AEP

BIODIVERSITY | BUSHFIRE | ARBORICULTURE

NEWCASTLE SYDNEY

Biodiversity Development Assessment Report

Proposed Mayfair Solar Farm, 204 Jacksons Lane Stubbo NSW Lot 2 DP734669 and Lot 2 DP528667

Prepared for: Elgin Energy Pty Ltd
C/- Urbis

21 May 2025
AEP Ref: 3345
Revision: 02

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Document Control

Document Name	Biodiversity Development Assessment Report for Proposed Mayfair Solar Farm, 204 Jacksons Lane Stubbo NSW Lot 2 DP734669 and Lot 2 DP528667
Project Number	3345
Client Name	Elgin Energy Pty Ltd c/- Urbis

Revision

Revision	Date	Author	Details
01	25 August 2024	Ian Benson	Final issued with applicant
02	21 May 2025	Ian Benson	Final issued with applicant. Amendments to PCTs and response to submissions.

Distribution

Revision	Date	Name	Organisation
01	25 August 2024	Pablo Yague	Urbis
02	21 May 2025	Pablo Yague	Urbis

SUMMARY

Anderson Environment & Planning (AEP) was commissioned by Urbis on behalf of Elgin Energy Pty Ltd (the proponent) to undertake a Biodiversity Development Assessment Report (BDAR) over land identified as 204 Jacksons Lane Stubbo, located within the Mid-Western Regional LGA in the Central Tablelands region of New South Wales.

Elgin Energy Pty Ltd is proposing to develop a solar farm (herewith referred to as Mayfair Solar Farm) with a capacity of approximately 60MW AC and will include a hybrid battery energy storage system (BESS) of approximately 60MW capacity and four (4) hours of storage. The proposal is classified as a State Significant Development (SSD-60074459). This report has been developed in response to the Secretary's Environmental Assessment Requirements (SEARs) issued for the project on 07/08/2023.

This report has been prepared to meet the requirements of the Biodiversity Assessment Method 2020 (BAM) established under Section 6.7 of the *NSW Biodiversity Conservation Act 2016* (BC Act). This assessment utilises methods detailed within the *Biodiversity Assessment Method Order 2020* to identify biodiversity values inherent within the site, including known and potentially occurring threatened species and ecological communities, and quantifies impacts of the proposal upon these values utilising the Streamlined Assessment Modules for 'scattered trees' and 'small area,' as outlined in Appendix B and Appendix C of the Biodiversity Assessment Method (BAM) (DPIE 2020a).

The proposal has been sited to avoid, minimise and mitigate impacts to biodiversity values. Forested vegetation has been avoided where practical, and impacts are primarily restricted to cleared agricultural lands that have been assessed as 'Category 1 – Exempt Land'. The majority of the site consists of cleared paddocks which have been subject to historical and on-going agricultural practices including cropping and grazing.

The majority of vegetation within the Subject Land was best fit for PCT 201: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion*. This PCT is associated with the BC Act listed endangered ecological community (EEC): *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions* (Fuzzy Box Woodland).

The scattered trees within the Subject Land were best fit for PCT 281: *Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion*. PCT 281 is associated with BC Act listed critically endangered ecological community (CEEC): *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 Riverina Bioregions* (Box Gum Woodland).

Both of these communities are listed as being at risk of Serious and Irreversible Impacts (SAII), and an assessment against the relevant criteria is undertaken in this report.

The development will have direct impacts on the endangered Fuzzy Box Woodland, including the removal of some native vegetation and potential habitat disruption due to construction activities. These include the removal of 1.60ha of native vegetation. Indirect impacts may include increased erosion and sedimentation, and alterations to water flow in nearby creeks as a result of the causeway upgrade along Jacksons Lane.

The removal of four (4) scattered trees equates to direct impacts on 0.15ha of Box Gum Woodland. Native vegetation has been avoided where practical, and re-vegetation is proposed as part of this development to minimise impacts and improve biodiversity values within retained lands.

Mitigation measures for the development include the strategic placement of infrastructure to avoid native vegetation, and the establishment of buffer zones around sensitive habitats which are proposed to be managed under a Biodiversity Management Plan (AEP 2025a) with the aim of restoring degraded riparian habitats and increasing the extent of Fuzzy Box Woodland and Box Gum Woodland. Recommendations are provided in the Aquatic Ecology Report (AEP 2024a) to ensure hydrological function is retained during construction works and subsequently improved.

Impacts requiring an offset are identified in **Table E1**.

Table E1 Impacts that require an offset – ecosystem credits

Vegetation zone	PCT	TEC/EC	Impact area (ha)	Number of ecosystem credits required
Moderate	PCT 201	Fuzzy Box Woodland	1.60ha	32
Scattered Trees	PCT 281	Box Gum Woodland	0.15ha (4 trees)	4

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Shortened Terms / Glossary

Assessment Area	Area within a 1500m buffer of the Subject Land
APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method Order (2020) that determines: • Methodology applicable to quantifying biodiversity values inherent within a development site; • Avoid and mitigation efforts required to be employed as part of any development proposal; and • Number and class of credits required to offset residual impacts of the proposal upon the biodiversity values therein.
BC Act	*Biodiversity Conservation Act 2016* (NSW)
Biodiversity Credit Report	Specifies the number and type of biodiversity credits required to offset the impacts of a development.
BAM Calculator	The online tool used to interpret site survey data and regional location information to quantify ecosystem and species credits required / generated at a development / stewardship site.
BESS	Battery energy storage system
Biodiversity credits	Ecosystem or Species Credits required to offset the loss of biodiversity values on a development site.
Biodiversity offsets	Specific measures that are put in place to compensate for impacts on biodiversity values.
Biodiversity values	The composition, structