabling and associated equipment to connect the BESS to and through the existing TransGrid Darlington Point Substation in Lot 2 DP628785. However, they did not contemplate the use of temporary construction areas in the adjacent TransGrid Darlington Point Substation land. These areas are now required to facilitate the storage of and access to the components and construction equipment involved in that project, including the connection to the substation. The biodiversity values and impacts of the cable routes and trenching impact areas was not included in the original biodiversity assessment (Darlington Point Biodiversity Assessment Report). Therefore, Edify has commissioned this BDAR to cover cable route and trenching impacts as well as the temporary construction areas. The BDAR provides a 'worst case' impact assessment, based on a maximum area that may be used to facilitate the temporary construction areas and cable/trenching impact areas.

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 if any of the thresholds listed above (see **Section 1.4 Regulatory Context**) are met.

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

From 16 June 2015, the *Biosecurity Act 2015* and its subordinate legislation commenced. The *Noxious Weeds Act 1993* and part of the *Local Land Services Act 2013* (Part 10 Pests), among other acts, have been repealed under the new *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. Matters relating to the FM Act are covered 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 on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

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

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *SEPP (Biodiversity and Conservation) 2021* is the collation of biodiversity and conservation related SEPP. 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 Murrumbidgee LGA is not listed in any of the relevant Schedules of the *SEPP (Biodiversity and Conservation) 2021*, therefore, Chapters 3 and 4 of the *SEPP (Biodiversity and Conservation) 2021* does not apply to this proposal.

The proposal's potential impacts to Koalas have been considered in this BDAR. This includes a specific Koala habitat assessment, using the guidelines and Koala Habitat Assessment tool contained in the Commonwealth Department of the Environment (2014) *EPBC Act referral guidelines for the*

vulnerable koala (**Appendix H**).

1.6.4 Murrumbidgee Local Environmental Plan (2013)

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 Murrumbidgee LEP (2013) aims to make local environmental planning provisions for land in Murrumbidgee in accordance with the relevant standard environmental planning instrument under section 33A of the Act.

(2) The particular aims of this Plan are as follows:

- (a) to protect, enhance and conserve agricultural and horticultural land through the proper management, development and conservation of natural and man-made resources,
- (b) to encourage a range of housing, employment, recreation and community facilities to meet the needs of existing and future residents of Murrumbidgee,
- (c) to promote the efficient and equitable provision of public services, infrastructure and amenities,
- (d) to conserve the environmental heritage of the land to which this Plan applies.

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
Ian Griffith	Ecologist	Initial vegetation integrity plots (BAM plots), vegetation mapping, reporting	• Honours (Genetics) – La Trobe University • Bachelor of Biological Sciences – La Trobe University • First Aid Training • WH&S Induction Training for Construction Work • Rail Industry Worker Card
Dr David Orchard	Ecologist	Additional BAM plots, revised vegetation mapping, reporting	• 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 • First aid training • WH&S Induction Training for Construction Work
Dr Crystal Graham	Senior Ecologist	Reporting, quality control, technical review	• 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
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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>)
- State Vegetation Type Map: Riverina Region Version v1.2 - VIS_ID 4469
- 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.rbgsyd.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 April 2022 and reviewed (and updated where applicable) in July 2022 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:

- Regional Scale State Vegetation Map: *Riverina Region Version v1.2 - VIS_ID 4469* (DPIE, 2016), 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, overstory 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 seven BAM plots were completed: three on 14 April 2022 and an additional four on 30 June 2022. As the likely final impact footprint was unknown at the time of these surveys, plots were conducted with a view to sampling all communities within the local landscape, irrespective of whether those communities were ultimately impacted. Ultimately, five plots (DPT03 and DPTA01-DPTA04; see **Figure 4-1** and **Appendix B**) were retained in the final analysis. Plots that were not needed to satisfactorily represent the observed vegetation were omitted.

The plot locations were randomly selected whilst ensuring adequate survey effort within each vegetation zone (**Table 2-2**). According to the BAM (2020), a minimum of four BAM plots would be required for this subject land, comprising one plot for each vegetation zone (as all zones were <2 ha in size).

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 20m x 50m and 20m x 20m plots
- Species composition and structure (species and percent cover) data collected from within 20m x 20m plot
- Vegetation function data (size and number of trees, presence of hollow-bearing trees and woody debris) collected from within 20m x 50m plot
- Percent of litter cover data collected within five 1m x 1m squares positioned at 5m, 15m, 25m, 35m and 45m points of the 50m plot
- 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

As the site assessments took place outside the specified survey period for most candidate threatened species, targeted surveys were only undertaken for two species, the threatened bird *Ardeotis australis* and the threatened plant *Convolvulus tedmoorei*. As the impact footprint was revised subsequent to the field surveys, a small area (c. 0.40 ha) of the subject land was not included in the flora transects, therefore this species has been assumed present for this 0.40 ha area.

A summary of field survey methods is provided in **Table 2-3**, depicted in **Figure 5-2**, and described in further detail in **Section 5.3.1** of this report.

Table 2-3. Summary of targeted survey methods and effort undertaken.

Survey date	Method	Effort
13 April 2022 30 June 2022	Foot traverses through the subject land attempting to visualise or flush any Australian Bustards (<i>Ardeotis australis</i>)	5 hr in April 4 hr in June
30 June 2022	- Parallel transects (5 to 10 m separation, depending on ground visibility) for <i>Convolvulus tedmoorei</i>. <i>In situ</i> identification and sampling of candidate plants (<i>Convolvulus</i> species). <i>Ex situ</i> microscopic confirmation of <i>in situ</i> identification.	c. 5.23 km plant transects – 5 to 10 m spacing across most suitable habitat, excluding an area of 0.40 ha - Identification of six samples from seed and vegetative material.

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-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:

- BAM plots were completed in autumn and winter, during which time many flora and fauna species may have been absent, difficult to detect, or difficult to identify.

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 <i>NSW BC Act 2016</i>	No (Appendix A).
Area of Outstanding Biodiversity Value (AOBV) under the <i>NSW 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.	Terrestrial Biodiversity, Groundwater Vulnerability (Appendix A)
Lands protected under <i>NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	No. 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 Murrumbidgee subregion of the Riverina Bioregion 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**.

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

Bioregion	Riverina
Subregion	Murrumbidgee
Geology	Quaternary alluvial sediments. Clay and sand with source bordering dunes and lakes.
Landforms	Alluvial fan with distributary channels and floodplains, undulating plains with depressions. Source-bordering dunes common.
Soils	Red brown earths, grey and brown clays and deep siliceous sands on dunes.
Vegetation	River Red Gum and River Cooba on channels. Black Box, Lignum and Old Man Saltbush, Cottonbush, Myall and grasses on the plains. White Cypress-pine on sandhills.

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 (or Mitchell) Landscapes (Mitchell, 2002).

The subject land spans the Murrumbidgee Depression Plains and Murrumbidgee Scalded Plains landscapes (**Figure 1-2**). The Murray Channels and Floodplains also occurs within the wider study area. The characteristics of these landscapes are described below.

Murrumbidgee Depression Plains

Murrumbidgee Depression Plains Quaternary alluvial plains with numerous circular depressions interpreted as high floodplains or low terraces beyond the reach of average floodwaters, relief to 10 m. Grey to brown clays and clay loams with linear patterns of sandy prior streams. Murrumbidgee Channels and Floodplains ecosystem includes parts of three land systems: Murrumbidgee, Lowbidgee and Riverland.

Over-clearing status: Over-cleared. 93% of this landscape is estimated to have been cleared.

Murrumbidgee Scalded Plains

Murrumbidgee Scalded Plains Quaternary alluvial plains with extensive scalding interpreted as relic floodplains or terraces. Grey, brown and red cracking clays, red brown texture-contrast soils with scalds. Levees traces evident, relief generally <1m, up to 5m on associated pans, swamps and lunettes. Murrumbidgee Lakes, Swamps and Lunettes ecosystem includes parts of the Cargelligo land system.

Over-clearing status: Not over-cleared. 67% 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 Griffith Airport (station 075041), 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 33.8°C experienced in January (**Figure 3-1**). Temperatures in winters are cool to mild with the coldest temperatures being recorded in July, having an average minimum of 3.4°C and an average maximum of 15.4°C.

The average annual rainfall at this station is 398.6 mm. Rainfall occurs regularly all year round, with October recording the highest average rainfall of 38.1 mm, followed by March (36.2 mm) and January (35.9 mm). The lowest monthly rainfall occurs in February (28.6 mm), followed by April (29.1 mm) and December (32.9 mm).

Prior to and during the site surveys, the weather station received highly variable but typically well above average rainfall. Griffith received its average annual rainfall (396.8 mm) by the end of June 2022.

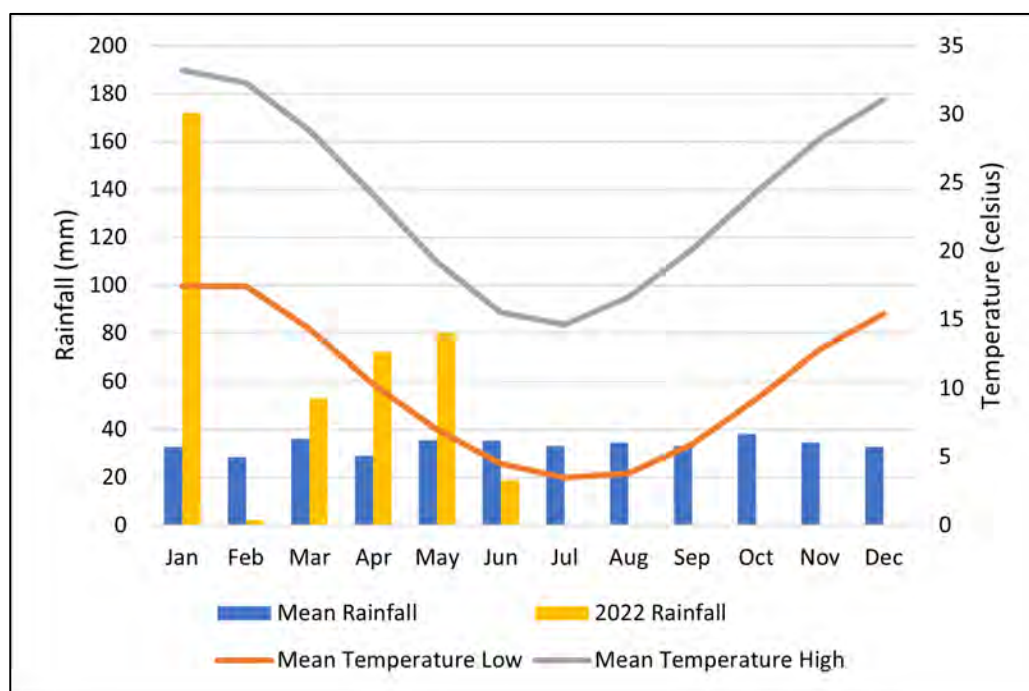


Figure 3-1. Climate statistics for Griffith Airport Weather Station (ID 075041) showing mean minimum and maximum temperatures, mean rainfall, and rainfall for 2022 (Bureau of Meteorology, 2022).

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 Murrumbidgee LGA is not listed in any of the relevant Schedules of the *SEPP (Biodiversity and Conservation) 2021*, therefore, Chapters 3 and 4 of the *SEPP (Biodiversity and Conservation) 2021* do not apply to this proposal.

The proposal's potential impacts to Koalas have been considered in this BDAR. This includes a specific Koala habitat assessment, using the guidelines and Koala Habitat Assessment tool contained in the Commonwealth Department of the Environment (2014) *EPBC Act referral guidelines for the vulnerable koala* (**Appendix H**). The koala habitat assessment tool returned a total score of 1, and therefore the subject land does not constitute critical habitat for the Koala (score <5) and referral is not required in this instance.

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, including regrowth and plantations comprised of plants native to New South Wales, and non-woody vegetation with no apparent signs of cultivation. It should be noted that, as available aerial imagery does include the nearby Darlington Point Solar Farm, the mapped native vegetation cover is likely to be approximate only. Native cover is mapped in **Figure 1-2** and **Figure 1-3**. 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 10%-30%.

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.	197.17	814.07	24.22

3.10 Rivers, Streams, Wetlands and Key Fish Habitat

No watercourses are mapped as occurring on the subject land (**Figure 3-2**). No threatened fish species or threatened populations are predicted to occur within, or are likely to make use of, the subject land. No areas recognised as Key Fish Habitat (KFH) by the Department of Primary Industries – Fisheries and Protected Riparian Land (PRL) by the Department of Planning, Industry and Environment are located within the study area. The nearest mapped watercourse is a minor, non-perennial drainage line located c. 2.6 km southwest of the subject land. The nearest mapped KFH and PRL are associated with Waddi Creek and the Murrumbidgee River and its ponds and billabongs.

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 (GDEs) does not identify any potential GDEs on the subject land. Within the study area, high and low potential terrestrial GDEs are mapped. No aquatic GDEs are predicted within the study area (**Figure 3-3**). Some interaction with groundwater may result from trenching operations. This is unlikely to adversely impact any identified GDE. Mitigation measures to reduce any potential impact on GDEs have been provided in **Section 6**.

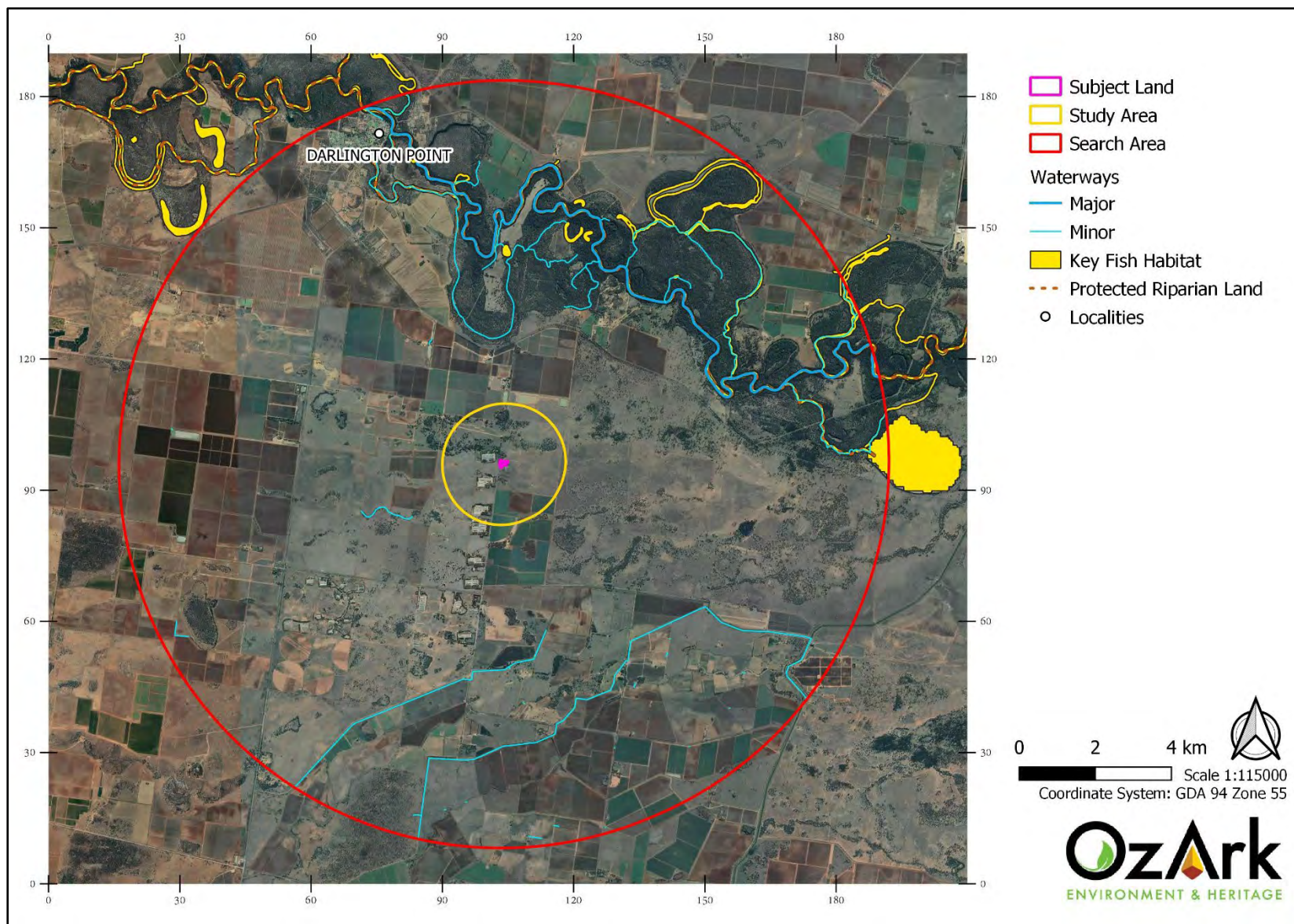


Figure 3-2. Watercourses, Protected Riparian Land, and Key Fish Habitat of the search area.

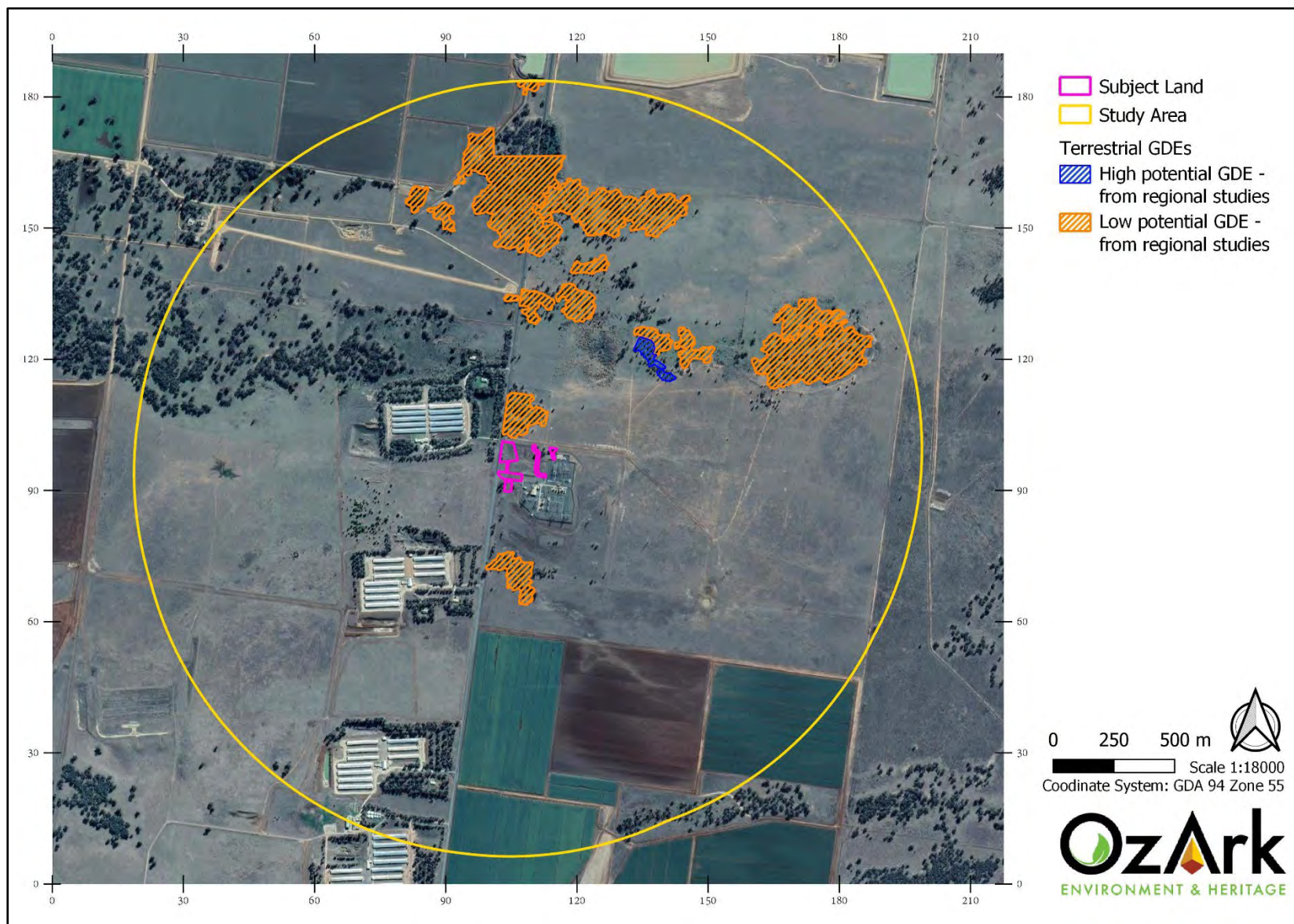


Figure 3-3. Groundwater-dependent Ecosystems of the study area.

3.12 Connectivity Features

The landscape surrounding the subject land has been heavily cleared for agricultural development and electrical infrastructure, including the adjacent solar farm and TransGrid substation. The proposal site contains very little wooded vegetation and hence offers no connectivity for species dependent on trees or large shrubs for movement across the landscape. For grassland specialists, the subject land forms part of a larger Plains Grass grassland, providing some scope for movement or gene flow within the landscape. However, this grassland appears to be bounded on all four sides by non-native grassland. The Plains Grass grassland is confined to an area of approximately 54 ha. It is unclear whether grassland specialists would be capable of moving between the patch and any additional native grassland patches in the surrounding landscape.

4 Native Vegetation

4.1 Plant Community Types (PCTs)

The State Vegetation Type Map (2022) does not predict any PCTs within the subject land. However, during the site assessments, two PCTs were recorded within the proposal footprint:

- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion.
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion.

PCT 26 was confined to a small area with a single mature tree and diffuse patches of regrowth. This area was assigned to a single vegetation zone, designated 26_Regrowth. By contrast, PCT 45 occupied much of the subject land and was recorded in three distinct condition classes, designated 45_Remnant, 45_Slashed, and 45_Plantings. Vegetation zones and the locations of supporting BAM plots are mapped in **Figure 4-1**. Justification for PCT determination is given in **Table 4-1**. Photographs and data sheets completed in the field are provided in **Appendices B and C**.

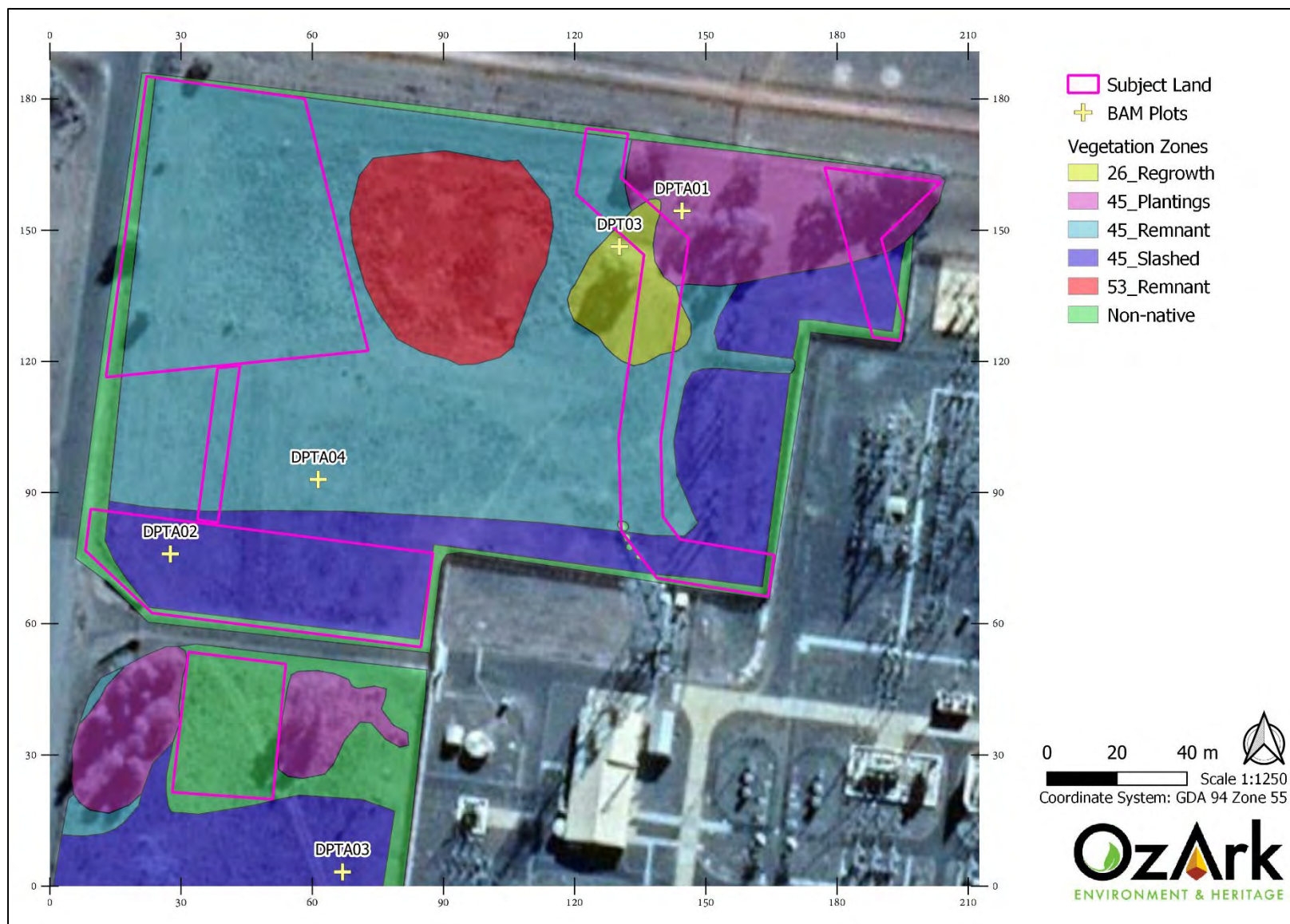


Figure 4-1. Vegetation Zones and BAM Vegetation Integrity plots.

Table 4-1. Plant Community Types present within the subject land.

PCT ID	PCT Name	Vegetation Formation	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
45	Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plains Grasslands	No TEC	No TEC	“Remnant” condition: - Grassland dominated by Plains Grass (<i>Austrostipa aristiglumis</i>), with Rigid Panic (<i>Walwhalleya proluta</i>), Wallaby Grasses (<i>Rytidosperma</i> spp.), Queensland Blue Grass (<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>), Fairy Grass (<i>Sporobolus caroli</i>), and Windmill Grass (<i>Chloris truncata</i>) subdominant. - Sparse shrubs include Black Rolypoly (<i>Sclerolaena muricata</i>), Buckbush (<i>Salsola australis</i>), and Ruby Saltbush (<i>Enchylaena tomentosa</i>). - Forbs are scarce, likely due to the survey being conducted out of season. Where present, these include New Holland Daisies (<i>Vittadinia</i> spp.), Quena (<i>Solanum esuriale</i>), Common Woodruff (<i>Asperula conferta</i>), and Small White Sunray (<i>Rhodanthe corymbiflora</i>). - The fern Nardoo (<i>Marsilea drummondii</i>) was recorded in isolated wet depressions. - Filtering the NSW BioNet Vegetation Classification Database by the relevant IBRA subregion and the above species returned a stronger match (10/13) for PCT 45 than for any alternative PCT (maximum 9/13). The closest alternative match, PCT 26, occurs within the subject land and grades into this community; however, PCT 26 was reserved for areas where Weeping Myall (<i>Acacia pendula</i>) was present either as mature trees or as regrowth.	100,000 ha 60.00% ±80

PCT ID	PCT Name	Vegetation Formation	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
					“Slashed” condition: - Grassland subjected to recent slashing, with a similar suite of grass species to the remnant condition but with sparser tussocks and a higher proportion of non-native species. - Common native grass species include Windmill Grass (<i>Chloris truncata</i>), Plains Grass (<i>Austrostipa aristiglumis</i>), Rigid Panic (<i>Walwhalleya proluta</i>), and Queensland Blue Grass (<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>). - The shrub Black Rolyoly (<i>Sclerolaena muricata</i>) was present, though typically as slashed regrowth, and Buckbush (<i>Salsola australis</i>) was recorded in places. - A range of opportunistic native forbs occur in these areas. These species – including Star Cudweed (<i>Euchiton sphaericus</i>), Jersey Cudweed (<i>Pseudognaphalium luteoalbum</i>), and Blue Crowsfoot (<i>Erodium crinitum</i>) – are not obviously associated with any relevant PCT but are instead post-disturbance colonisers. - Slashed areas were continuous with remnant areas of PCT 45 and showed no sign of regrowth of any canopy species. - Non-native grasses were common and included Perennial Ryegrass (<i>Lolium perenne</i>) and Wild Oat (<i>Avena fatua</i>). - Filtering the NSW BioNet Vegetation Classification Database by the relevant IBRA subregion and the dominant species identified above (excluding opportunistic forbs) returned a stronger match (6/7) for PCT 45 than for any alternative PCT (maximum 5/7). The closest matches included PCT 27, which does not occur within the subregion, and PCT 55, a community dominated by Belah (<i>Casuarina cristata</i>). As this species was not recorded in the site or in the surrounding landscape, it was considered a close match.	

PCT ID	PCT Name	Vegetation Formation	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
					“Plantings” condition: - Grassland with an overstorey of planted eucalyptus, including River Red Gum (<i>Eucalyptus camaldulensis</i>) and several species not known to occur naturally in NSW. - The most common native grasses were the same as for the remnant condition, and included Plains Grass (<i>Austrostipa aristiglumis</i>), Rigid Panic (<i>Walwhalleya proluta</i>), Wallaby Grasses (<i>Rytidosperma</i> spp.), Queensland Blue Grass (<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>), Fairy Grass (<i>Sporobolus caroli</i>), and Windmill Grass (<i>Chloris truncata</i>). - As in the remnant condition class, the sparse shrub layer includes Black Rolpoly (<i>Sclerolaena muricata</i>), Buckbush (<i>Salsola australis</i>), and Ruby Saltbush (<i>Enchylaena tomentosa</i>). - Forbs include New Holland Daisies (<i>Vittadinia</i> spp.), Quena (<i>Solanum esuriale</i>), and Common Woodruff (<i>Asperula conferta</i>). - Filtering the NSW BioNet Vegetation Classification Database by the relevant IBRA subregion and the dominant species in each stratum returned a stronger match (9/12) for PCT 45 than for any alternative PCT (maximum 7/12). The closest matches were PCT 27 and PCT 3518, neither of which occur in the IBRA subregion. - The search did not return a >25% match to any River Red Gum-dominated PCT; consequently, despite the presence of this planted canopy, the Plains Grass community was preferred.	
26	Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	Endangered	Does not meet criteria	“Regrowth” condition: A small fragment containing a single mature Weeping Myall (<i>Acacia pendula</i>) tree and several patches of juvenile regrowth. Nearby occurrences also contained Willow Wattle (<i>Acacia salicina</i>).	160,000 ha 90% ±50

PCT ID	PCT Name	Vegetation Formation	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
					- Understorey is broadly continuous with the surrounding grassland and is dominated by Plains Grass (<i>Austrostipa aristiglumis</i>), with Rigid Panic (<i>Walwhalleya proluta</i>), Windmill Grass (<i>Chloris truncata</i>), and Queensland Blue Grass (<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>). - Sparse shrubs include Black Rolypoly (<i>Sclerolaena muricata</i>), Ruby Saltbush (<i>Enchylaena tomentosa</i>), Buckbush (<i>Salsola australis</i>). - Forbs include scattered New Holland Daisies (<i>Vittadinia</i> spp.), Quena (<i>Solanum esuriale</i>), Grassland Wood-sorrel (<i>Oxalis perennans</i>), Swamp Dock (<i>Rumex brownii</i>), Common Woodruff (<i>Asperula conferta</i>), and Small White Sunray (<i>Rhodanthe corymbiflora</i>). - Filtering the NSW BioNet Vegetation Classification Database by the relevant IBRA subregion and the above species returned a stronger match (11/16) for PCT 27 than for any alternative PCT. This is an <i>Acacia pendula</i>-dominated community but is considered not to occur within the relevant subregion. For this reason, it was excluded from consideration. - Close alternative matches included PCT 45 (10/16), which does not contain <i>Acacia pendula</i>, and PCT 3397, which does not occur within the relevant subregion and does not contain <i>Acacia pendula</i>. - It was considered that none of the matches obtained in this way were satisfactory. Ultimately, the patch was mapped to PCT 26 despite a relatively poor match (6/16) as this is the only <i>Acacia pendula</i>-dominated community recorded within the subregion. The local occurrence of this PCT appears to resemble more closely the northern form of this community (PCT 27), suggesting that the north-south division may be less absolute than otherwise indicated.	

PCT ID	PCT Name	Vegetation Formation	TEC Status BC Act	TEC Status EPBC Act	Justification of Identification	Current NSW Extent Percent Cleared
					It is likely that historical disturbance has allowed the Plains Grass community (PCT 45) to colonise this area.	

4.2 Vegetation Zones, Patch Size and Vegetation Integrity

4.2.1 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.

Two PCTs containing one (PCT 26) and three (PCT 45) vegetation zones were identified during the site assessment (**Table 4-1; Table 4-2; Figure 4-1**). Much of the vegetation on the subject land is routinely disturbed by slashing. Broad condition states have been determined by the presence or absence of the key structural elements of the PCT, but differences in composition observed *in situ*, and, to a lesser degree, the vegetation integrity (VI) score, calculated in the BAM-C using plot data. This method also compares data collected with the benchmarks for each PCT. The presence or absence of structural elements was assessed both by reviewing plot data and general observations made whilst carrying out field work. A description of each vegetation zone is provided below:

- 45_Remnant** – A grassland typically lacking emergent trees or large shrubs. A sparse, sporadic layer of small shrubs was noted, which included the species Black Rolypoly (*Sclerolaena muricata*), Buckbush (*Salsola australis*), and Ruby Saltbush (*Enchylaena tomentosa*). Groundcover approaches 100% throughout and is dominated by Plains Grass (*Austrostipa aristiglumis*), with Rigid Panic (*Walwhalleya prolata*), Wallaby Grasses (*Rytidosperma* spp.), Queensland Blue Grass (*Dichanthium sericeum* subsp. *sericeum*), Fairy Grass (*Sporobolus caroli*), and Windmill Grass (*Chloris truncata*) as subdominant species. A small number of forbs were recorded, including Quena (*Solanum esuriale*), Common Woodruff (*Asperula conferta*), and Small White Sunray (*Rhodanthe corymbiflora*), along with the herbaceous twiner Desert Bindweed (*Convolvulus clementii*) and the aquatic fern Nardoo (*Marsilea drummondii*). It is likely that many additional forb species would be detected within this zone in spring.
- 45_Slashed** – A grassland showing evidence of recent modification by slashing. While similar in species composition to 45_Remnant, native cover was markedly lower (typically <50%) and weed cover greater (typically >20%). Plains Grass, though still common, was less pronounced in these areas, with a greater proportion of overall coverage accounted for by Windmill Grass (*Chloris truncata*) and Queensland Blue Grass (*Dichanthium sericeum* subsp. *sericeum*). The shrub Black Rolypoly (*Sclerolaena muricata*) was present, though typically as slashed regrowth, and Buckbush (*Salsola australis*) was recorded in places, including along gravel road verges. This zone possessed a greater diversity of forbs than 45_Remnant; however, these forbs were mainly opportunistic colonisers not particular to any PCT, including Star Cudweed (*Euchiton sphaericus*), Jersey Cudweed (*Pseudognaphalium luteoalbum*), and Blue

Crowsfoot (*Erodium crinitum*). The Garland Lily (*Calostemma purpureum*) was recorded in this zone but was not detected in 45_Remnant.

- **45_Plantings** – A grassland or artificial woodland, in which the zone 45_Remnant has been modified by the addition of planted canopy trees. These trees include both locally native species – chiefly River Red Gum (*Eucalyptus camaldulensis*) – and species not known to occur naturally in NSW, including a species resembling Gimlet (designated *Eucalyptus* sp. aff. *salubris*), though plant material necessary for identification of these non-indigenous species was not present. The shrub layer and understorey were otherwise similar 45_Remnant, though slightly sparser due to the presence of planted trees.
- **26_Regrowth** – A small open woodland community comprising a single mature tree and accompanying diffuse regrowth. Regrowth is mainly < 1m in height and is located up to 25 m from the mature tree. The understorey is in most respects identical to that of 45_Remnant, which abuts 26_Regrowth to the west, south, and east. To the north, the understorey grades into 45_Plantings. This zone meets the condition criteria to be considered a component of the BC Act-listed Endangered Ecological Community (EEC) *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions*. It does not meet the conditions for the equivalent EPBC Act-listed EEC, *Weeping Myall Woodlands*, as it falls below the 0.5 ha patch size threshold for that community.
- **Non-native** – Designation of vegetation as non-native was reserved for highly modified areas surrounding the margins of the TransGrid substation and an active gravel parking area in the south of the subject land. In the former case, these marginal areas were dominated by Wild Oat (*Avena fatua*) and Perennial Ryegrass (*Lolium perenne*), often to the exclusion of all other species. In the latter case, the site is actively used for vehicle parking and only isolated plants were found to persist. The most common species in this area was the High-threat Exotic plant Khaki Weed (*Alternanthera pungens*). These areas were unsuitable for BAM plots, due either to the extremely small area of the zone or, in the case of the carpark, due to the presence of moving vehicles. Photographs of these areas are included in **Appendix B**.

4.2.2 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 State Vegetation Mapping (**Figure 4-2**). Note that the aerial imagery used in this figure pre-dates the construction of the Darlington Point Solar Farm. Certain areas of native vegetation visible in the figure have been excluded from the patch as ground-truthing determined that these areas are no longer present.

The use of a single patch was appropriate for the vegetation within the subject land. Total patch size was 56.60 ha and the patch was assigned to the 25-100 ha patch size class. Patch size and vegetation integrity score (VIS) are displayed in **Table 4-2**. Patch size is depicted in **Figure 4-2**.

Table 4-2. Vegetation zones and patch sizes of native vegetation on the subject land.

PCT ID	Condition State	VI Score	HBT ¹	Area Impacted (ha)	Patch Number	Patch Size	BAM Patch Size Class	Vegetation Zone	BAM Plots
45	Remnant	68.6	N	0.56	1	56.60	25-100 ha	45_Remnant	DPTA04
45	Slashed	66	N	0.26	1	56.60	25-100 ha	45_Slashed	DPTA02 DPTA03
45	Plantings	67.2	N	0.06	1	56.60	25-100 ha	45_Plantings	DPTA01
26	Regrowth	38.6	N	0.04	1	56.60	25-100 ha	26_Regrowth	DPT03

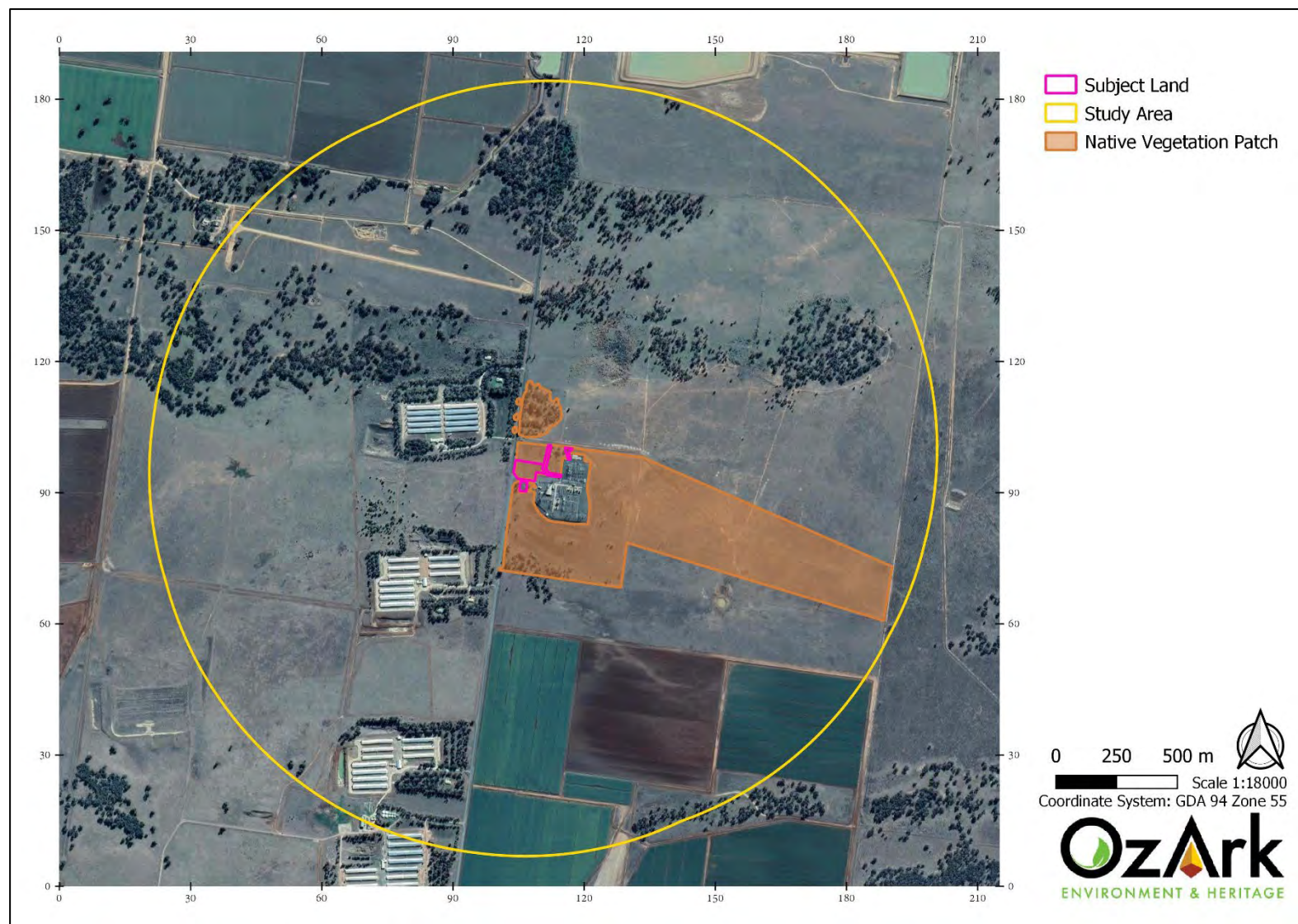


Figure 4-2. Native vegetation patch associated with the vegetation zones.

4.3 Flora Species Observed

The field survey identified a total of 61 flora species within the subject land (**Appendix C**). Of these, 41 species (67.21%) were native and 20 (32.79%) exotic. Three of the recorded exotic species are listed as High Threat Exotic (HTE) species under the BAM:

- Khaki Weed (*Alternanthera pungens*)
- Paspalum (*Paspalum dilatatum*)
- Bathurst Burr (*Xanthium spinosum*)

No Weeds of National Significance or Priority Weeds for the region were recorded during the assessment.

Plot data, plot photographs and a list of all flora species observed during the field assessment are provided in **Appendices B** and **C**.

4.4 Threatened Ecological Communities

PCT 26 is associated with the following TECs:

- BC Act-listed Endangered Ecological Community (EEC): *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions*.
- EPBC Act-listed EEC: *Weeping Myall Woodlands*.

The listing for the BC Act EEC does not specify any condition thresholds for the community; therefore, all *Acacia pendula* woodlands within the relevant subregions, including the occurrence of PCT 26 on the subject land, are considered to form part of the EEC. By contrast, the EPBC listing specifies that a patch of *Acacia pendula* woodland must be ≥ 0.5 ha in order to be considered part of that community. As the occurrence of PCT 26 recorded on and near the subject land did not meet this condition (total area = 0.097 ha), it is not considered part of the EPBC community. Consequently, up to 0.04 ha of the BC Act-listed EEC *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions* would be impacted by this proposal.

PCT 45 is associated with the following TECs:

- BC Act-listed Critically Endangered Ecological Community (CEEC): *Artesian Springs Ecological Community in the Great Artesian Basin*.
- EPBC Act-listed CEEC: *Natural Grasslands of the Murray Valley Plains*.

The occurrence of PCT 45 on the subject land could be excluded from consideration for the former CEEC as the site falls well outside the Great Artesian Basin. The grassland within the subject land is broadly similar in composition to the listing description for the Natural Grasslands of the Murray Valley Plains CEEC; however, the approved conservation advice for that community indicates that “the northern limit of the ecological community in NSW broadly

corresponds to the northern boundary of the Murray Catchment Management Authority,” which is located c. 50 km to the south of the subject land. In addition, more species considered contraindicative of the community than indicative of the community were recorded during the site assessment (**Table 4-3**), though surveying in a more favourable season may return additional species on this list. On the basis of the above, PCT 45 was determined not to belong to the *Natural Grasslands* CEEC. Note that the BAM Calculator does not permit the identification of PCT 45 as a TEC under the BC or EPBC Acts.

Table 4-3. Indicative and contraindicative species for the *Natural Grasslands of the Murray Valley Plains* CEEC recorded from the subject land.

Indicative Species	Contraindicative Species
<i>Flora species recorded within PCT 45 that are indicative of the Natural Grasslands of the Murray Valley Plains CEEC.</i>	<i>Flora species recorded within PCT 45 that are indicative of derived and not natural grasslands.</i>
• Common Woodruff (<i>Asperula conferta</i>) • Plains Grass (<i>Austrostipa aristiglumis</i>) • Woolly Buttons (<i>Leiocarpa panaetioides</i>)	• Climbing Saltbush (<i>Einadia nutans</i>) • Ruby Saltbush (<i>Enchylaena tomentosa</i>) • Nardoo (<i>Marsilea drummondii</i>) • Black Rolypoly (<i>Sclerolaena muricata</i>) • Fairy Grass (<i>Sporobolus caroli</i>)
Species considered indicative of a high-quality remnant are given in bold .	

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 occur within the subject land, though trees with both large (>20 cm diameter) and small (<20 cm diameter) hollows occur in adjacent lands. No stags (standing dead trees) were located. No watercourses occur within the subject land. Shallow, ephemeral wetlands occur marginally outside the impact footprint, and farm dams occur in the wider landscape.

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

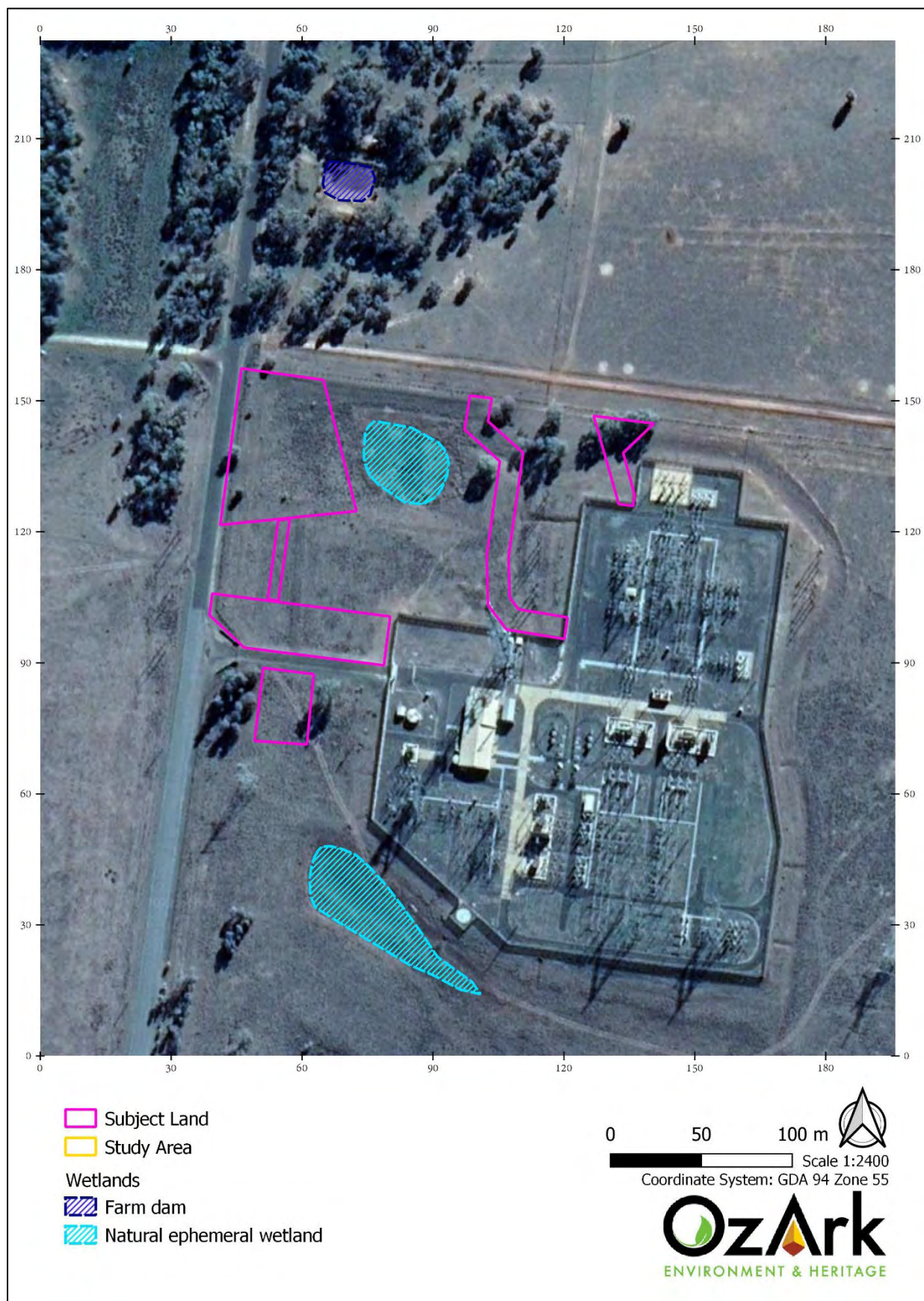


Figure 5-1. Habitat features recorded on or near the subject land.

5.2 Ecosystem Credit Species

In total, 23 ecosystem credit species were generated by the BAM-C. The habitat suitability of the subject land for these species was assessed. Two species were removed from the list due to habitat constraints; therefore, 21 species are 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>Anseranas semipalmata</i>	Magpie Goose	Assumed Present
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Assumed Present
<i>Certhionyx variegatus</i>	Pied Honeyeater	Assumed Present
<i>Chalinolobus picatus</i>	Little Pied Bat	Assumed Present
<i>Circus assimilis</i>	Spotted Harrier	Assumed Present
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Assumed Present
<i>Epthianura albifrons</i>	White-fronted Chat	Assumed Present
<i>Falco hypoleucos</i>	Grey Falcon	Assumed Present
<i>Falco subniger</i>	Black Falcon	Assumed Present
<i>Grus rubicunda</i>	Brolga	Assumed Present
<i>Hieraaetus morphnoides</i>	Little Eagle (foraging)	Assumed Present
<i>Hirundapus caudacutus</i>	White-throated Needletail	Assumed Present
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (foraging)	Assumed Present
<i>Lophoictinia isura</i>	Square-tailed Kite	Assumed Present
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	Assumed Present
<i>Petroica boodang</i>	Scarlet Robin	Assumed Present
<i>Polytelis swainsonii</i>	Superb Parrot (foraging)	Assumed Present
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Assumed Present
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Assumed Present
<i>Stagonopleura guttata</i>	Diamond Firetail	Assumed Present
<i>Tyto novaehollandiae</i>	Masked Owl (foraging)	Assumed Present
<i>Grantiella picta</i>	Painted Honeyeater	Absent (constraint)
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (foraging)	Absent (constraint)

5.3 Species Credit Species

In total, 21 species credit species were generated by the BAM-C (**Table 5-2**). The habitat suitability of the subject land for these species was assessed. According to the BAM, if suitable habitat for these species occurs on the subject land, they must be the subject of targeted survey according to recommended guidelines, or else assumed present. After consideration of geographical and habitat constraints, nine species could be discounted due either to distribution or to the absence of features necessary for breeding. Twelve species credit species were not discounted due to constraints. A survey was conducted for two of these twelve species; however, following revisions to the proposal footprint, one surveyed flora species was necessarily assumed present for a small area (0.40 ha) of unsurveyed habitat. Targeted surveys followed relevant and approved BAM survey methodologies (**Section 5.3.1**). The remaining species were assumed present as it was not the appropriate time of year to conduct targeted surveys for them (**Table 5-2**).

Table 5-2. Species credit species predicted to occur and the nature of their presence within or absence from the subject land.

Scientific Name	Common Name	Species presence
<i>Ardeotis australis</i>	Australian Bustard	Absent Surveyed
<i>Austrostipa wakoolica</i>	A spear-grass	Assumed Present
<i>Brachyscome muelleroides</i>	Claypan Daisy	Assumed Present
<i>Brachyscome papillosa</i>	Mossgiel Daisy	Assumed Present
<i>Convolvulus tedmoorei</i>	Bindweed	Absent Surveyed (0.52 ha) Assumed Present (0.40 ha)
<i>Lepidium monoplacoides</i>	Winged Peppergrass	Assumed Present
<i>Leptorhynchus orientalis</i>	Lanky Buttons	Assumed Present
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (breeding)	Assumed Present
<i>Phascolarctos cinereus</i>	Koala (breeding)	Assumed Present
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	Assumed Present
<i>Swainsona murrayana</i>	Slender Darling Pea	Assumed Present
<i>Swainsona sericea</i>	Silky Swainson-pea	Assumed Present
<i>Burhinus grallarius</i>	Bush Stone-curlew	Absent (constraint)
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (breeding)	Absent (constraint)
<i>Hieraaetus morphnoides</i>	Little Eagle (breeding)	Absent (constraint)
<i>Lophoictinia isura</i>	Square-tailed Kite (breeding)	Absent (constraint)
<i>Maireana cheelii</i>	Chariot Wheels	Absent (constraint)
<i>Polytelis swainsonii</i>	Superb Parrot (breeding)	Absent (constraint)
<i>Sclerolaena napiformis</i>	Turnip Copperburr	Absent (constraint)
<i>Swainsona plagiotropis</i>	Red Darling Pea	Absent (constraint)
<i>Tyto novaehollandiae</i>	Masked Owl (breeding)	Absent (constraint)

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 10 km of the subject land are also displayed in **Table 5-4** for site context.

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 2-3)	Results of survey
Bindweed (<i>Convolvulus tedmoorei</i>)	- 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. (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. (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	DPIE, 2020b	June-September	Surveys were conducted on 30 June 2022	- The target species is associated with PCT 45. (a) The targeted survey took place in June, within the survey window for this species. (b) June received below-average rainfall. However, May received well above-average rainfall, and the combined rainfall for the two months was above average (Figure 3-1), encouraging growth by this species, which would increase the likelihood of detection. (c) The entire subject land was searched, with the exception of non-native vegetation and an area of 0.40 ha that was subsequently added to the impact footprint (Figure 5-2). (a) Targeted surveys were undertaken using 5 to 10 m transects, depending on vegetation density and ground visibility, as is recommended for forb species in open habitats. (b) The vegetation was variably open and dense and transect width and walking speed were 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, with the exception of non-native vegetation and an area of 0.40 ha that was subsequently added to the impact footprint. (e) Tracks were recorded using a handheld GPS device (Figure 5-2). This survey did not detect <i>Convolvulus tedmoorei</i>. The survey

Species	Survey requirements (TBDC)	Primary reference material	Survey timetable (BAM-C)	Survey Period (see also Table 2-3)	Results of survey
	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.				did detect the related species <i>Convolvulus clementii</i> at several locations within the impact footprint, suggesting that the methods employed were sufficiently robust to detect <i>C. tedmoorei</i> if it were present. The two species are similar but can be distinguished in the field by details of the stem (coarse in <i>C. tedmoorei</i>, slender in <i>C. clementii</i>). The identification of these plants as <i>C. clementii</i> was confirmed by microscopic assessment of seeds collected from six plants. These seeds were observed to be mainly <3 mm in length and to possess large, uneven tubercles. These are features associated with <i>C. clementii</i>. By contrast, seeds of <i>C. tedmoorei</i> are >3.5 mm in length and possess numerous fine tubercles. Result: Absent (surveyed), excluding an area of 0.40 ha subsequently added to the footprint.
Australian Bustard (<i>Ardeotis australis</i>)	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. 2. (a) The survey must take place within the appropriate survey window and (b) Appropriate habitat must be identified on the	DEWHA, 2010	January-December	Surveys were conducted on 13 April 2022 and 30 June 2022	1. The species is associated with PCT26 and 45. 2. (a) The targeted surveys took place in April and June, within the survey window for this species. (b) The entire subject land was searched (Figure 5-3). 3. The subject land was searched for 9 hours. As there is only 0.92 ha of native vegetation within the subject land, this well exceeds the standard of 20-minutes per hectare. Tracks were recorded using a handheld GPS device (Figure 5-3). No Australian bustards were observed. All fauna species observed are recorded in Appendix C.

Species	Survey requirements (TBDC)	Primary reference material	Survey timetable (BAM-C)	Survey Period (see also Table 2-3)	Results of survey
	subject land. 3. There are no specific targeted survey guidelines for the Australian Bustard. Therefore, the standard approach for birds of searching for 20-min 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.				Result: Absent (surveyed).



Figure 5-2. Targeted flora surveys: Parallel flora transects conducted in June 2022.

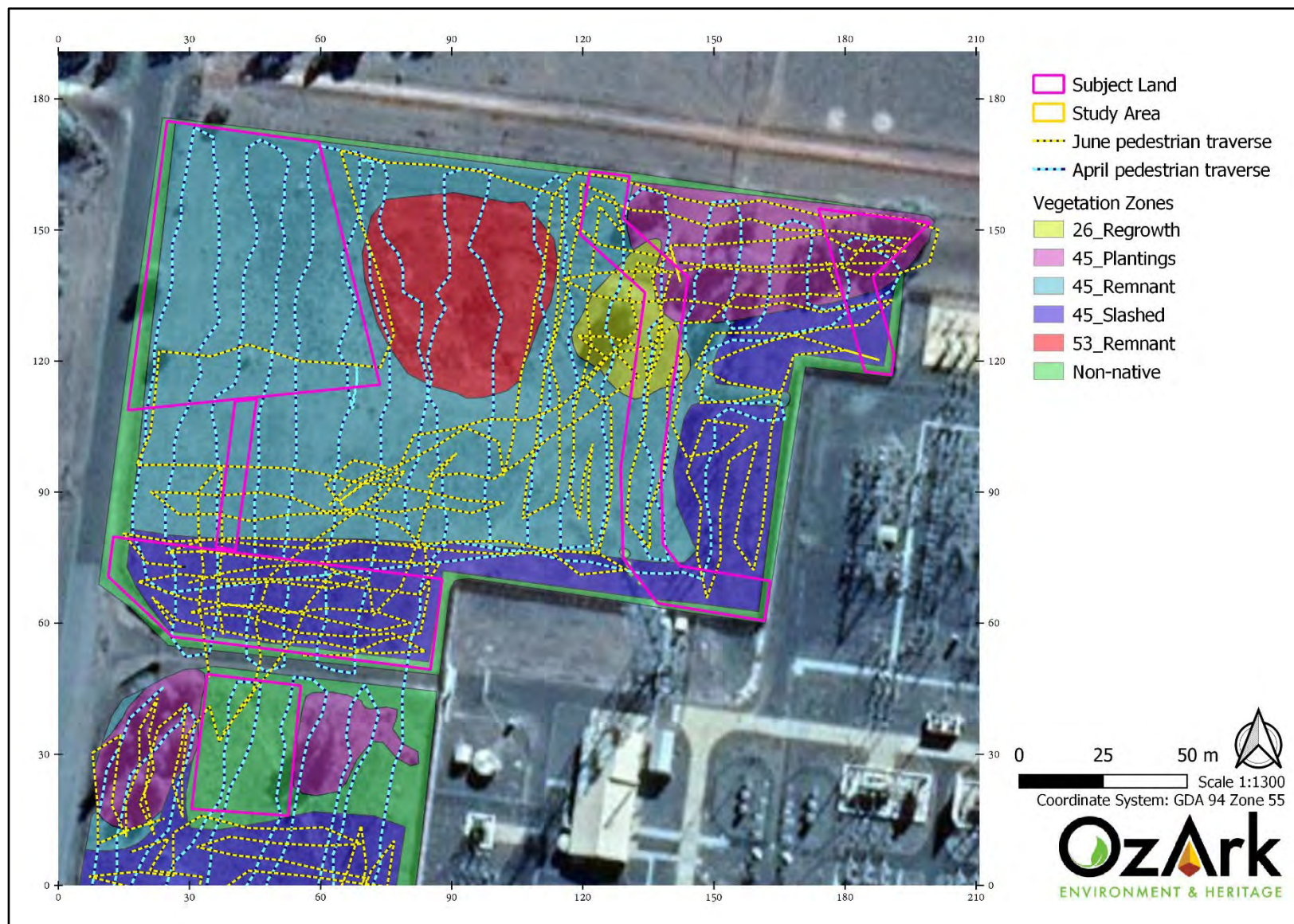


Figure 5-3. Targeted fauna surveys: Site traverses for the Australian Bustard (*Ardeotis australis*).

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>Anseranas semipalmata</i>	Magpie Goose	V,P		1
<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		2
<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		1
<i>Circus assimilis</i>	Spotted Harrier	V,P		1
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	V,P		6
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		4
<i>Diuris tricolor</i>	Pine Donkey Orchid	V,P		1
<i>Grus rubicunda</i>	Brolga	V,P		1
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		11
<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		2
<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	4
<i>Oxyura australis</i>	Blue-billed Duck	V,P		1
<i>Polytelis swainsonii</i>	Superb Parrot	V,P	V	261
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		28
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		1
<i>Vespadelus baverstocki</i>	Inland Forest Bat	V,P		1

* V=Vulnerable, E=Endangered, P=Protected, V=Vulnerable

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

5.3.2 Species credit species assumed present

Ten Species Credit Species generated by the BAM-C were assumed present across the whole of their associated PCT(s), as their indicated survey periods fell outside of the window of opportunity for targeted surveys. One species – the Australian Bustard (*Ardeotis australis*) was deemed absent during targeted surveys. One additional species – Bindweed (*Convolvulus tedmoorei*) – was assumed present within an area of 0.40 ha, while being determined absent by survey for the remainder of the site. Species polygons for these species are given in **Figure 5-4**, to **Figure 5-9**. The remaining species were determined to be absent due to habitat constraints (see **Appendix D**). Credits generated by species credit species are given in **Table 5-5** below.

Table 5-5. Species credit summary for species assumed present.

Scientific Name	Common Name	Species presence	Impacted area	Biodiversity risk weighting	Potential SAIL	Species credits generated
<i>Austrostipa wakoolica</i>	A spear-grass	Assumed present	0.04 (26_Regrowth)	High	False	1
<i>Brachyscome muelleroides</i>	Claypan Daisy	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings)	Very High	True	45

Scientific Name	Common Name	Species presence	Impacted area	Biodiversity risk weighting	Potential SAI	Species credits generated
<i>Brachyscome papillosa</i>	Mossgiel Daisy	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings)	High	False	30
<i>Convolvulus tedmoorei</i>	Bindweed	Assumed present	0.40 ha (45_Remnant)	Very High	True	21
<i>Lepidium monoplocoides</i>	Winged Peppercre ss	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings) 0.04 (26_Regrowth)	High	False	31
<i>Leptorhynchos orientalis</i>	Lanky Buttons	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings)	High	False	30
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (breeding)	Assumed present	0.56 ha (45_Remnant)	High	False	17
<i>Phascolarctos cinereus</i>	Koala (breeding)	Assumed present	0.06 (45_Plantings)	High	False	2
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings) 0.04 (26_Regrowth)	Very High	True	46
<i>Swainsona murrayana</i>	Slender Darling Pea	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings) 0.04 (26_Regrowth)	High	False	31
<i>Swainsona sericea</i>	Silky Swainson-pea	Assumed present	0.56 ha (45_Remnant) 0.26 ha (45_Slashed) 0.06 (45_Plantings) 0.04 (26_Regrowth)	High	False	31

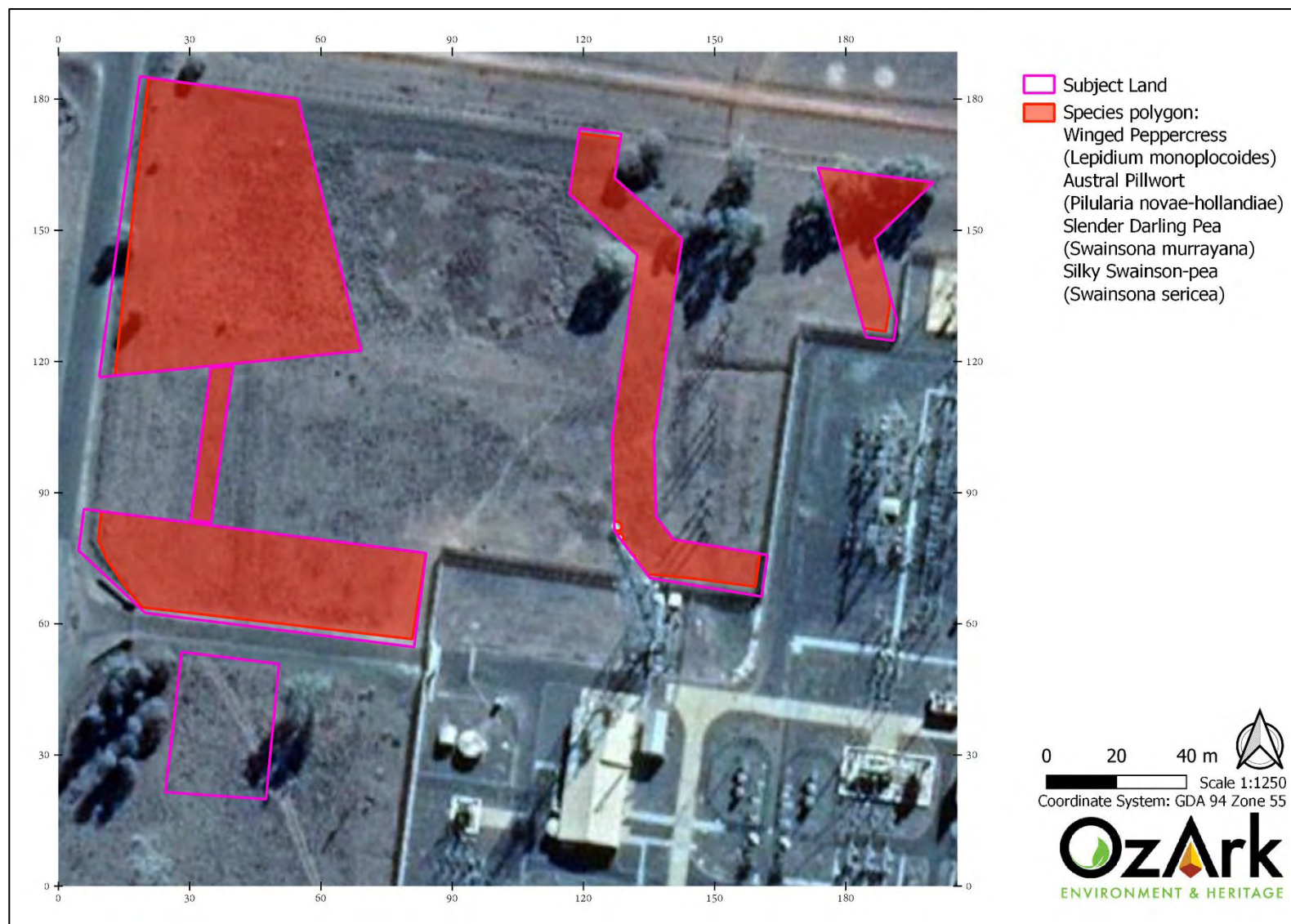


Figure 5-4. Species polygon for species associated with all PCTs and vegetation zones within the subject land.



Figure 5-5. Species polygon for species associated with all zones within PCT 45.

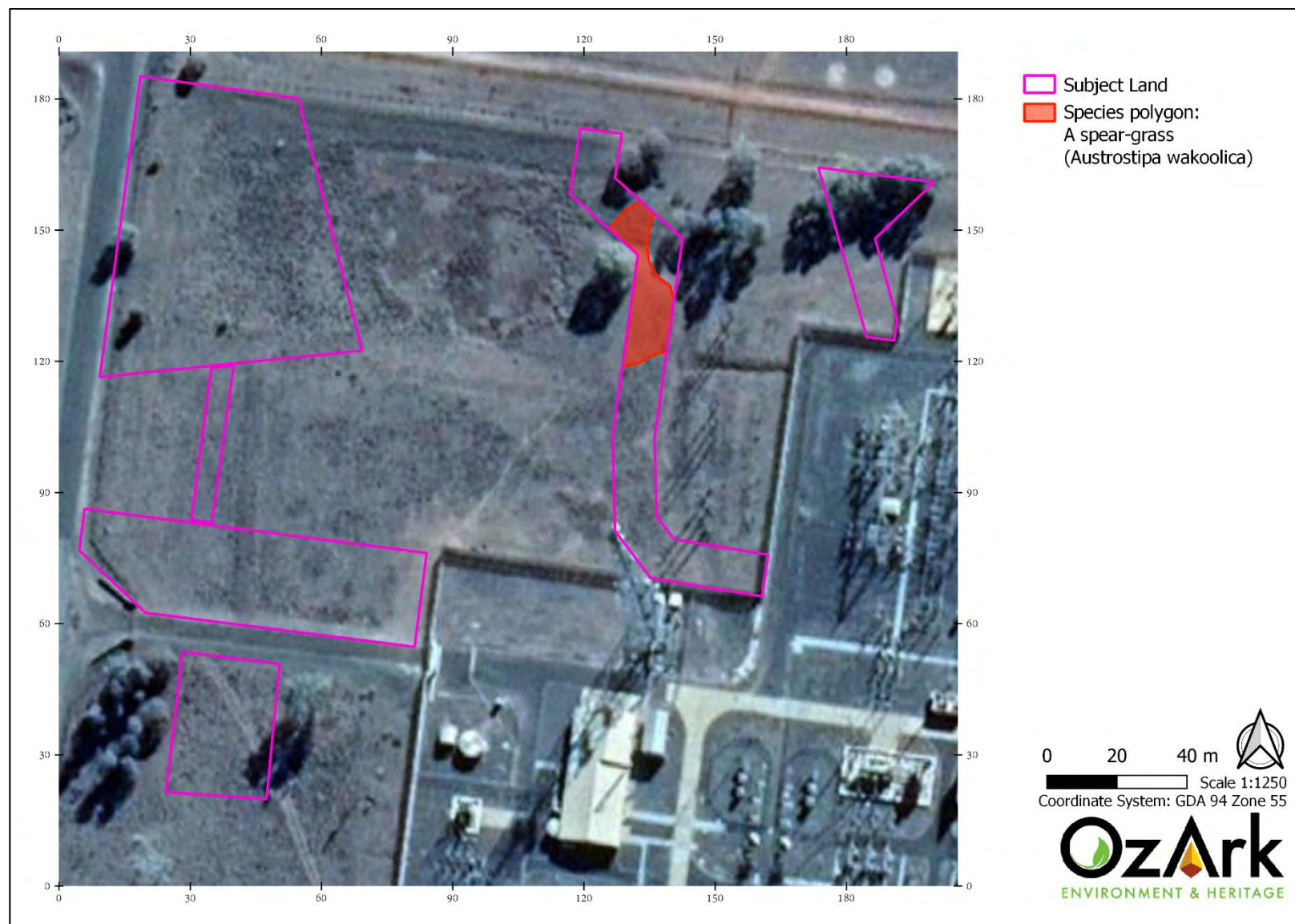


Figure 5-6. Species polygon for *Austrostipa wakoolica*, which is associated with PCT 26.

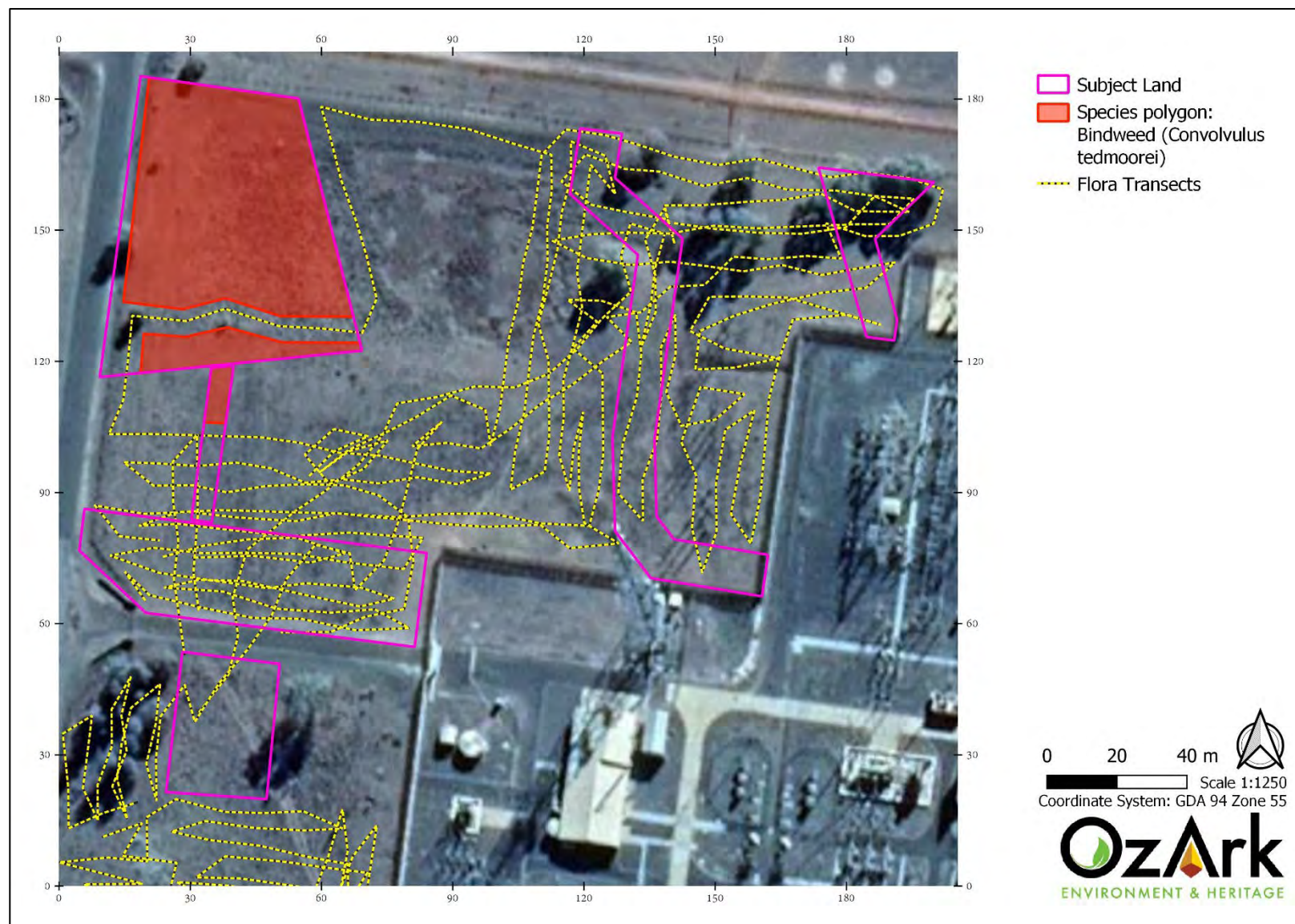


Figure 5-7. Species polygon for Bindweed (*Convolvulus tedmoorei*), incorporating all areas of PCT 45 that were not directly surveyed.

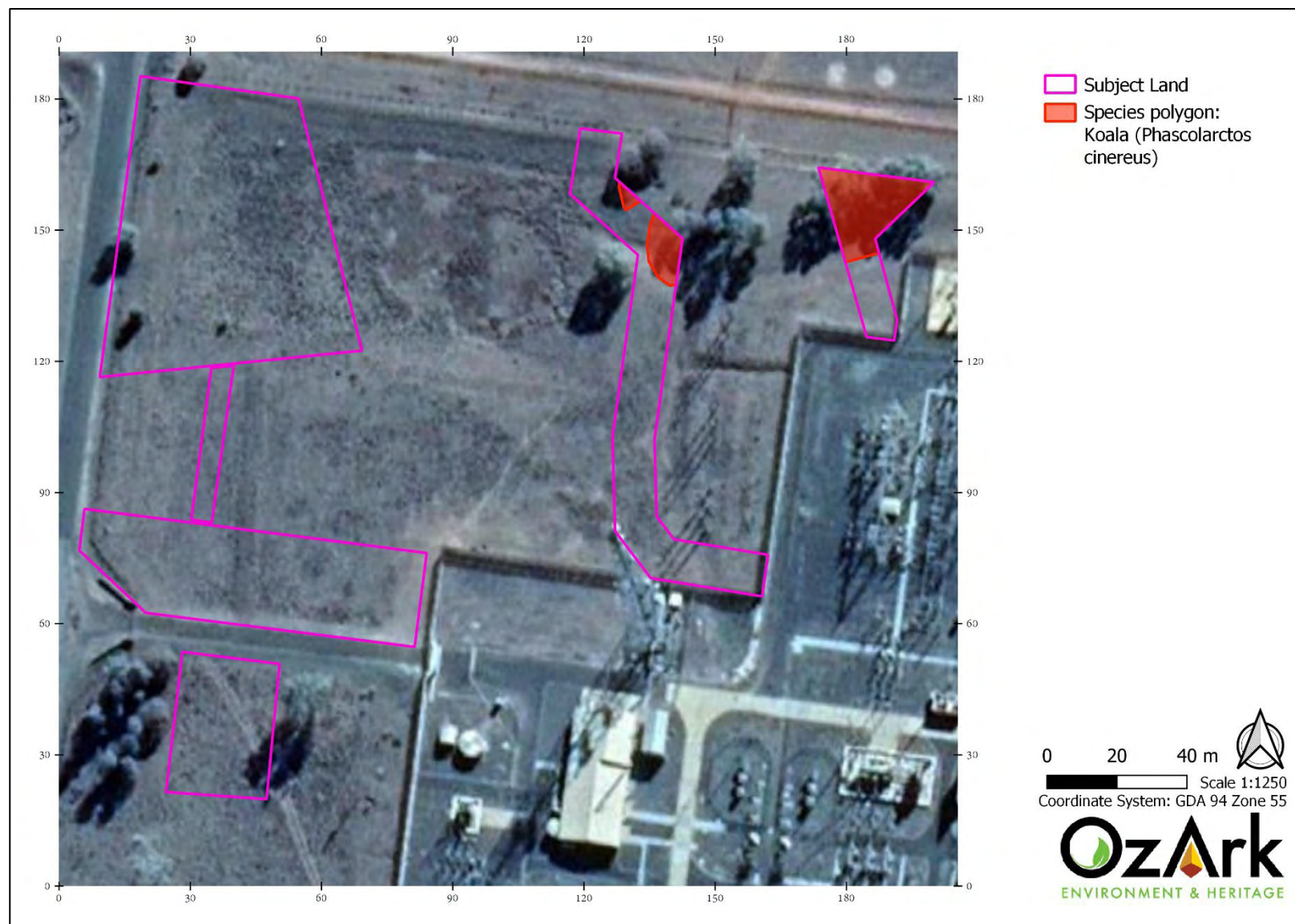


Figure 5-8. Species polygon for the Koala (*Phascolarctos cinereus*), incorporating all vegetation with suitable feed trees.

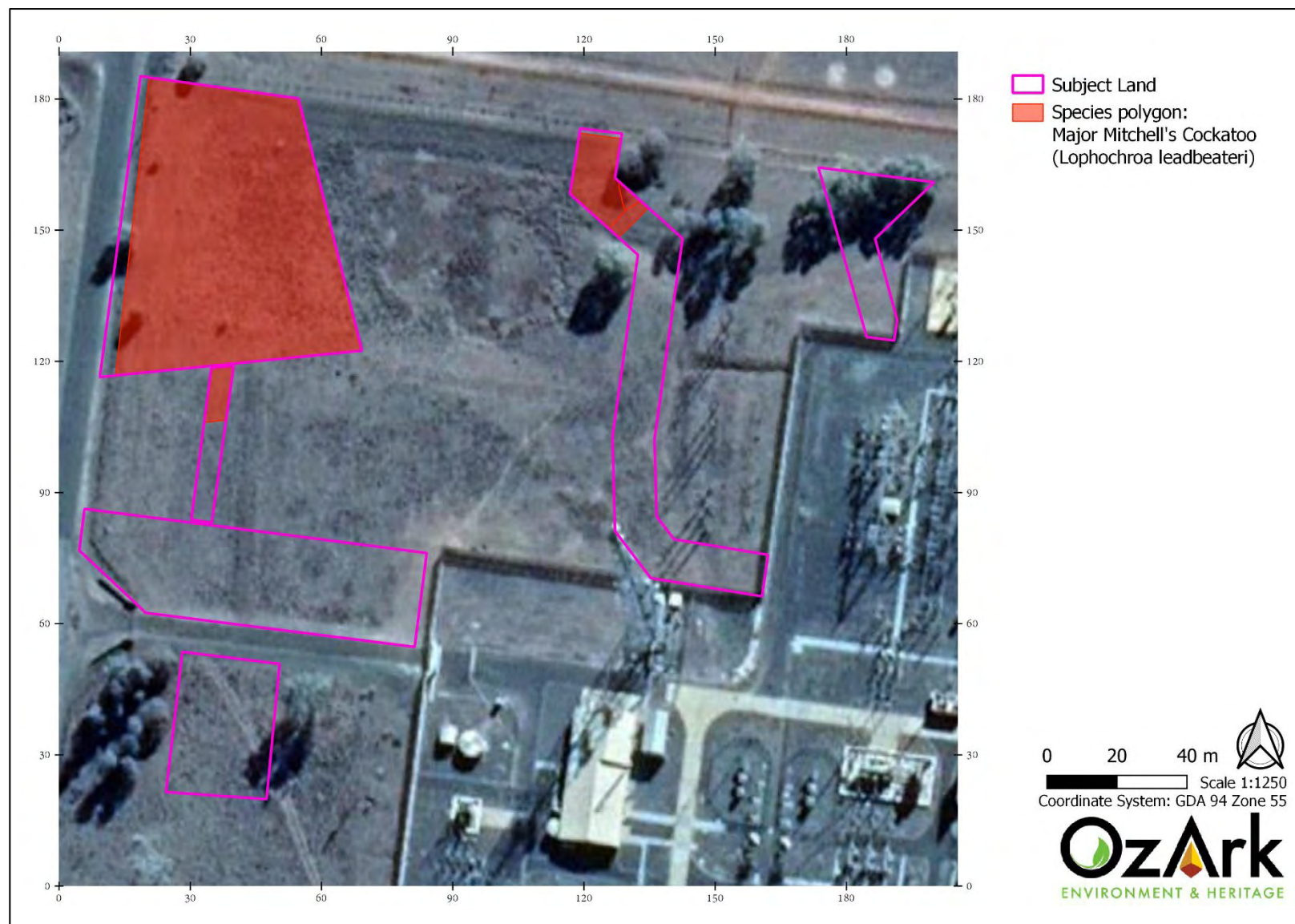


Figure 5-9. Species polygon for the Major Mitchell's Cockatoo (*Lophochroa leadbeateri*), incorporating all vegetation within 200 m of suitable tree hollows.

6 Impact Summary

6.1 Offset Scheme Threshold

The proposal will not impact on land mapped on the Biodiversity Values Map (**Appendix A**). The Proposal has been assessed against the relevant vegetation clearing thresholds under the NSW Biodiversity Offsets Scheme (BOS). The thresholds applicable to different lot size categories for the land zoning are provided in **Table 6-1** (BAM 2020). The subject land is currently zoned RU1 Primary Production, with a minimum lot size of 200 ha. Clearing of 1 ha or more of native vegetation will require entry into the BOS. While the proposal will clear less than 1 ha, the proposal is being assessed as a component of an earlier development and it has been determined that a BDAR will be required for any vegetation clearance.

Table 6-1. Area clearing thresholds for entry into the Biodiversity Offsets Scheme.

LEP Minimum Lot Size	Threshold Area of Clearing
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

6.2 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 reduced in the planning phase to minimise impact to native vegetation on the subject land.

In addition, the following minimisation methods will be implemented:

- Vegetation will be removed in a manner that avoids damage to surrounding vegetation, ensuring disturbance to vegetation and soil is kept to a minimum.

Table 6-2 outlines recommended environmental safeguards to reduce impacts on vegetation, soil and biodiversity.

Table 6-2. Recommended Environmental Safeguards.

Impact	Environmental Safeguard	Timing
Clearing and prevention of over-clearing	1. No new areas to be cleared without further assessment, as threatened flora species may occur in any unassessed impact area.	Pre-disturbance
	2. All personnel are to be inducted to be aware that disturbance of any stand of native vegetation outside the development footprint, or otherwise unauthorised disturbance, could have legislative consequences if done without approval. Evidence of all personnel receiving an induction would be kept on file (signed induction sheets).	
	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
	4. A pre-clearing process and unexpected threatened species finds procedure is recommended. All personnel involved with the construction should be made aware of potential threatened flora and fauna present e.g., those in Table 5-4 . In the event that threatened flora is discovered on site, works should cease in that location and a qualified ecologist should be consulted. Any fauna found during the disturbance are to be allowed (or assisted) to relocate into adjoining habitat. Any vegetation containing threatened fauna may not be removed until the fauna has dispersed.	Pre-disturbance / during construction
	5. Vegetation will be removed in such a way to avoid unnecessary damage to surrounding vegetation.	Pre-disturbance
	6. Where possible, vegetation to be removed will be mulched or placed on-site and re-used to stabilise disturbed areas.	During and after disturbance
Bushfire protection	7. Ensure vegetation management for bushfire protection is consistent, as far as practicable, with biodiversity protection and remove only the necessary vegetation to achieve fuel reduction.	Ongoing
Soil management	8. An erosion and sediment control plan will be addressed within an Environmental Management Plan	Pre-disturbance
Damage to native vegetation outside of impact zone	9. Stockpile and compound sites are to be located within the assessed subject land and preferentially according to the following criteria: - o At least 40 m away from the nearest waterway. - o In areas of low ecological conservation significance (i.e. previously disturbed land). - o On relatively level ground.	During construction
	10. Stockpiling of materials and equipment, and parking of vehicles, is to be avoided within the dripline (extent of foliage cover) of any tree.	During construction
Introduction and spread of significant weeds and pathogens	11. Construction machinery (bulldozers, excavators, trucks, loaders and graders) would be clean, and soil- and weed-free, before entry to the work site.	Pre-disturbance
	12. Protocols must be in place to ensure that weeds are not spread throughout the site. In particular, the High Threat Exotic: Treasure Flower (<i>Gazania rigens</i>) is present on the subject land and must be managed.	Pre-disturbance, during disturbance, ongoing
	13. Weed-free fill only to be used for on-site earthwork, if required.	During disturbance, Ongoing

Impact	Environmental Safeguard	Timing
	14. 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.	Ongoing
Disturbance to fallen timber, dead wood, bush rock and anthropogenic habitat	15. 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.	Pre-disturbance and during disturbance
	16. If fauna is detected, stop work immediately and either leave the area undisturbed until the individuals have dispersed or engage suitably qualified personnel to facilitate their removal.	During disturbance

6.3 Impacts to Wetlands, Watercourses and Aquatic habitat

There are no watercourses on the subject land; however, small ephemeral wetlands occur marginally outside the footprint. As these wetlands are already highly disturbed, the impacts of the proposal are likely to be minimal. Potential for indirect impacts to these wetlands from erosion and sedimentation related to construction activities will be further minimised by developing and implementing an erosion and sediment control plan.

6.4 Impacts to Native Vegetation

There are two PCTs (26 and 45) within the subject land, with up to 0.92 ha of native vegetation to be removed. One vegetation zone (26_Regrowth) was found to meet the condition criteria to be considered an EEC under the BC Act. As such, 0.04 ha of the BC Act-listed EEC *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions* will be impacted by the current proposal. No zones fitted the criteria to be an EEC under the EPBC Act, as such, no EPBC Act-listed ecological community will be impacted by the current proposal.

6.5 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 has 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.

Three SAI species are relevant to this proposal and are explored below:

- 1) ***Brachyscome muelleroides* - Claypan Daisy.** For this species, Principle 3 must be considered. This plant grows in damp areas on the margins of claypans in northern Victoria and southern NSW. It is known to grow in association with *Pycnosorus globosus*, *Lachnagrostis filiformis*, *Austrodanthonia duttoniana*, and *Calotis anthemoides*; none of these associated species were recorded within the subject land (**Appendix C**). The closest record occurs ~55 km southeast of the subject site within claypans soils. As the subject land is farther north than any sightings of this species as recorded on BioNet Atlas and the Australian Virtual Herbarium, it is unlikely that the species occurs on the subject land. Should it occur, it would be most likely to occur in the zone 53_remnant, that has been excluded from the impact footprint (**Figure 4-1**). Therefore the proposal should not further reduce the geographic distribution of this species.
- 2) ***Convolvulus tedmoorei* – Bindweed.** For this species, Principle 2 must be considered. This species occurs in northern inland areas of South Australia, south-western Queensland and western NSW. Within western NSW it is known from five records along floodplains of the major rivers, the Darling and Murrumbidgee. Their hard-coated seeds are believed to lie dormant for long periods with periodic flooding triggering germination. The nearest records occur ~30km from the subject land from 1969. A targeted survey was carried out for this species on the subject land; although the survey did detect the related species *Convolvulus clementii* at several locations within the impact footprint, *C. tedmoorei* was not detected. As such, this species is deemed to be absent from all but a small section (0.4 ha) of the subject land that was not traversed during the targeted survey. If *C. tedmoorei* were to occur in the 0.4 ha that was not surveyed, its population size should not be further reduced by the proposal as the disturbance will be temporary, with groundcover being allowed to regenerate post-construction.

3) *Pilularia novae-hollandiae* - Austral Pillwort. For this species, Principle 3 must be considered. Austral Pillwort is a semi-aquatic fern, that grows in shallow swamps and waterways, often among grasses and sedges. It is known to occur from table drains on roadsides. The Australian Virtual Herbarium shows records for this species in Western Australia, South Australia, Victoria, NSW, and one record from Queensland. Within NSW this species has been recorded from Sydney, Khancoban, the Riverina (between Albury and Urana), Oolambeyan National Park, and Lake Cowal, though the latter two populations are the only two still known to be extant in NSW. Surveying for this species is difficult, as individuals are small, only growing to 8 cm in height, and often occurring in inundated habitat, therefore this species may be more widespread than currently reported. The nearest records for this species are from ~60km from the subject land at Oolambeyan NP where they grow in Gilgai landforms. One gilgai landform occurs near the subject land (but outside of the impact footprint) and these landforms are common throughout the study area. Considering the absence of nearby records of this species, and the abundance of similar microhabitat that would remain in the study area, it is unlikely that impacts on this habitat would impact the geographic distribution of this species.

6.6 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.

Impacts associated with the construction of the Darlington Point Solar Farm resulted in impacts to the same communities identified in the present assessment. The Biodiversity Assessment Report for that proposal identified 782 ha of PCT 45 and 6 ha of PCT 26 within the footprint of that proposal. It is estimated that 60% of PCT 45 and 90% of PCT 26 have been lost within NSW, as a result of historical clearing for agriculture and infrastructure. The surviving remnants have also experienced declines in condition due to weed incursions and changes to land management practices. While the proposed impacts of this additional work are small, they will nevertheless contribute further to the decline in these communities. It should be noted, however, that the impacts associated with the present proposal – namely the digging of trenches for cable routes and the use of land for temporary construction laydowns – are not necessarily permanent impacts. It is likely that the communities impacted will be able to recolonise the impact footprint, though they may experience some decline in condition. Historical impacts associated with intensive poultry farming and potential future impacts associated with energy infrastructure,

including an additional proposed BESS on nearby lands, are sources of additional impacts to native flora and fauna within the local landscape.

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 represent contributions to the ongoing decline in biodiversity values across the state.

6.7 Prescribed Impacts

The *Biodiversity Conservation Regulation 2017* lists eleven impacts as prescribed impacts that must be avoided, minimised and mitigated. These prescribed impacts and their relevance to the Proposal are described in **Table 6-3**.

Table 6-3. 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 development footprint.	None required.
Impacts of development on the habitat of threatened species or ecological communities associated with human made structures.	Human-made structures exist within the footprint – namely, structures associated with electricity infrastructure. 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.	Non-native vegetation occurs around the margins of the TransGrid substation and the parking lot located at the southern limit of the subject land. Considering the small extent of this non-native vegetation, impacts associated with the proposal are likely to be minimal. However, non-native vegetation on the subject land may still provide habitat for species or ecosystem credit species, and mitigations associated with fauna interactions still apply.	Table 6.2.
Impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range.	The proposal is unlikely to adversely impact connectivity within the Plains Grass grassland. While construction works would likely impede movement of species within the grassland, particularly as the cable routes will bisect the site, this impact is only likely to be temporary.	Table 6-2.

	Connectivity within the landscape is already poor (see Section 3.12).	
Impacts of the development on movement of threatened species that maintains their life cycle.	Due to the limited connectivity and few habitat features offered by the site, no significant impacts to the movement of any threatened species are expected as a result of this proposal.	Table 6-2.
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 outside the subject land are anticipated. Small ephemeral wetlands occur within the local landscape. Sediment runoff (caused by ground disturbance/vegetation removal by the proposal) may impact these wetlands; however, considering the existing degree of disturbance to these wetlands, these impacts are unlikely to be significant.	Table 6-2.
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 the construction works associated with the proposal. Maintaining suitably low speed limits on site will help to mitigate impacts that arise from this increase.	Table 6-2.

6.8 Indirect Impacts

Potential indirect impacts associated with the proposal are explored further in **Table 6-4**. The main impacts of the proposal are expected to be contained within the subject land, 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 6-2**.

Table 6-4. 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	- Native vegetation surrounding the subject land - 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	Constant	- Native vegetation surrounding the subject land - Threatened species assumed present	Degradation (possibly temporary) of native vegetation and habitat for threatened flora and fauna.
Reduce viability of adjacent habitat due to noise, dust or light spill	Construction phase	Common	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	Native vegetation surrounding the subject land	Degradation (possibly temporary) of native vegetation.
Increased risk of starvation or exposure, and loss of shade or shelter	Construction phase	Rare	Threatened species assumed present	Minor loss of foraging and refuging habitat
Loss of breeding habitat	Construction and Operation phase	Possible	Threatened species assumed present	Minor (possibly temporary) loss of potential breeding habitat
Trampling of threatened flora species	Construction and Operation phase	Rare	No threatened flora species were detected or assumed present, so no impacts are likely.	Possible minor loss of threatened flora
Rubbish dumping	Construction and Operation phase	Possible	Native vegetation surrounding the subject land	Degradation of native vegetation

			Threatened species assumed present	and habitat for threatened species
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6.9 Key Threatening Processes

Some Key Threatening Processes (KTPs) at the NSW State and Federal level will be exacerbated by the proposal. Threats exacerbated by poor biosecurity controls will potentially be exacerbated by the proposal. However, implementing the measures for preventing the introduction and spread of pathogens and weeds described in **Table 6-2**, this potential is reduced. A summary of those KTPs that may be exacerbated by the current proposal is given in **Table 6-5**. **Appendix F** lists all KTPs and includes explanations as to why many have been assessed as not being present in the study area or exacerbated by the proposal.

Table 6-5. Key threatening processes likely or potentially exacerbated by the proposal.

Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Anthropogenic Climate Change	KTP	KTP	Likely	Yes Some unavoidable emissions will occur from construction machinery.
Competition and grazing by the feral European Rabbit, <i>Oryctolagus cuniculus</i>	KTP	KTP	Likely	Potentially The spread of grassy weeds that may result from these works could encourage rabbit activity.
Importation of Red Fire Ants <i>Solenopsis invicta</i>	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks though the pathogen likely already occurs in the study area.
Infection of native plants by <i>Phytophthora cinnamomi</i>	KTP	KTP	Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion and establishment of exotic vines and scramblers	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.

Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Invasion, establishment and spread of Lantana (<i>Lantana camara</i>)	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by African Olive <i>Olea europaea</i> subsp. <i>cuspidata</i>	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Invasion of native plant communities by exotic perennial grasses	KTP		Likely	Potentially Increased disturbance may bring new exotic perennial grasses to the site
Invasion of the Yellow Crazy Ant, <i>Anoplolepis gracilipes</i> (Fr. Smith) into NSW	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.

6.10 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, five TECs, 24 threatened species, 10 migratory species and 16 marine species that could possibly occur in the search area (**Appendix A**). Of these, 10 threatened and one migratory species possibly occur, based on habitat available on the subject land (**Table 6-6; 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 6-7**. It is concluded that no MNES will be significantly impacted by the proposal.

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

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence
<i>Litoria raniformis</i>	Southern Bell Frog	E,P	V	4	Moderate
<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	0	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	P	V,C,J,K	0	Moderate
<i>Polytelis swainsonii</i>	Superb Parrot	V,P	V	261	High
<i>Austrostipa wakoolica</i>	A spear-grass	E	E	0	Moderate
<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	0	Moderate
<i>Brachyscome papillosa</i>	Moss-giel Daisy	V	V	0	Moderate
<i>Lepidium monophlocoides</i>	Winged Pepper-cress	E	E	0	Moderate
<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	0	Moderate
<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	0	Moderate
<i>Phascogale cinereus</i>	Koala	V,P	E	0	Moderate

* V=Vulnerable, E=Endangered, P=Protected, V=Vulnerable

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

Table 6-7. Impacts to Matters of National Environmental Significance.

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

7 Biodiversity Credit and Offset Report

7.1 Management Zones

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

7.2 Vegetation Integrity Assessment

Vegetation integrity scores (VIS) 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 4.2.2**.

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 BAM, as described above. The VI assessment for each vegetation zone including the loss of VI due to the Proposal, averaged across the construction and any APZ areas, 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
45_Remnant	45	0.56	59.2	79.5	-	68.6	Development footprint	0	-68.6
45_Slashed	45	0.26	58.6	74.3	-	66	Development footprint	0	-66
45_Plantings	45	0.06	55.7	81	-	67.2	Development footprint	0	-67.2
26_Regrowth	26	0.04	37.8	55	27.7	38.6	Development footprint	0	-38.6

7.3 Ecosystem Credit Summary

Based on the VI score and area of PCT impacted, 28 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 G**.

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

Vegetation zone name	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 SAIL	Ecosystem credits
45_Remnant	68.6	-68.6	0.56	-	-	Not a TEC	High Sensitivity to Gain	1.75	False	17
45_Slashed	66	-66	0.26	-	-	Not a TEC	High Sensitivity to Gain	1.75	False	8
45_Plantings	67.2	-67.2	0.06	-	-	Not a TEC	High Sensitivity to Gain	1.75	False	2
26_Regrowth	38.6	-38.6	0.04	EEC	Does not fit listing	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	High Sensitivity to Gain	2.0	False	1
TOTAL										28

7.4 Species Credit Summary

In total, eleven species credit species were assumed to be present, generating an obligation to retire 285 species credits. The species credits required for the proposal are summarised in **Table 7-3**. The full biodiversity credit summary report is provided in **Appendix G**.

Table 7-3. Species credit summary.

Scientific Name	Common Name	Species presence	Impacted area	Biodiversity risk weighting	Potential SAI	Species credits generated
<i>Austrostipa wakoolica</i>	A spear-grass	Assumed present	0.04 ha	High	False	1
<i>Brachyscome muelleroides</i>	Claypan Daisy	Assumed present	0.88 ha	Very High	True	45
<i>Brachyscome papillosa</i>	Mossgiel Daisy	Assumed present	0.88 ha	High	False	30
<i>Convolvulus tedmorei</i>	Bindweed	Assumed present	0.40 ha	Very High	True	21
<i>Lepidium monolocoides</i>	Winged Peppergrass	Assumed present	0.92 ha	High	False	31
<i>Leptorhynchus orientalis</i>	Lanky Buttons	Assumed present	0.88 ha	High	False	30
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (breeding)	Assumed present	0.49 ha	High	False	17
<i>Phascolarctos cinereus</i>	Koala (breeding)	Assumed present	0.06 ha	High	False	2
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	Assumed present	0.92 ha	Very High	True	46
<i>Swainsona murrayana</i>	Slender Darling Pea	Assumed present	0.92 ha	High	False	31
<i>Swainsona sericea</i>	Silky Swainson-pea	Assumed present	0.92 ha	High	False	31
TOTAL						285

7.5 Offset Requirement

Offsetting is required for the 28 Ecosystem Credits and 285 Species 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 (the proponent) proposes to develop new cable routes from the new Riverina Battery Energy Storage System (BESS) to the existing TransGrid Darlington Point Substation at Darlington Point, New South Wales as well as establish temporary construction areas for laydowns, stockpiles and a compound within the substation (the proposal). OzArk Environment & Heritage (OzArk) was engaged by Edify Energy to prepare the biodiversity assessment for the proposal. The proposal will clear up to 0.92 ha of native vegetation on Lot 2 DP628785, surrounding the TransGrid Darlington Point Substation. The native vegetation clearing threshold for the relevant lot is 1 ha; as such, the proposal in itself would not ordinarily trigger entry into the NSW Biodiversity Offsets Scheme (BOS). However, as the proposal is part of a larger action (the Darlington Point Solar Farm development, SSD-8392), the BOS has already been triggered and therefore a Biodiversity Development Assessment Report (BDAR) is required. 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 (number of ecosystem and species credits).

The native vegetation present on the subject land consists of two Plant Community Types (PCTs):

- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion.
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion.

PCT 26 was confined to a small area (0.04 ha) with a single mature tree and diffuse patches of regrowth. This area was assigned to a single vegetation zone (26_Regrowth). PCT 26 is associated with the following Threatened Ecological Communities (TECs):

- *Biodiversity and Conservation Act 2016* (BC Act)-listed Endangered Ecological Community (EEC): *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions*.
- Environment Protection and Biodiversity Conservation Act (EPBC Act)-listed EEC: *Weeping Myall Woodlands*.

The occurrence of PCT 26 fitted the criteria for listing under the BC Act, but not the EPBC Act, therefore 0.04 ha of the BC Act-listed EEC will be impacted by this proposal.

PCT 45 occupied the majority of the subject land (0.88 ha) and was recorded in three distinct condition classes (45_Remnant, 45_Slashed, and 45_Plantings).

PCT 45 is associated with the following TECs:

- BC Act-listed Critically Endangered Ecological Community (CEEC): *Artesian Springs Ecological Community in the Great Artesian Basin*.
- EPBC Act-listed CEEC: *Natural Grasslands of the Murray Valley Plains*.

The occurrence of PCT 45 on the subject land could be excluded from consideration as either CEEC.

In total, 23 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. Two species were removed from the list due to habitat constraints; therefore, 21 species are assumed present, generating a total of 28 Ecosystem Credits.

In total, 21 species credit species were generated by the BAM-C. After consideration of geographical and habitat constraints, nine species could be discounted due either to distribution or to the absence of features necessary for breeding. Twelve species credit species were not discounted due to constraints. Targeted surveys were conducted for two of these twelve species: the Australian Bustard (*Ardeotis australis*) and the Bindweed (*Convolvulus tedmoorei*) and neither species was detected; however, following revisions to the proposal footprint, *C. tedmoorei* was necessarily assumed present for a small area (0.40 ha) of unsurveyed habitat. The remaining ten species were assumed present for the entire subject land as it was not the appropriate time of year to conduct targeted surveys for them. Species credits for the species assumed present total 285 Species Credits.

The proponent intends to satisfy their Ecosystem and Species credit obligations by buying and retiring the necessary Ecosystem 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 Agriculture, Water and the Environment 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

BC Act Biodiversity Values Map



Biodiversity Values Map



81.5 0 40.77 81.5 Metres
WGS_1984_Web_Mercator_Auxiliary_Sphere

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.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

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Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	22/07/2022 10:21 AM	BDAR Required*
Total Digitised Area	11,732.4 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	2,000,000 sqm	
Area Clearing Threshold 10,000sqm = 1ha	10,000 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

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

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

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

Disclaimer

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

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

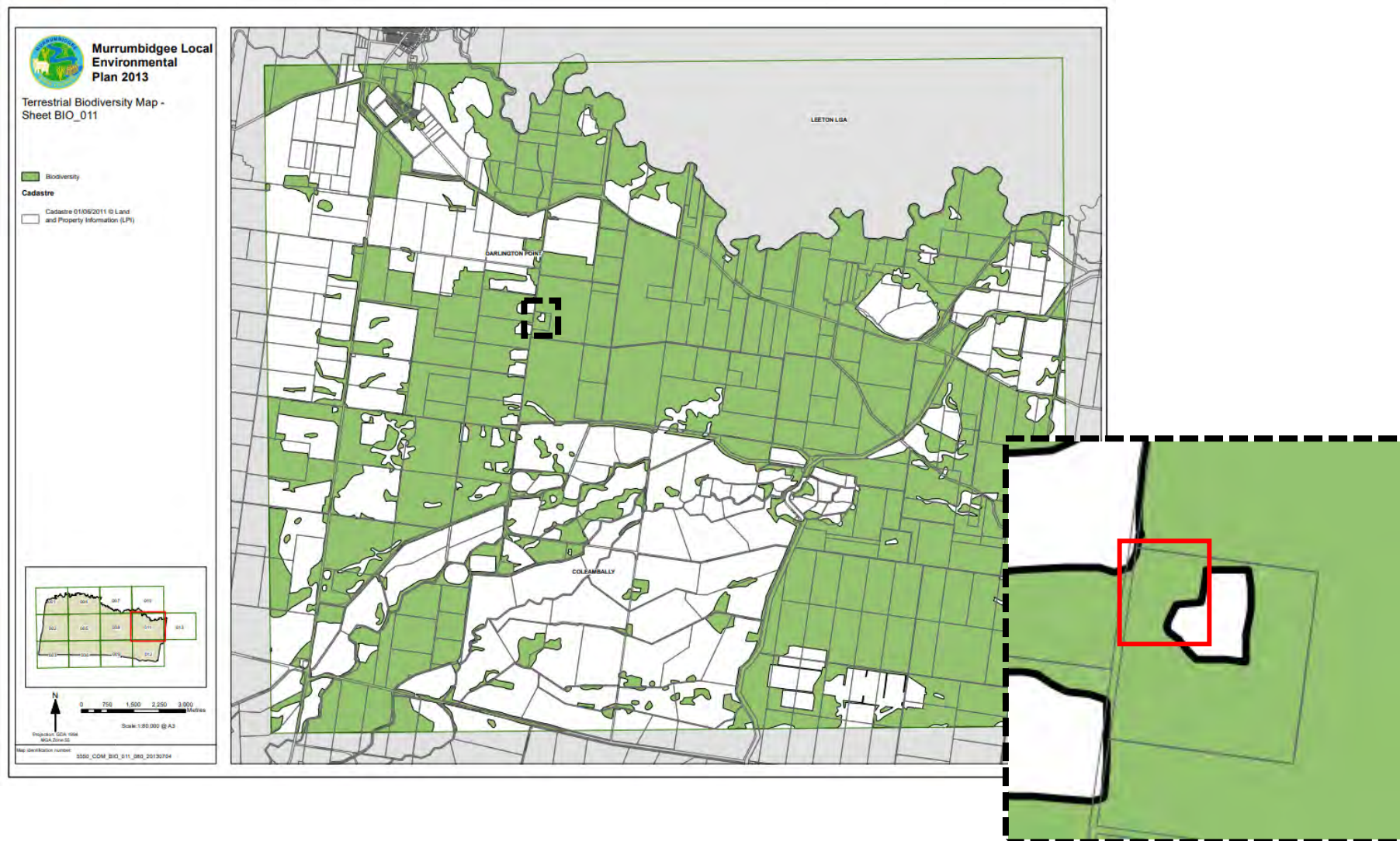
Acknowledgement

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

Signature _____ Date: 22/07/2022 10:21 AM

Murrumbidgee Local Environmental Plan 2013: Terrestrial Biodiversity Values.

Magnified inset: The red polygon shows the location of the subject land.



EPBC Act Protected Matters Report



Australian Government
Department of Agriculture,
Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 14-Jul-2022

[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:	5
Listed Threatened Species:	24
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	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:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	500 - 600km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	300 - 400km upstream from Ramsar site	In feature area
Riverland	400 - 500km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	500 - 600km 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
Buloke Woodlands of the Riverina and Murray-Darling Depression 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
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poeciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat known to 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
FISH			
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In feature area
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
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
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascogale 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 buffer area only
PLANT			
Austrostipa wakoolica [66623]	Endangered	Species or species habitat may occur within area	In buffer area only
Brachyscome papillosa Mossgiel Daisy [6625]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium monoplacoides Winged Pepper-cress [9190]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Maireana cheeli Chariot Wheels [8008]	Vulnerable	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 plagiotropis Red Darling-pea, Red Swainson-pea [10804]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
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 likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within 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	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands

[Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [15399]	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 likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
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]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Murrumbidgee Valley	Regional Park	NSW	In buffer area only
Murrumbidgee Valley	National Park	NSW	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Darlington Point Solar Farm, near Darlington Point, NSW	2018/8218	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	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 the Murrumbidgee Subregion of the Riverina Bioregion

Class	Scientific Name	Common Name	NSW Status*	Comm. Status+	Records
Amphibia	<i>Crinia sloanei</i>	Sloane's Froglet	V,P	E	2
Amphibia	<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	1791
Reptilia	<i>Tiliqua occipitalis</i>	Western Blue-tongued Lizard	V,P		P
Aves	<i>Leipoa ocellata</i>	Malleefowl	E1,P	V	1
Aves	<i>Anseranas semipalmata</i>	Magpie Goose	V,P		61
Aves	<i>Oxyura australis</i>	Blue-billed Duck	V,P		149
Aves	<i>Stictonetta naevosa</i>	Freckled Duck	V,P		262
Aves	<i>Apus pacificus</i>	Fork-tailed Swift	P	C,J,K	9
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	10
Aves	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	241
Aves	<i>Circus assimilis</i>	Spotted Harrier	V,P		122
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		359
Aves	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		142
Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		5
Aves	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		1
Aves	<i>Falco hypoleucos</i>	Grey Falcon	E1,P,2		9
Aves	<i>Falco subniger</i>	Black Falcon	V,P		164
Aves	<i>Grus rubicunda</i>	Brolga	V,P		194
Aves	<i>Ardeotis australis</i>	Australian Bustard	E1,P		6
Aves	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		30
Aves	<i>Charadrius veredus</i>	Oriental Plover	P	C,J,K	1
Aves	<i>Pluvialis fulva</i>	Pacific Golden Plover	P	C,J,K	14
Aves	<i>Pedionomus torquatus</i>	Plains-wanderer	E1,P	CE	1342
Aves	<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	34
Aves	<i>Actitis hypoleucos</i>	Common Sandpiper	P	C,J,K	5
Aves	<i>Arenaria interpres</i>	Ruddy Turnstone	P	C,J,K	11
Aves	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	C,J,K	488
Aves	<i>Calidris canutus</i>	Red Knot	P	E,C,J,K	4
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	101
Aves	<i>Calidris melanotos</i>	Pectoral Sandpiper	P	J,K	75
Aves	<i>Calidris ruficollis</i>	Red-necked Stint	P	C,J,K	152
Aves	<i>Calidris subminuta</i>	Long-toed Stint	P	C,J,K	21
Aves	<i>Gallinago hardwickii</i>	Latham's Snipe	P	J,K	81
Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	P	C,J,K	8
Aves	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	64
Aves	<i>Numenius minutus</i>	Little Curlew	P	C,J,K	2

Class	Scientific Name	Common Name	NSW Status*	Comm. Status+	Records
Aves	<i>Philomachus pugnax</i>	Ruff	P	C,J,K	12
Aves	<i>Tringa glareola</i>	Wood Sandpiper	P	C,J,K	322
Aves	<i>Tringa nebularia</i>	Common Greenshank	P	C,J,K	274
Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	C,J,K	382
Aves	<i>Glareola maldivarum</i>	Oriental Pratincole	P	C,J,K	1
Aves	<i>Chlidonias leucopterus</i>	White-winged Black Tern	P	C,J,K	3
Aves	<i>Gelochelidon nilotica</i>	Gull-billed Tern	P	C	148
Aves	<i>Hydroprogne caspia</i>	Caspian Tern	P	J	88
Aves	<i>^Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo, Riverina population	E2,V,P,2		1
Aves	<i>^Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V,P,2		2
Aves	<i>^Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V,P,2		72
Aves	<i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	2
Aves	<i>Neophema pulchella</i>	Turquoise Parrot	V,P,3		5
Aves	<i>Polytelis anthopeplus monarchoides</i>	Regent Parrot (eastern subspecies)	E1,P,3	V	7
Aves	<i>Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	1163
Aves	<i>Ninox connivens</i>	Barking Owl	V,P,3		5
Aves	<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3		2
Aves	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		3
Aves	<i>Climacteris affinis</i>	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	E2,P		P
Aves	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		221
Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		14
Aves	<i>Pyrrholaemus brunneus</i>	Redthroat	V,P		3
Aves	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE	2
Aves	<i>Certhionyx variegatus</i>	Pied Honeyeater	V,P		37
Aves	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		279
Aves	<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	73
Aves	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V,P		7
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		800
Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		68
Aves	<i>Pachycephala inornata</i>	Gilbert's Whistler	V,P		2
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		62

Class	Scientific Name	Common Name	NSW Status*	Comm. Status+	Records
Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		10
Aves	<i>Petroica boodang</i>	Scarlet Robin	V,P		12
Aves	<i>Petroica phoenicea</i>	Flame Robin	V,P		33
Aves	<i>Hirundo rustica</i>	Barn Swallow	P	C,J,K	2
Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		63
Mammalia	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1
Mammalia	<i>Macrotis lagotis</i>	Bilby	E4,P	V	1
Mammalia	<i>Phascolarctos cinereus</i>	Koala	V,P	E	29
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V,P		4
Mammalia	<i>Chalinolobus picatus</i>	Little Pied Bat	V,P		1
Mammalia	<i>Myotis macropus</i>	Southern Myotis	V,P		10
Mammalia	<i>Vespadelus baverstocki</i>	Inland Forest Bat	V,P		3
Flora	<i>Ptilotus extenuatus</i>		E4		2
Flora	<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	12
Flora	<i>Brachyscome papillosa</i>	Mossgiel Daisy	V	V	51
Flora	<i>Calotis moorei</i>	A burr-daisy	E1	E	P
Flora	<i>Leptorhynchos orientalis</i>	Lanky Buttons	E1		39
Flora	<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray		E	1
Flora	<i>Lepidium monoplacoides</i>	Winged Peppercress	E1	E	25
Flora	<i>Stenopetalum velutinum</i>	Velvet Thread-petal	E4		1
Flora	<i>Maireana cheelii</i>	Chariot Wheels	V	V	50
Flora	<i>Sclerolaena napiformis</i>	Turnip Copperburr	E1	E	186
Flora	<i>Convolvulus tedmoorei</i>	Bindweed	E1		1
Flora	<i>Cullen parvum</i>	Small Scurf-pea	E1		2
Flora	<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	157
Flora	<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	1353
Flora	<i>Swainsona sericea</i>	Silky Swainson-pea	V		150
Flora	<i>Pilularia novae-hollandiae</i>	Austral Pillwort	E1,3		3
Flora	<i>Eucalyptus leucoxylon</i> subsp. <i>pruinosa</i>	Yellow Gum	V		1
Flora	<i>Caladenia arenaria</i>	Sand-hill Spider Orchid	E1,P,2	E	95
Flora	<i>Diuris</i> sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	E1,P,2		20
Flora	<i>Diuris tricolor</i>	Pine Donkey Orchid	V,P,2		3
Flora	<i>Austrostipa wakoolica</i>	A spear-grass	E1	E	P
Flora	<i>Grevillea ilicifolia</i> subsp. <i>ilicifolia</i>	Holly-leaf Grevillea	E4A		P
Flora	<i>Solanum karsense</i>	Menindee Nightshade	V	V	7
Amphibia	<i>Crinia sloanei</i>	Sloane's Froglet	V,P	E	2
Amphibia	<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	1791

Class	Scientific Name	Common Name	NSW Status*	Comm. Status+	Records
Reptilia	<i>Tiliqua occipitalis</i>	Western Blue-tongued Lizard	V,P		P

*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.

^^ = Category 2 sensitive species.

BioNET Atlas search – threatened ecological communities predicted to occur within the Murrumbidgee Subregion of the Riverina Bioregion

Community Name	NSW status*	Comm. Status+	Records‡
<i>Acacia melvillei</i> Shrubland in the Riverina and Murray-Darling Depression bioregions	E3		K
<i>Allocasuarina luehmannii</i> Woodland in the Riverina and Murray-Darling Depression Bioregions	E3		K
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		E	K
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3		K
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3		K
Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions		CE	K
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E3		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	E4A		K
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	K

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

+Comm. Status: CE=Critically endangered, E=Endangered, V=Vulnerable.

‡Records: P = predicted to occur, K = known to occur.

BioNET Atlas search – Key Threatening Processes predicted within the Murrumbidgee Subregion of the Riverina Bioregion

Threats	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 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
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
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	
DPT03	26	Regrowth	411463.7	6165614.6		

DPTA 01	45	Plantings	411481.6	6165624.8	 
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DPTA 02	45	Slashed	411335.3	6165526.8	 
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DPTA 03	45	Slashed	411384.5	6165435.9	 
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DPTA 04	45	Remnant	411377.6	6165548.0		
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No plot	0	Non-native (TransGrid margins)				
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No plot	0	Non-native (carpark)				
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Appendix C: Field Survey Results

Fauna species list

In total, 16 fauna species, all native, were detected during the April/July 2022 field surveys. Two of the detected species are threatened. The Superb parrots were >100 m from the subject land.

*V=Vulnerable

+V=Vulnerable

Class	Scientific name	Common name	*BC Act Status	+EPBC Act Status
Aves	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped thornbill	-	-
Aves	<i>Corvus coronoides</i>	Australian raven	-	-
Aves	<i>Cracticus nigrogularis</i>	Pied butcherbird	-	-
Aves	<i>Grallina cyanoleuca</i>	Magpie-lark	-	-
Aves	<i>Gymnorhina tibicen</i>	Australian magpie	-	-
Aves	<i>Hirundo neoxena</i>	Welcome swallow	-	-
Aves	<i>Lichenostomus penicillatus</i>	White-plumed honeyeater	-	-
Aves	<i>Malurus cyaneus</i>	Superb fairywren	-	-
Aves	<i>Manorina melanocephala</i>	Noisy miner	-	-
Aves	<i>Ocyphaps lophotes</i>	Crested pigeon	-	-
Aves	<i>Philemon citreogularis</i>	Little friarbird	-	-
Aves	<i>Platycercus eximius</i>	Eastern rosella	-	-
Aves	<i>Polytelis swainsonii</i>	Superb parrot	V	V
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned babbler (eastern subspecies)	V	-
Aves	<i>Psephotus haematonotus</i>	Red-rumped parrot	-	-
Aves	<i>Rhipidura leucophrys</i>	Willie wagtail	-	-

Flora Species List

In total, 61 plant species were detected during the April and June 2022 field surveys. Of this number, 41 (67.21%) are native and 20 (32.79%) are introduced. Three are listed as High-threat Exotic species (HTE) under the BAM. No species listed as Weeds of National Significance (WoNS) or Priority Weeds (PW) for the Riverina, including the Murrumbidgee LGA, were recorded.

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
TG	<i>Acacia pendula</i>	Weeping Myall	N	-	-	-
FG	<i>Alternanthera pungens</i>	Khaki Weed	I	Yes	No	No
FG	<i>Atriplex semibaccata</i>	Creeping Saltbush	N	-	-	-
GG	<i>Austrostipa aristiglumis</i>	Plains Grass	N	-	-	-
GG	<i>Avena fatua</i>	Wild Oats	I	-	-	-
FG	<i>Calostemma purpureum</i>	Garland Lily	N	-	-	-
FG	<i>Carex inversa</i>	Inverse Sedge	N	-	-	-
GG	<i>Chloris truncata</i>	Windmill Grass	N	-	-	-
OG	<i>Convolvulus clementii</i>	Desert Bindweed	N	-	-	-
FG	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	I	No	No	No
FG	<i>Cucumis myriocarpus</i> subsp. <i>myriocarpus</i>	Paddy Melon	I	No	No	No
GG	<i>Cynodon dactylon</i>	Couch	N	-	-	-
GG	<i>Dactyloctenium radulans</i>	Button Grass	N	-	-	-
GG	<i>Dichanthium sericeum</i>	Queensland Bluegrass	N	-	-	-
FG	<i>Dichondra</i> sp.	Kidneyweed	N	-	-	-
FG	<i>Dysphania pumilio</i>	Small Crumbweed	N	-	-	-
FG	<i>Echium plantagineum</i>	Paterson's Curse	N	-	-	-
FG	<i>Einadia nutans</i>	Climbing Saltbush	N	-	-	-
FG	<i>Eleocharis</i> sp.	Spike-rush	N	-	-	-
FG	<i>Enchylaena tomentosa</i>	Ruby Saltbush	N	-	-	-
GG	<i>Enteropogon acicularis</i>	Curly Windmill Grass	N	-	-	-
GG	<i>Eragrostis lacunaria</i>	Purple Lovegrass	N	-	-	-
FG	<i>Erodium crinitum</i>	Blue Crowfoot	N	-	-	-
TG	<i>Eucalyptus mellidora</i>	River Red Gum	N	-	-	-
TG	<i>Eucalyptus camaldulensis</i>	Yellow Box	N	-	-	-
TG	<i>Eucalyptus</i> sp. aff. <i>salubris</i>	Gimlet	I	No	No	No
TG	<i>Eucalyptus</i> spp.	Planted Eucalypts	I	No	No	No
FG	<i>Euchiton sphaericus</i>	Star Cudweed	N	-	-	-
FG	<i>Euphorbia drummondii</i>	Caustic Weed	N	-	-	-

¹ Growth Form	Scientific Name	Common Name	² Status	³ HTE	⁴ WoNS	⁵ PW
FG	<i>Helminthotheca echioides</i>	Ox-tongue	I	No	No	No
FG	<i>Juncus aridicola</i>	Rush	N	-	-	-
FG	<i>Juncus subsecundus</i>	Rush	N	-	-	-
FG	<i>Leiocarpa panaetioides</i>	Woolly Buttons	N	-	-	-
FG	<i>Lepidium africanum</i>	African Peppergrass	I	No	No	No
GG	<i>Lolium perenne</i>	Perennial Ryegrass	I	No	No	No
FG	<i>Lomandra multiflora</i>	Many-Flowered Mat-Rush	N	-	-	-
FG	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife	N	-	-	-
FG	<i>Marrubium vulgare</i>	White Horehound	I	No	No	No
FG	<i>Marsilea drummondii</i>	Common Nardoo	N	-	-	-
FG	<i>Medicago lupulina</i>	Black Medic	I	No	No	No
FG	<i>Oxalis perennans</i>	Grassland Wood-sorrel	N	-	-	-
GG	<i>Paspalum dilatatum</i>	Paspalum	I	Yes	No	No
FG	<i>Polygonum arenastrum</i>	Wireweed	I	No	No	No
FG	<i>Proboscidea louisianica</i>	Purple-Flowered Devil's Claw	I	No	No	No
FG	<i>Rhodanthe corymbiflora</i>	Small White Sunray	N	-	-	-
FG	<i>Rumex brownii</i>	Swamp Dock	N	-	-	-
GG	<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	N	-	-	-
FG	<i>Salsola australis</i>	Buckbush	N	-	-	-
FG	<i>Sclerolaena birchii</i>	Galvanized Burr	N	-	-	-
FG	<i>Sclerolaena muricata</i>	Black Rolypoly	N	-	-	-
FG	<i>Sida corrugata</i>	Corrugated Sida	N	-	-	-
FG	<i>Solanum esuriale</i>	Quena	N	-	-	-
FG	<i>Sonchus asper</i>	Prickly Sowthistle	I	No	No	No
FG	<i>Sonchus oleraceus</i>	Common Sowthistle	I	No	No	No
FG	<i>Trifolium arvense</i>	Haresfoot Clover	I	No	No	No
FG	<i>Trifolium subterraneum</i>	Subterranean Clover	I	No	No	No
FG	<i>Vittadinia cuneata</i>	Fuzzweed	N	-	-	-
FG	<i>Vittadinia gracilis</i>	Woolly New Holland Daisy	N	-	-	-
GG	<i>Vulpia bromoides</i>	Squirrel Tail Fescue	I	No	No	No
GG	<i>Walwhalleya proluta</i>	Rigid Panic	N	-	-	-
FG	<i>Xanthium spinosum</i>	Bathurst Burr	I	Yes	No	No

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

BAM Data Sheets

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	14/04/2022	Survey Name	Darlington Point - TransGrid Substation
Recorders	IG	Plot ID #	DPT03
Photo #		Zone ID	26_Regr
Datum	GDA94	Plot dimensions	20 x 20 m
Eastings	411364.3	Plot bearing along midline	170
Northings	6165644.5	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

Aerial photograph showing plot markers (0 m points). Photos taken vertically and horizontally at 0 m point and 20 m point, looking into plot			
IBRA region	Riverina		
Subregion	Murrumbidgee		
Likely Vegetation Class	Riverine Plain Woodlands		
Plant Community Type	26	Condition state	Regrowth

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

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	1
	Shrubs	2
	Grasses etc	3
	Forbs	4
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	2
	Shrubs	4
	Grasses etc	85
	Forbs	4
High threat weed cover	Ferns	0
	Other	0

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

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

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	20 x 20 m
Tree stem DBH (cm)		
>80	0	Notes on function attributes: Stem size class records # large trees (cf. benchmark) Record stems for living trees only, and for all species For multistemmed trees, record only the largest stem Presence of <5cm stems records regeneration Record # trees with hollows, not number of hollows Count as one stem where tree is multistemmed Hollow bearing stem may be a dead stem (incl. stag)
50 - 79	0	
30 - 49	-	
20 - 29	+	
10 - 19	-	
5 - 9	-	# Trees with hollows
< 5	-	
# Trees with hollows		<20cm
		>20cm**
Length of logs		Total #
		0
		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	10	50	20	20	10	22
	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

Page 1 of (2)

Date	30/06/2022	Survey Name	Darlington Point - TransGrid Substation
Recorders	DO	Plot ID #	DPTA01
Photo #		Zone ID	45_Planti
Datum	GDA94	Plot dimensions	20 x 50 m
Zone	55	Plot bearing along midline	84
Easting	411481.6	Northing	6165624.8

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	Riverina
Subregion	Murrumbidgee
Likely Vegetation Class	Riverine Plain Grasslands
Plant Community Type	45
Condition state	Plantings

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

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	1
	Shrubs	4
	Grasses etc	5
	Forbs	3
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	9
	Shrubs	14
	Grasses etc	72.4
	Forbs	1.6
High threat weed cover	Ferns	0
	Other	0

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

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

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	20 x 20 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		Total #
<20cm		0
>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							
Sub-plot score (% cover)	Litter	1	2	3	4	5	Average
	Bare ground	15	50	10	50	50	35
	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

Page 1 of (2)

Date	30/06/2021	Survey Name	Darlington Point - TransGrid Substation
Recorders	DO	Plot ID #	DPTA02
Photo #		Zone ID	45_Slashed
Datum	GDA94	Plot dimensions	20 x 50 m
Easting	411336.6	Plot bearing along midline	92
Northing	6165525.8	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	Riverina
Subregion	Murrumbidgee
Likely Vegetation Class	Riverine Plain Grasslands
Plant Community Type	45
Condition state	Slashed

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

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	2
	Grasses etc	4
	Forbs	5
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	0
	Shrubs	0.2
	Grasses etc	37
	Forbs	0.7
High threat weed cover	Ferns	0
	Other	0

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

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

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	20 x 20 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 multitemmed 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 multitemmed
< 5	-	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<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	25	40	30	5	40	28
	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				Page 1 of (2)			
Date	30/06/2021	Survey Name	Darlington Point - TransGrid Substation				
Recorders	DO	Plot ID #	DPTA03	Zone ID	45_Slashed		
Photo #		Plot dimensions	20 x 50 m				
Datum	GDA94	Zone	55	Plot bearing along midline	277		
Easting	411384.5	Northing	6165435.9	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	Riverina						
Subregion	Murrumbidgee						
Likely Vegetation Class	Riverine Plain Grasslands						
Plant Community Type	45	Condition state	Slashed				
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 (400m²)							
Dimensions (circle applicable size)							
20 x 20 m	10 x 40 m	Sum values*					
Native Richness (count of native species)	Trees	0					
	Shrubs	2					
	Grasses etc	4					
	Forbs	5					
	Ferns	0					
	Other	0					
Cover (sum of cover of natives species)	Trees	0					
	Shrubs	0.2					
	Grasses etc	37					
	Forbs	0.7					
	Ferns	0					
	Other	0					
High threat weed cover		0					
*These values summarise the floristic data for input into BAM calculator							
BAM Function plot (1000m²)							
Dimensions (circle applicable size)							
20 x 50 m	10 x 100 m	20 x 20 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 multitemmed 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 multitemmed					
< 5	-	Hollow bearing stem may be a dead stem (incl. stag)					
# Trees with hollows		<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	10	50	20	10	5	19
	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)			Micorelief				
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

Page 1 of (2)

Date	30/06/2021	Survey Name	Darlington Point - TransGrid Substation
Recorders	DO	Plot ID #	DPTA04
Photo #		Zone ID	45_Mod
Datum	GDA94	Plot dimensions	20 x 50 m
Easting	411377.5	Plot bearing along midline	277
Northing	6165545.4	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	Riverina		
Subregion	Murrumbidgee		
Likely Vegetation Class	Riverine Plain Grasslands		
Plant Community Type	45	Condition state	Moderate

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

BAM Composition / Structure plot (400m²)

Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	4
	Grasses etc	6
	Forbs	4
	Ferns	1
Cover (sum of cover of natives species)	Other	1
	Trees	0
	Shrubs	1.3
	Grasses etc	91.4
	Forbs	0.5
High threat weed cover	Ferns	0.1
	Other	0.1
0		

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

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

BAM Function plot (1000m²)

Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	20 x 20 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 multitemmed 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 multitemmed
< 5	-	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows		Total #
<20cm		0
>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)

		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	5	5	10	5	5	6
	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>Anseranas semipalmata</i>	Magpie Goose	V,P		The Magpie Goose is still relatively common in the Australian northern tropics but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. One record within 10 km and habitat broadly appropriate for this species – assumed present.
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,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. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Certhionyx variegatus</i>	Pied Honeyeater	V,P		Widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (<i>Acacia aneura</i>), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (<i>Eremophila</i> spp.); also from mistletoes and various other shrubs (e.g. <i>Grevillea</i> spp.); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times. No records within 10 km; however, some marginal foraging habitat for this species is available – assumed present.
Mammalia	<i>Chalinolobus picatus</i>	Little Pied Bat	V,P		The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest,

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
					open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. Can tolerate high temperatures and dryness but need access to nearby open water. Feeds on moths and possibly other flying invertebrates. No records within 10 km; however, some marginal foraging habitat for this species is available – assumed present.
Aves	<i>Circus assimilis</i>	Spotted Harrier	V,P		The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including <i>Acacia</i> and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. One record within 10 km and habitat broadly appropriate for this species – assumed present.
Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and <i>Acacia</i> woodland. Four records within 10 km and habitat broadly appropriate for this species – assumed present.
Aves	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. No records within 10 km; however, habitat appropriate for this species – assumed present.
Aves	<i>Falco hypoleucos</i>	Grey Falcon	E1,P,2		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,

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
					although it is occasionally found in open woodlands near the coast. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Falco subniger</i>	Black Falcon	V, 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. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Grus rubicundus</i>	Brolga	V,P		The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs. One record within 10 km and habitat broadly appropriate for this species – assumed present.
Aves	<i>Hieraaetus morphnoides</i>	Little Eagle (foraging)	V,P		The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Two records within 10 km and habitat broadly appropriate for this species – assumed present (foraging).
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	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. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
Aves	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (foraging)	V,P,2		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. No records within 10 km; however, habitat broadly appropriate for this species – assumed present (foraging).
Aves	<i>Lophoictinia isura</i>	Square-tailed Kite (foraging)	V,P,3		The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. No records within 10 km; however, habitat broadly appropriate for this species – assumed present (foraging).
Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,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. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Petroica boodang</i>	Scarlet Robin	V,P		The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
					shrubs. This species lives in both mature and regrowth vegetation. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Polytelis swainsonii</i>	Superb Parrot (foraging)	V,P,3	V	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. 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. Numerous records within 10 km, habitat broadly appropriate for this species, and species recorded in lands adjacent to subject land during field survey – assumed present (foraging).
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,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. Twenty-eight records within 10 km, habitat broadly appropriate for this species, and species recorded in and around subject land – assumed present.
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		The Yellow-bellied Sheath-tail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
					areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March, when a single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn. One record within 10 km and habitat broadly appropriate for this species – assumed present.
Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	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 Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. No records within 10 km; however, habitat broadly appropriate for this species – assumed present.
Aves	<i>Tyto novaehollandiae</i>	Masked Owl (foraging)	V,P,3		Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. No records within 10 km; however, habitat broadly appropriate for this species – assumed present (foraging).
Aves	<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. No records within 10 km and habitat lacks key requirements for this species (namely, presence of mistletoes) – absent (constraint).
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (foraging)	V,P	C	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

Class	Scientific Name	Common Name	*NSW status	+Comm status	Habitat Assessment
					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. Eleven records within 10 km; however, habitat lacks key requirements for this species (namely, presence of substantial watercourses or waterbodies within 1 km) – absent (constraint).

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>Austrostipa wakoolica</i>	A spear-grass	E	E	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
<i>Brachyscome muelleroides</i>	Claypan Daisy	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
<i>Brachyscome papillosa</i>	Mossgiel Daisy	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
<i>Convolvulus tedmoorei</i>	Bindweed	E		Most of the subject land was surveyed for this species, with the exception of a small area (0.40 ha) of suitable habitat added to the footprint subsequent to the survey. The species has been assumed present for this area and considered absent (surveyed) for the remainder of the subject land.	Assumed present - partial Absent (surveyed) - partial
<i>Lepidium monoplacoides</i>	Winged Peppergrass	E	E	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
<i>Leptorhynchus orientalis</i>	Lanky Buttons	E		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
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo (breeding)	V		This species depends on hollow-bearing trees. One suitable hollow occurs within 200 m of the impact footprint. Consequently, the species has been assumed present for the area within this 200 m buffer (=0.49 ha).	Assumed present
<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 could be conducted within the appropriate timeframe.	Assumed present
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	E		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

Scientific Name	Common Name	NSW status	Comm. status	Habitat Assessment	Species presence
<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
<i>Swainsona sericea</i>	Silky Swainson-pea	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
<i>Burhinus grallarius</i>	Bush Stone-curlew	E		This species depends on fallen or standing dead timber. With the exception of small twigs and litter, no dead timber, whether fallen or standing, occurs within the impact footprint.	Absent (constraint)
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (breeding)	V	C	No substantial waterway or waterbody exists within 1 km of the subject land. The ephemeral wetlands and small farm dams nearby are unlikely to be sufficient for this species.	Absent (constraint)
<i>Hieraaetus morphnoides</i>	Little Eagle (breeding)	V		This species depends on large live (or occasionally dead) trees within vegetation. No large trees occur within the impact footprint – only short, relatively recently planted trees were noted. The species could therefore be discounted.	Absent (constraint)
<i>Lophoictinia isura</i>	Square-tailed kite (breeding)	V		No nest trees were recorded within the subject land. All trees within the footprint were assessed. The species could therefore be discounted.	Absent (constraint)
<i>Maireana cheelii</i>	Chariot Wheels	V	V	This species is confined to the area west of Darlington Point and Jerilderie. As the subject land falls to the west of a line between these two locations, this species could be discounted.	Absent (constraint)
<i>Polytelis swainsonii</i>	Superb Parrot (breeding)	V	V	No hollow-bearing trees occur within the subject land or within the applicable buffer distance for this species (100 m).	Absent (constraint)
<i>Sclerolaena napiformis</i>	Turnip Copperburr	E	E	Confined to the Hay Plain. As the subject land does not fall within the Hay Plain, this species could be discounted.	Absent (constraint)
<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	Confined to the Hay Plain. As the subject land does not fall within the Hay Plain, this species could be discounted.	Absent (constraint)
<i>Tyto novaehollandiae</i>	Masked Owl (breeding)	V		No hollow-bearing trees occur within the subject land or within the applicable buffer distance for this species (100 m).	Absent (constraint)

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, five TECs, 24 threatened species, 10 migratory species and 16 marine species that could possibly occur in the 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	500 – 600 km upstream	No, the proposal does not occur close to the wetland.
Hattah-Kulkyne Lakes	300 – 400 km upstream	No, the proposal does not occur close to the wetland.
Riverland	400 – 500 km upstream	No, the proposal does not occur close to the wetland.
The Coorong, and Lakes Alexandrina and Albert Wetland	500 – 600 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)
Buloke Woodlands of the Riverina and Murray-Darling Depression 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.
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.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	No, this community does not occur within the subject land.

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Crinia sloanei</i>	Sloane's Froglet	V,P	E	0	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Low -Subject land within known distribution, no associated vegetation present and no records within 10 km.	No
<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	4	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. The species is also found in Victoria, Tasmania and South Australia, where it has also become endangered. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Moderate - Subject land within species distribution. No associated vegetation present and four records within 10 km.	Yes

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Actitis hypoleucos</i>	Common Sandpiper	P	C,J,K	0	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. Absent - No appropriate wetland habitat present.	No

<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE	0	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. In the last 10 years Regent Honeyeaters have been recorded in urban areas around Albury where woodlands tree species such as Mugga Ironbark and Yellow Box were planted 20 years ago. 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 eugenioides</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. cambagei</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. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
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Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Apus pacificus</i>	Fork-tailed Swift	P	C,J,K	0	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. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Arenaria interpres</i>	Ruddy Turnstone	P	C,J,K	0	Typically occurs in tropical and sub-tropical oceans across the Pacific and Indian Oceans. Absent - No appropriate habitat present.	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	0	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. Absent - No appropriate marsh habitat present.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	C,J,K	0	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. Absent - No appropriate wetland habitat present.	No
<i>Calidris canutus</i>	Red Knot	P	E,C,J,K	0	The Red Knot is migratory, breeding overseas. The omnivorous species feeds predominantly within wetland and coastal environments. There are no sites of international importance for the species listed within NSW. Absent - No appropriate wetland habitat present.	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	0	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and 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. Absent - No appropriate wetland habitat present.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Calidris melanotos</i>	Pectoral Sandpiper	P	J,K	0	The Pectoral Sandpiper breeds in northern Russia and North America. Within Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Calidris ruficollis</i>	Red-necked Stint	P	C,J,K	0	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in salt flats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation. Absent – No appropriate marsh or shore habitat present.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Calidris subminuta</i>	Long-toed Stint	P	C,J,K	0	The Long-toed Stint is a regular summer visitor to Australia, but uncommon in the east. The Long-toed Stint is irregular with widely scattered records in NSW. The species has been recorded at the estuary of the Richmond River, Kooragang Island, Pitts Town Lagoon, McGrath's Hill, Bushell's Lagoon, the Hawkesbury River, Shell Point, Botany Bay, Parkes, Fivebough Swamp, Tullakool Saltworks, Dareton, Mortanally Billabong, Wentworth and Cobar. The Long-toed Stint occurs in a variety of terrestrial wetlands. They prefer shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds. The species is also fond of areas of muddy shoreline, growths of short grass, weeds, sedges, low or floating aquatic vegetation, reeds, rushes and occasionally stunted samphire. It has also been observed at open, less vegetated shores of larger lakes and ponds and is common on muddy fringes of drying ephemeral lakes and swamps. The Long-toed Stint also frequents permanent wetlands such as reservoirs and artificial lakes. They are uncommon, but not unknown, at tidal estuaries, saline lakes, saltponds and bore swamps. Absent - No appropriate wetland habitat present.	No
<i>Charadrius veredus</i>	Oriental Plover	P	C,J,K	0	The Oriental Plover has been recorded in all states but most common in coastal areas and northern Australia. It breeds in Mongolia, and passes through east China on migration. The Oriental Plover is found generally inland; in open grasslands in arid and semi-arid zones; and less often in estuarine or littoral environments. This species prefers flat inland plains, sparsely vegetated short grass with hard bare ground including claypans, playing fields, lawns and cattle camps. The Oriental Plover may move to lightly-wooded grasslands with the onset of the wet season Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Chlidonias leucopterus</i>	White-winged Black Tern	P	C,J,K	0	The species is a non-breeding migrant to Australia, where it is widespread and common along south-western, northern and central-eastern coasts, with only scattered records of small numbers along the coasts elsewhere in southern Australia. In Australia, and elsewhere in their non-breeding range, the species mostly inhabits fresh, brackish or saline, and coastal or subcoastal wetlands. White-winged Black Terns frequent tidal wetlands, such as harbours, bays, estuaries and lagoons, and their associated tidal sandflats and mudflats. Terrestrial wetlands, including swamps, lakes, billabongs, rivers, floodplains, reservoirs, saltworks, sewage ponds and outfalls are also inhabited. In NSW, the species is widespread east of the Great Divide, mainly south to about Wollongong, but with scattered records further south along the coast and on inland wetlands west of the Great Divide, for example Lake Cowal, Narran Lake and as far west as the Menindee Lakes. Absent - No appropriate wetland habitat present.	No
<i>Gallinago hardwickii</i>	Latham's Snipe	P	J,K	0	Latham's Snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (i.e. it travels through northern Australia to reach non-breeding areas located further south). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South Wales. Absent - Associated wetland habitat absent.	No
<i>Gelochelidon nilotica</i>	Gull-billed Tern	P	C	0	The Gull-billed Tern occurs on all continents except Antarctica. Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands. They are only rarely found over the ocean. Absent - Coastal species; associated shore habitat absent.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Glareola maldivarum</i>	Oriental Pratincole	P	C,J,K	0	Within Australia the Oriental Pratincole is widespread in northern areas, especially along the coasts of the Pilbara Region and the Kimberley Division in Western Australia, the Top End of the Northern Territory, and parts of the Gulf of Carpentaria. It is also widespread but scattered inland, mostly north of 20° S. There are occasional records in southern Australia, at sparsely scattered sites, with records in all states, including an unconfirmed report in Tasmania. The species breeds overseas, spending its non-breeding season within Australia and occasionally New Zealand. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	0	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. Moderate - Subject land is within species distribution, associated vegetation present (26) and no records within 10 km.	Yes

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	0	The White-throated Needletail is widespread in eastern and south-eastern. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. Moderate - Subject land is within species distribution, associated vegetation present (26, 45) and no records within 10 km.	Yes
<i>Hirundo rustica</i>	Barn Swallow	P	C,J,K	0	The species breeds overseas. The Barn Swallow usually occurs in northern Australia, on islands and coastal regions and patchily along the north coast of the mainland from the Pilbara region, Western Australia, to Fraser Island in Queensland. The species has been recorded irregularly further south in Western Australia, in areas such as Derby and Carnarvon, and in South Australia. Vagrants have also been recorded as far south as Sydney. In Australia, the Barn Swallow is recorded in open country in coastal lowlands, often near water, towns and cities. Birds are often sighted perched on overhead wires and also in or over freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Hydroprogne caspia</i>	Caspian Tern	P	J	0	Within Australia, the Caspian Tern has a widespread occurrence and can be found in both coastal and inland habitat (Higgins & Davies 1996). The following table presents the distribution and breeding sites of the Caspian Tern in Australia. Widespread east of the Great Divide, mainly in coastal regions, and also in the Riverina and Lower and Upper Western Regions, with occasional records elsewhere (Higgins & Davis 1996). The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs Absent - Coastal species; associated wetlands and shore habitat absent.	No
<i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	0	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i>, Spotted Gum <i>Corymbia maculata</i>, Red Bloodwood <i>C. gummifera</i>, Forest Red Gum <i>E. tereticornis</i>, Mugga Ironbark <i>E. sideroxylon</i>, and White Box <i>E. albens</i>. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Leipoa ocellata</i>	Malleefowl	E1,P	V	0	The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. 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. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Limosa lapponica</i>	Bar-tailed Godwit	P	C,J,K	0	Bar-tailed Godwits arrive in Australia each year in August from breeding grounds in the northern hemisphere. Birds are more numerous in northern Australia. Bar-tailed Godwits inhabit estuarine mudflats, beaches and mangroves. They are common in coastal areas around Australia. They are social birds and are often seen in large flocks and in the company of other waders. Absent - Coastal species; appropriate shore habitat absent.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	0	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species. Absent - Coastal species; appropriate shore habitat absent.	No
<i>Numenius minutus</i>	Little Curlew	P	C,J,K	0	The Little Curlew is widespread in the north of Australia and scattered elsewhere. It is an irregular visitor to New Zealand and Tasmania. It breeds in Siberia and is seen on passage through Mongolia, China, Japan, Indonesia and New Guinea. Little Curlews may gather in large flocks on coastal and inland grasslands and black soil plains in northern Australia, near swamps and flooded areas. They also feed on playing fields, paddocks and urban lawns. Low - Subject land is within species distribution, no associated vegetation present, and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Pedionomus torquatus</i>	Plains-wanderer	E1,P	CE	0	Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species. The Plains-wanderer has declined greatly since European settlement. Areas where the species was formerly common and is now so reduced in numbers that it is effectively extinct include eastern NSW, south-western Victoria, and south-eastern South Australia. Its current stronghold is the western Riverina of southern NSW. The main reason for the decline in the numbers and distribution of Plains-wanderers in all eastern States has been the conversion of native grasslands to dense introduced pasture or croplands. If native grasslands are not overgrazed or cultivated then Plains-wanderers are largely sedentary, though there is some recent evidence to suggest that birds may not remain sedentary during prolonged drought conditions. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Philomachus pugnax</i>	Ruff	P	C,J,K	0	Rare vagrant visitor to Australia. Breeds in wetland habitat in northern Eurasia, and migrates to Africa, India and southeast Asia. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Pluvialis fulva</i>	Pacific Golden Plover	P	C,J,K	0	Within Australia, the Pacific Golden Plover is widespread in coastal regions, though there are also a number of inland records (in all states), sometimes far inland and usually along major river systems, especially the Murray and Darling Rivers and their tributaries. As the species breeds overseas, in non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Absent - Coastal species; no associated shore habitat present.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Polytelis anthopeplus monarchoides</i>	Regent Parrot (eastern subspecies)	E1,P,3	V	0	The species nests within River Red Gum forests along the Murray, Wakool and lower Murrumbidgee Rivers, and possibly the Darling River downstream of Pooncarie. Typical nest trees are large, mature healthy trees with many spouts (though dead trees are used) and are usually located close to a watercourse. Principal foraging habitat is mallee woodlands, though foraging also occurs in riverine forests and woodlands. Mallee woodland within 20 kilometres of nesting sites is critical foraging habitat for breeding birds. They may utilise cereal crops and will feed on spilt grain. Is claimed to be a pest in almond orchards. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	261	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. High - Subject land within species distribution. Associated vegetation present (26, 45); 261 records within 10 km; species recorded >100 m from subject site during field survey.	Yes

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	0	The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, 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. Low – Subject land within species distribution and no associated vegetation present. No records within 10 km.	No
<i>Tringa glareola</i>	Wood Sandpiper	P	C,J,K	0	Wood Sandpipers are more numerous in the north than the south of Australia and are also found in New Guinea, Africa, the Indian subcontinent and South-east Asia. They breed widely across the north of Europe and Asia, mostly in Scandinavia, Baltic countries and Russia. They are the most abundant migratory wader in non-coastal areas of Asia. Wood Sandpipers are seen in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber. Absent – Coastal species; appropriate wetland habitat absent.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Tringa nebularia</i>	Common Greenshank	P	C,J,K	0	The Common Greenshank does not breed in Australia, however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayments, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. Absent – Coastal species; appropriate wetland habitat absent.	No
<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	C,J,K	0	The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In south-east Australia they prefer inland saline lakes and coastal saltworks. They are found infrequently around mangroves (Higgins & Davies 1996). Absent – Coastal species; appropriate wetland habitat absent.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Caladenia arenaria</i>	Sand-hill Spider Orchid	E1,P,2	E	0	Caladenia arenaria is found mostly on the south west plains and western south west slopes. The original description is of a plant from Nangus, west of Gundagai (1865) and there is a report of the species from Adelong near Tumut. A record near Cootamundra needs verifying. The Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narranderra. Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (<i>Callitris glaucophylla</i>). Low – Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Austrostipa wakoolica</i>	A spear-grass	E1	E	0	Confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and Mairjimmy State Forest (now part of South West Woodland Nature Reserve). Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. Moderate - Subject land within species distribution, associated vegetation present (26) and no records within 10 km.	Yes
<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	0	The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Also occurs in north-central Victoria (only along the Murray from Tocumwal to the Ovens River). Grows in damp areas on the margins of claypans in moist grassland with <i>Pycnosorus globosus</i>, <i>Agrostis avenacea</i> and <i>Austrodanthonia duttoniana</i>. Also recorded from the margins of lagoons in mud or water, and in association with <i>Calotis anthemoides</i>. Moderate - Subject land within species distribution, associated vegetation present (45) and no records within 10 km.	Yes

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Brachyscome papillosa</i>	Mossgiel Daisy	V	V	0	The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington Point. In addition, there are a number of records from the Willandra Lakes World Heritage Area (including Mungo National Park) with a north-western outlier at Byrnedale Station, north of Menindee. The only known site on South Western Slopes is Ganmain Reserve. Moderate - Subject land within species distribution, associated vegetation present (45) and no records within 10 km.	Yes
<i>Calotis moorei</i>	A burr-daisy	E1	E	0	The species is confined to NSW and is known from only four populations in NSW, the type locality north-west of Louth near the homestead of Mt Mulyan sheep station, west of Wilcannia, around the Menindee area and an old record at Zara Station near Deniliquin. The species grows in sandy soil on flats, low dunes and small hills and appears to be associated with Acacia woodlands and chenopod shrublands. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Commersonia procumbens</i>		V	V	0	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. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Lepidium monoplocoides</i>	Winged Peppergrass	E1	E	0	Widespread in the semi-arid western plains regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. There is a single collection from Broken Hill and only two collections since 1915, the most recent being 1950. Also previously recorded from Bourke, Cobar, Urana, Lake Cargelligo, Balranald, Wanganella and Deniliquin. Recorded more recently from the Hay Plain, south-eastern Riverina, and from near Pooncarie. Moderate - Subject land within species distribution, associated vegetation present (26, 45) and no records within 10 km.	Yes
<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray		E	0	Endemic to south-eastern Australia, where it is currently known from three geographically separate areas in Tasmania, Victoria and south-eastern NSW and ACT. In NSW it currently occurs on the Southern Tablelands adjacent areas in an area roughly bounded by Albury, Bega and Goulburn, with a few scattered localities known from beyond this region. Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Absent - Subject land is not within known or predicted species distribution.	No
<i>Maireana cheelii</i>	Chariot Wheels	V	V	0	Restricted to the southern Riverina region of NSW, mainly in the area between Deniliquin and Hay. Also has a limited distribution in Victoria where very rare. NSW collections have mainly been from the Moulamein, Deniliquin and Hay districts, including Tchelery and Zara Stations. There is an outlying record from "Wangareena east of Wanaaring". Tends to grow in shallow depressions, often on eroded or scalded surfaces, and does not extend to the higher soils in the habitat Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Sclerolaena napiformis</i>	Turnip Copperburr	E1	E	0	Known from only a few small populations in remnant grassland in the southern Riverina of NSW and north-central Victoria. NSW populations are confined to the area between Jerilderie and Moama on travelling stock routes and road reserves. Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of <i>Austrostipa nodosa</i> and <i>Chloris truncata</i>, in grey cracking clay to red-brown loamy clay. Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of <i>Austrostipa nodosa</i> and <i>Chloris truncata</i>, in grey cracking clay to red-brown loamy clay. Sites are roadside travelling stock routes and reserves subject to sheep grazing. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	Yes
<i>Solanum karsense</i>	Menindee Nightshade	V	V	0	Menindee Nightshade is the a species of <i>Solanum</i> endemic to NSW, restricted to the far south-western plains, extending up the Darling River to the Menindee and Wilcannia districts. Mainly restricted to the area between the Darling and Lachlan Rivers. Localities include Kars Station, Lake Tandou, Lake Cawndilla, Oxley area, between Broken Hill and Menindee, and the Darling River. It has been recorded from Kinchega National Park and Nearie Lake Nature Reserve. Low - Subject land within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	0	Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Moderate - Subject land within species distribution, associated vegetation present (26, 45) and no records within 10 km.	Yes

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	0	Occurs in the upper Murray River valley in the south-western plains of NSW and into Victoria. Most NSW records are from the Jerilderie area, with possible collections from the Louth-Bourke area and a disjunct record in the north-western plains from Buttabone Stud Park 35 km NW of Warren. Also rare in Victoria, restricted to a few sites in the central north, mostly between Bendigo and the Murray River south of Echuca. Grows on flat grassland and in heavy red soil, often on roadsides and especially in table drains. Moderate - Subject land within species distribution, associated vegetation present (26, 45) and no records within 10 km.	Yes
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	0	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Bionet Records < 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
<i>Macrotis lagotis</i>	Bilby	E4,P	V	0	Bilbies were common in many habitats throughout Australia, from the dry interior to temperate coastal regions. Changes to the Bilby's habitat have seen their numbers greatly reduced and today the species is nationally listed as vulnerable, and is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland. Once widespread in arid, semi-arid and relatively fertile areas, the Bilby is now restricted to arid regions and remains a threatened species. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub. Low - Subject land is within species distribution, no associated vegetation present and no records within 10 km.	No
<i>Phascolarctos cinereus</i>	Koala	V,P	E	0	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Moderate - Subject land is within species distribution, associated vegetation present (26) and no records within 10 km.	Yes

***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

EPBC Act-listed Critically Endangered and Endangered Species

Koala - <i>Phascolarctos cinereus</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	This proposal is expected to impact 0.04 ha of potential habitat for this species. No sightings of the species occur within 10 km. The nearest known population occurs at Narrandera ~50km from the subject land. Since no population is believed to occur within the subject land, this proposal will not lead to the long-term decrease in the population of this species.
Reduce the area of occupancy of the species	Predictive mapping indicates 17.62 ha of suitable habitat will remain in the study area. Some planted primary feed trees River red gum (<i>E. camaldulensis</i>) may be impacted by the proposal. Given the lack of sightings within the subject land and the general lack of suitability of the site for this species, the proposal will not reduce the area of occupancy for this species.
Fragment an existing population into two or more populations	The subject land already occurs in a highly fragmented landscape, and is fenced off, which likely impedes koalas from accessing the site. This proposal is not expected to result in any significant additional 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 on or directly adjacent to the subject land.
Disrupt the breeding cycle of a population	As no population is believed to occur within the subject land 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 modify up to 0.04 ha of potential habitat for this species with planted River red gum that be used transiently used by this species for foraging. Considering the disturbed nature of the site and the positioning of the site between a road and a substation surrounding by fencing, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the Koala. Any impacts on this habitat are very unlikely to cause the species to decline at a regional scale.
Lead to a long-term decrease in the size of a population	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 6.2).
Reduce the area of occupancy of the species	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 6.2).
Fragment an existing population into two or more populations	Habitat loss, modification and fragmentation are the main threats to this species. The proposal is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	No significant impact

A spear-grass - <i>Austrostipa wakoolica</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	This proposal is expected to impact 0.04 ha of habitat for this species. No sightings of this species occur within 10 km. The nearest known records occur ~60km from the subject land. As such, it is unlikely that the proposal will lead to a long-term decrease in a population of this species.
Reduce the area of occupancy of the species	Predictive mapping indicates 14.19 ha of suitable habitat will remain in the study area. This species grows on floodplains of the Murray River tributaries creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine Forest on low sandy range; and low, rocky rises. Given the lack of sightings 10km and that it was not detected during the field surveys within the subject land, the proposal is unlikely to reduce the area of occupancy for this species.
Fragment an existing population into two or more populations	The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any additional 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 on or directly adjacent to the subject land.
Disrupt the breeding cycle of a population	As no population is believed to occur within the subject land 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	This proposal is expected to impact 0.04 ha of potential habitat for this species. Considering the disturbed nature of the site, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for this spear-grass. Any impacts on this habitat are unlikely to cause the species to decline at a regional scale.
Lead to a long-term decrease in the size of a population	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 6.2).
Reduce the area of occupancy of the species	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 6.2).
Fragment an existing population into two or more populations	Habitat loss, modification and fragmentation, grazing, drought and weed invasion are the main threats to this species. The proposal is unlikely increase these threats and will not directly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Winged Peppercress - <i>Lepidium monoplocoides</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of a population	This proposal is expected to impact 0.92 ha of habitat for this species. No sightings occur within 10 km. The nearest known population occurs ~50km from the subject land. As such, it is unlikely that the proposal will lead to a long-term decrease in a population of this species.
Reduce the area of occupancy of the species	Predictive mapping indicates 58.37 ha of suitable habitat will remain in the study area. Occurs in periodically flooded and waterlogged habitats with no grazing disturbance. Given the lack of sightings 10 km and that it was not detected during the field surveys within the subject land, the proposal is unlikely to reduce the area of occupancy for this species.
Fragment an existing population into two or more populations	The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any additional 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 on or directly adjacent to the subject land.
Disrupt the breeding cycle of a population	As no population is believed to occur within the subject land 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 modify up to 0.92 ha of potential habitat for this species. Considering the disturbed nature of the site and the positioning of the site between a road and a substation, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the Winged Peppercress. Any impacts on this habitat are unlikely to cause the species to decline at a regional scale.
Lead to a long-term decrease in the size of a population	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 6.2).
Reduce the area of occupancy of the species	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 6.2).
Fragment an existing population into two or more populations	Agricultural development, cultivation and grazing, service roads and fire breaks, and recreational 4WDs are the main threats to this species. The proposal is unlikely increase any threats and will not to directly interfere with the recovery of the species within the region.
Conclusion	No significant impact

EPBC Act-listed Vulnerable Species

Southern Bell Frog - <i>Litoria raniformis</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	The subject land is not near the edge of this species' distribution. The subject land is narrowly outside of the mid-Murrumbidgee Floodplain priority management area for this species. No vegetation associated with this species occurs within the subject land. There are 4 sightings within 10km with the closest record being ~4.5km from the subject land. Since the subject land lacks the preferred habitat, permanent and ephemeral wetlands, the subject land is unlikely to contain a population of this species.
Reduce the area of occupancy of an important population	As no permanent and ephemeral wetlands occurs within the subject land, the proposal will not reduce the area of occupancy available for this species.
Fragment an existing important population into two or more populations	The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any additional 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 on or directly adjacent to the subject land and no preferred habitat is contained within the subject land.
Disrupt the breeding cycle of an important population	Since no suitable breeding habitat occurs on the subject land, the proposal will not disrupt the breeding cycle 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 modify up to 0.92 ha of native vegetation that may be used by this species for foraging. Considering the disturbed nature of the site and the positioning of the site between a road and a substation, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat. Any impacts are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Removal of ground cover, fallen timber, leaf litter, etc (due to fire, clearing, overgrazing, trampling), alteration to flooding regimes, predation by exotics, disease, habitat degradation due to pollution are the main threats to this species. This proposal will not increase any threats and is unlikely to significantly interfere with the recovery of the species within the region.
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	This proposal is expected to impact 0.04 ha of habitat for this species. The subject land is not within a priority management area for this species, no sightings occur within 10 km, and the subject land is not near the species range limit, as such, no important population is likely to occur on the subject land.
Reduce the area of occupancy of an important population	Predictive mapping indicates 17.62 ha of suitable habitat will remain in the study area, including one large remnant <i>Acacia pendula</i> tree within the immediate Trans grid facility. Given the scarcity of ideal foraging habitat and absence of breeding habitat within the subject land, the proposal will not reduce the area of occupancy for any population for this species.
Fragment an existing important population into two or more populations	The subject land already occurs in a highly fragmented landscape. Canopy cover will be retained within the immediate area. This proposal is not expected to result in any significant additional 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 on or directly adjacent to the subject land. As the subject land does not contain stick nests for breeding, or preferred mistletoe sp. for foraging, the habitat is unlikely critical to the species.
Disrupt the breeding cycle of an important population	No important population is likely to occur (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 modify up to 0.92 ha of native vegetation that may be transiently used by this species for foraging. However, the subject land does not contain preferred mistletoe sp. for foraging. Considering the disturbed nature of the site and the positioning of the site between a road and a substation, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the Painted Honeyeater. Any impacts on this habitat are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Clearing of woodlands and open forests and removal of large, old trees with heavy mistletoe infestations are the main threats for this species. The proposal will not remove mistletoe and no quality foraging habitat will be impacted. The proposal is very unlikely to 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	This proposal is expected to impact 0.92 ha of habitat for this species. No priority management area for this species currently exists. No records occur within 10km, most records in Australia occur from coastal environments. It is therefore unlikely this proposal will reduce any population of this species.
Reduce the area of occupancy of an important population	Predictive mapping indicates 17.24 ha of suitable habitat will remain in the study area. As this species feeds aerially at storms fronts, it is unlikely this proposal will reduce any area of occupancy for this species.
Fragment an existing important population into two or more populations	The subject land already occurs in a highly fragmented landscape. Canopy cover will be retained within the immediate vicinity. This proposal is not expected to result in any significant additional 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 on or directly adjacent to the subject land.
Disrupt the breeding cycle of an important population	No. This species breeds in Asia.
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 modify up to 0.92 ha of native vegetation that may be transiently used by this species for foraging. Considering the disturbed nature of the site and the positioning of the site between a road and a substation, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the White-throated Needletail. Any impacts on this habitat are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Vegetation clearing and windfarms are the main threats for this species. Wind turbines are not part of this proposal. The proposal is unlikely to directly 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	This proposal is expected to impact 0.92 ha of habitat for this species. The subject land is within a priority management area for this species and there are 261 sightings within 10 km; however, as the subject land does not contain the tree hollows required for breeding, and instead offers only marginal foraging habitat, the proposal is unlikely to reduce any population of this species.
Reduce the area of occupancy of an important population	Predictive mapping indicates 72.34 ha of suitable habitat will remain in the study area. Given the scarcity of foraging habitat and absence of breeding habitat within the subject land, the proposal will not reduce the area of occupancy for this species.
Fragment an existing important population into two or more populations	The subject land already occurs in a highly fragmented landscape. Canopy cover will be retained within the immediate vicinity. This proposal is not expected to result in any significant additional 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 there are no breeding hollows within the subject land.
Disrupt the breeding cycle of an important population	Since no hollows will be impacted, 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 modify up to 0.92 ha of native vegetation that may be transiently used by this species for foraging. Considering the disturbed nature of the site and the positioning of the site between a road and a substation, it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the superb parrot. Any impacts on this habitat are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Loss of tree hollows and loss of habitat are the main threats for this species. The proposal will not remove any hollow bearing trees and no quality foraging habitat will be impacted. The proposal is very unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Brachyscome Daisy - <i>Brachyscome muelleroides</i>	
Significant Impact Guideline	Assessment
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	This proposal is expected to impact 0.88 ha of potential habitat for this species. The subject land is not within a priority management area for this species and no sightings occur within 10 km. The nearest record is ~55km southeast of the subject land. Considering the absence of nearby records, the proposal is unlikely to reduce any population of this species. This species is considered further in Section 6.5 .
Reduce the area of occupancy of an important population	This proposal is expected to impact 0.88 ha of potential habitat for this species. Predictive mapping indicates 54.47 ha of suitable habitat will remain in the study area. Grows in damp areas on the margins of claypans in moist grassland. Given the lack of ideal microhabitat within the subject land, the proposal is unlikely to reduce the area of occupancy for this species.
Fragment an existing important population into two or more populations	The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any significant additional fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Given the lack of nearby records and absence of ideal microhabitat within the subject land, it is unlikely to constitute habitat critical to the survival of this species.
Disrupt the breeding cycle of an important population	An important population is unlikely to occur on the subject land (see above). Should the species occur, the proposal should not interfere with the species ability to recolonise the area once the project is complete.
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 modify up to 0.92 ha of native vegetation that may be occupied by this species. The proposal will not isolate any habitat for the Claypan Daisy. Any impacts on this habitat are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Disturbance by stock, feral goats, clearing of roadside vegetation the regulation of water flow in the Murray River, are the main threats to this species. The proposal will not increase any threats is very unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Mossgiel Daisy - <i>Brachyscome papillosa</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	This proposal is expected to impact 0.88 ha of potential habitat for this species. No priority management area for this species currently exists, the subject land is not near the range limit of this species, there are no sightings within 10 km and the species was not recorded during the field surveys. The nearest record is ~15km from the subject land. Considering the above, it is unlikely that an important population exists on the subject land.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists on the subject land (see above).
Fragment an existing important population into two or more populations	It is unlikely that an important population exists on the subject land (see above). The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any significant additional 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 on or directly adjacent to the subject land and lacks any commonly associated species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists on the subject land (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 modify up to 0.92 ha of potential habitat for this species. This species grows in association with Bladder Saltbush (<i>Atriplex vesicaria</i>) and Leafless Bluebush (<i>Maireana aphylla</i>) plains, grasslands and in Inland Grey Box (<i>Eucalyptus microcarpa</i>) - Cypress Pine (<i>Callitris</i> spp.) woodland, none of which were recorded within the subject land. Given the lack of ideal habitat and absence of nearby sightings it is unlikely that the habitat is of sufficient quality for this species. Predictive mapping indicates 53.16 ha of suitable habitat will remain in the study area. The proposal will not isolate any habitat for the Mossgiel Daisy.
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 6.2).
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 6.2).
Interfere with the recovery of the species.	Agricultural practices including cropping and grazing, feral goats, road maintenance and insufficient understanding of species ecology are the main threats to this species. The proposal will increase any threats is very unlikely to significantly 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	This proposal is expected to impact 0.92 ha of potential habitat for this species. No priority management area for this species currently exists, no sightings occur within 10 km (the nearest records are ~20 km from the subject land) and the subject land is not near the range limit for this species. Considering the above, and that this species was not detected during the field survey, no important population is expected to occur on the subject land.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists on the subject land (see above).
Fragment an existing important population into two or more populations	It is unlikely that an important population exists on the subject land (see above). The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any significant additional 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 on or near to the subject land.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists on the subject land (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 modify up to 0.92 ha of potential habitat for this species. This species is known to occur with bladder saltbush and black box grassland communities, neither were recorded within the subject land. Predictive mapping indicates 54.94 ha of suitable habitat will remain in the study area. The proposal will not isolate any habitat for the Slender Darling Pea.
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 6.2).
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 6.2).
Interfere with the recovery of the species.	Heavy grazing by domestic stock, cultivation, pasture improvement, invasion of weeds are the main threats for this species. The proposal will increase any threats is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

Red Darling Pea - <i>Swainsona plagiotropis</i>	
Significant Impact Guideline	Assessment
Lead to a long-term decrease in the size of an important population of a species	This proposal is expected to impact 0.92 ha of potential habitat for this species. No priority management area for this species currently exists, no sightings occur within 10 km (the nearest records are ~60 km from the subject land) and the subject land is not near the range limit for this species. Considering the above, and that this species was not detected during the field survey, no important population is expected to occur on the subject land.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists on the subject land (see above).
Fragment an existing important population into two or more populations	It is unlikely that an important population exists on the subject land (see above). The subject land already occurs in a highly fragmented landscape. This proposal is not expected to result in any significant additional 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 on or near the subject land.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists on the subject land (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 modify up to 0.92 ha of potential habitat for this species. Considering the disturbed nature of the site it is unlikely to be important habitat for this species. The proposal will not isolate any habitat for the Red Darling Pea. Any impacts on this habitat are 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 6.2).
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 6.2).
Interfere with the recovery of the species.	Habitat loss and degradation, town expansion and weed competition are the main threats for this species. If weeds are managed the proposal will not increase any threats and is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	No significant impact

EPBC Act-listed Migratory Species

<i>Hirundapus caudacutus</i> - White-throated Needletail	
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 forages aerially in storm fronts in Australia. No records occur within 10 km of the subject land. Given the small impact area within the subject land, 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 6.2).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	The species breeds in northern Asia before migrating to Australia. In Australia they prefer coastal environments chasing storm fronts. It is unlikely this proposal will disrupt the lifecycle or that an ecologically significant proportion of the population occurs within or is dependent on the subject land.
Conclusion	No significant impact

Appendix F: Key Threatening Processes

Key Threatening Processes (KTP) predicted as acting on the study area that may be exacerbated by the proposal.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners <i>Manorina melanocephala</i> .	KTP	KTP	Unlikely	No No areas within the subject land can be considered a woodland or forest habitat.
Threat	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		Unlikely	No No watercourses occur within the immediate vicinity
Threat	Anthropogenic Climate Change	KTP	KTP	Likely	Yes Some unavoidable emissions will occur from construction machinery.
Threat	Bushrock removal	KTP		Unlikely	No No rock outcroppings occur within the assessment area.
Threat	Clearing of native vegetation	KTP	KTP	Unlikely	No No native vegetation will be cleared by the current proposal.
Threat	Competition and grazing by the feral European Rabbit, <i>Oryctolagus cuniculus</i>	KTP	KTP	Likely	Potentially The spread of grassy weeds that may result from these works could encourage rabbit activity.
Threat	Competition and habitat degradation by Feral Goats, <i>Capra hircus</i> Linnaeus 1758	KTP	KTP	Unlikely	No The proposal does not include any activities that would exacerbate this threat.
Threat	Competition from feral honey bees, <i>Apis mellifera</i>	KTP		Unlikely	No The proposal does not include any activities that would exacerbate this threat.
Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		Unlikely	No

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
					The proposal does not include any activities that would exacerbate this threat
Threat	Herbivory and environmental degradation caused by feral deer	KTP		Unlikely	No The proposed development will not increase occupancy by this species.
Threat	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		Unlikely	No Fire frequency will not increase due to activities undertaken as part of the proposal.
Threat	Importation of Red Fire Ants <i>Solenopsis invicta</i>	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Infection by <i>Psittacine Circoviral</i> (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	No	No Since no tree hollows will be impacted, the proposed works will not increase the likelihood of this threat.
Threat	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Infection of native plants by <i>Phytophthora cinnamomi</i>	KTP	KTP	Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Introduction of the Large Earth Bumblebee <i>Bombus terrestris</i>	KTP		Unlikely	No

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
					This species only occurs in Tasmania. It is highly unlikely that the proposal will result in the importation of this species to the mainland.
Threat	Invasion and establishment of exotic vines and scramblers	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion, establishment and spread of Lantana (<i>Lantana camara</i>)	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by African Olive <i>Olea europaea</i> subsp. <i>cuspidata</i>	KTP		Likely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>	KTP		Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by exotic perennial grasses	KTP		Likely	Potentially Increased disturbance may bring new exotic perennial grasses to the site.
Threat	Invasion of the Yellow Crazy Ant, <i>Anoplolepis gracilipes</i> (Fr. Smith) into NSW	KTP		Unlikely	Potentially

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
					Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	Unlikely	Potentially Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss of Hollow-bearing Trees	KTP		Unlikely	No No hollow-bearing trees will be cleared under the proposal.
Threat	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		Unlikely	No No sites known or suspected to be present.
Threat	Predation and hybridisation by Feral Dogs, <i>Canis lupus familiaris</i>	KTP		Unlikely	No The proposed works will not increase the likelihood of this threat.
Threat	Predation by <i>Gambusia holbrooki</i> Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		Unlikely	No No wetlands or streams present in the immediate vicinity
Threat	Predation by the European Red Fox (<i>Vulpes vulpes</i>)	KTP	KTP	Unlikely	No Ease of access for feral foxes will not be increased by the proposal
Threat	Predation by the Feral Cat <i>Felis catus</i>	KTP	KTP	Unlikely	No Ease of access for feral cats will not be increased by the proposal
Threat	Predation, habitat degradation, competition and disease transmission by Feral Pigs	KTP	KTP	Unlikely	No Ease of access for feral pigs will not be increased by the proposal
Threat	Removal of dead wood and dead trees	KTP		Likely	Yes Some dead wood on site is likely to be removed.

Appendix G: BAM Credit Summary Report



BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00033983/BAAS21028/22/00033984	Darlington Point - TransGrid Connection	16/06/2022
Assessor Name	Report Created	BAM Data version *
David Orchard	15/07/2022	54
Assessor Number	BAM Case Status	Date Finalised
BAAS21028	Finalised	15/07/2022
Assessment Revision	Assessment Type	BOS entry trigger
2	Part 4 Developments (General)	BOS Threshold: Area clearing threshold

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

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

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
1	45_Remnina	Not a TEC	68.6	68.6	0.56	PCT Cleared - 60%	High Sensitivity to Gain			1.75		17

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2	45_Slashe d	Not a TEC	66	66.0	0.26	PCT Cleared - 60%	High Sensitivity to Gain		1.75	8	
3	45_Plantin gs	Not a TEC	67.2	67.2	0.06	PCT Cleared - 60%	High Sensitivity to Gain		1.75	2	
									Subtot al	27	
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion											
4	26_Regro wth	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	38.6	38.6	0.04	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	1
									Subtot al	1	
									Total	28	

Species credits for threatened species

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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 SAI	Species credits
<i>Austrostipa wakoolica</i> / A spear-grass (Flora)									
26_Regrowth		38.6	38.6	0.04 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
Subtotal									1
<i>Brachyscome muelleroides</i> / Claypan Daisy (Flora)									
45_Remnant		68.6	68.6	0.56 Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	29
45_Slashed		66.0	66.0	0.26 Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	13
45_Plantings		67.2	67.2	0.06 Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	3
Subtotal									45

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<i>Brachyscome papillosa</i> / Mossiel Daisy (Flora)								
45_Remnant	68.6	68.6	0.56 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	19
45_Slashed	66.0	66.0	0.26 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	9
45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
							Subtotal	30
<i>Convolvulus tedmoorei</i> / Bindweed (Flora)								
45_Remnant	68.6	68.6	0.4 Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	21
							Subtotal	21
<i>Lepidium monoplacoides</i> / Winged Peppergrass (Flora)								
45_Remnant	68.6	68.6	0.56 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	19

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45_Slashed	66.0	66.0	0.26 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	9
45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2
26_Regrowth	38.6	38.6	0.04 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
Subtotal								31
<i>Leptorhynchus orientalis / Lanky Buttons (Flora)</i>								
45_Remnant	68.6	68.6	0.56 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	19
45_Slashed	66.0	66.0	0.26 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	9

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45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	2
Subtotal								30
<i>Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)</i>								
45_Remnant	68.6	68.6	0.48 Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	16
26_Regrowth	38.6	38.6	0.01 Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1
Subtotal								17
<i>Phascolarctos cinereus / Koala (Fauna)</i>								
45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2
Subtotal								2

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Pilularia novae-hollandiae / Austral Pillwort (Flora)

45_Remnant	68.6	68.6	0.56	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	True	29
45_Slashed	66.0	66.0	0.26	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	True	13
45_Plantings	67.2	67.2	0.06	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	True	3
26_Regrowth	38.6	38.6	0.04	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	True	1
Subtotal									46

Swainsona murrayana / Slender Darling Pea (Flora)

45_Remnant	68.6	68.6	0.56	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	19
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45_Slashed	66.0	66.0	0.26 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	9
45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
26_Regrowth	38.6	38.6	0.04 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1
Subtotal								31
<i>Swainsona sericea / Silky Swainson-pea (Flora)</i>								
45_Remnant	68.6	68.6	0.56 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	19
45_Slashed	66.0	66.0	0.26 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	9
45_Plantings	67.2	67.2	0.06 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2

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26_Regrowth	38.6	38.6	0.04 Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	1
Subtotal								31

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Appendix H: Koala Habitat Assessment

Table 4: Koala habitat assessment tool

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

Koala Occurrence – 0. There are no BioNet records of Koalas within 10 km of the subject land.

Vegetation Composition – 1. A small number of River Red Gums (*Eucalyptus camaldulensis*) occur in pockets of planted woodland on the subject land.

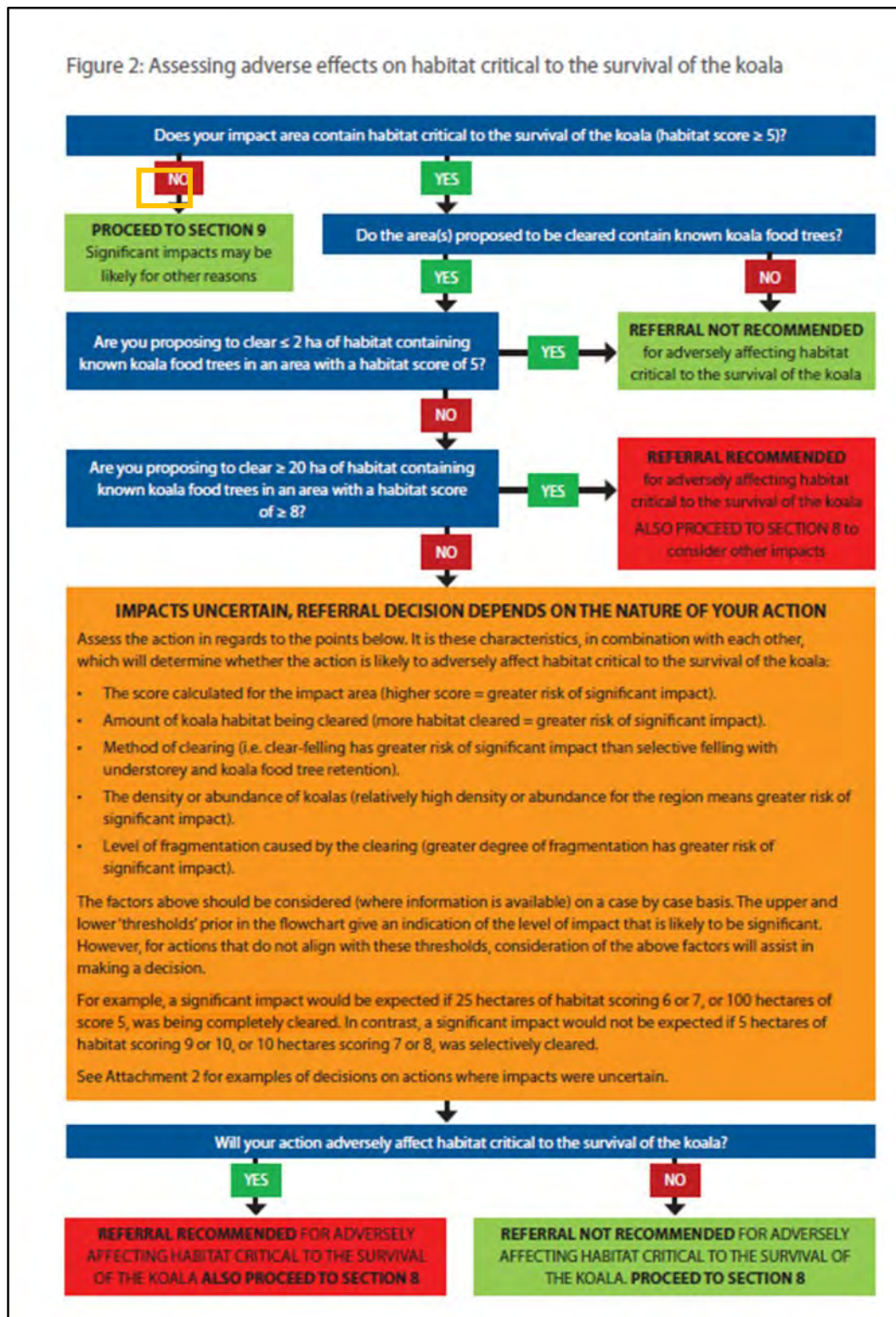
Habitat Connectivity – 0. The patches of River Red Gum occur in a matrix of grassland surrounded by electrical infrastructure and a road. Few areas of suitable vegetation occur within c. 2 km; these areas are less than 500 ha in size in total and are themselves isolated and surrounded by cleared land.

Key Existing Threats – 0. No koalas have been recorded locally, consequently, no evidence of mortality is known. As the site is in an agricultural landscape and adjacent to a road and power infrastructure, it is likely that there is significant dog and vehicle threat.

Recovery Value – 0. As the habitat to be directly impacted by this proposal consists of a very small number of trees, in a highly modified landscape, it is unlikely to be important for the recovery of the Koala. Most trees are unlikely to be impacted by the proposal.

TOTAL SCORE = 1. The subject land does not constitute critical habitat for the Koala.

Figure 2: Assessing adverse effects on habitat critical to the survival of the koala



Based on the EPBC Act referral guidelines, the proposal is not likely to significantly impact current or future populations of Koalas and therefore does not require referral.

Note: Following the decision to elevate the listing status of the Koala from vulnerable to endangered, this assessment tool was rendered obsolete. It is retained here as new tools have not been made available. The conclusion that the subject land constitutes critical habitat is maintained here, regardless of the change in listing status.

Appendix I: Terms and abbreviations

Abbreviations

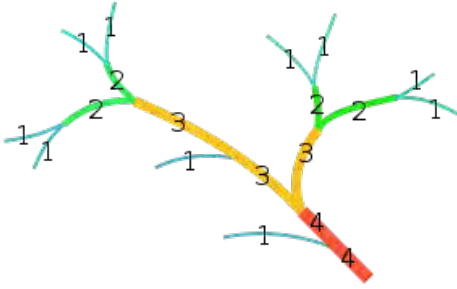
Term	Description
°C	Degrees Celsius
AOBV	Areas of Outstanding Biodiversity Value
ASL	Above Sea Level
BAM	Biodiversity Assessment Method 2020
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BOS	NSW Biodiversity Offsets 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
DAWE	Commonwealth Department of Agriculture, Water and Environment
DPE	NSW 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
mm/cm/m/m ² /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
PW	Priority Weed
RAMSAR	Convention on Wetlands of International Importance
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
VIS	Vegetation information system
WoNS	Weeds of National Significance

Glossary of terms

Term	Description
Areas of outstanding biodiversity	An area of outstanding biodiversity value is: • an area important at a State, national or global scale, and • an area that makes a significant contribution to the persistence of at least one of the following: - o multiple species or at least one threatened species or ecological community - o irreplaceable biological distinctiveness - o ecological processes or ecological integrity - o outstanding ecological value for education or scientific research. The declaration of an area may relate, but is not limited, to protecting threatened species or ecological communities, connectivity, climate refuges and migratory species (BC Act).
Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impacts	Are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat (OEH 2018).
Habitat	The area occupied or used, including areas periodically or occasionally occupied or used, by any threatened species or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycle (OEH 2018).
Important population	Is a population that is necessary for a species' long-term survival and recovery; this may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range (DE 2013).
Indirect impact	Occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject 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).
Invasive species	Is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources, or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.
Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence 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.

Term	Description
Local population (in regard to a threatened or migratory species)	A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extends into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate. A local population of fauna species comprises those individuals known or likely to occur in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time (DECC 2007).
Low condition (vegetation)	Either: a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-story percent foliage cover benchmark for that vegetation type, and where either: • less than 50% of ground cover vegetation is indigenous species, or • greater than 90% of ground cover vegetation is cleared - or b) native grassland, wetland or herb field where either: • less than 50% of ground cover vegetation is indigenous species, or • more than 90% of ground cover vegetation is cleared. Note: The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetated compared to non-native ground cover vegetation is likely to be at its maximum.
Moderate to good condition (vegetation)	If native vegetation is into in low condition (above), it is in moderate to good condition.
Mitigation	Action to reduce the severity of an impact.
Mitigation measure	Any measure that prevents, reduce or controls adverse environmental effects of a project.
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (OEH 2018).
Proposal	Is considered to include 'all activities likely to be undertaken within the subject 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.
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).
Study region	Is considered to 'include the lands that surround the subject land for a distance of 10 km' (DECC 2007). The study region has been used to search information sources to establish the landscape context of the subject land.
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.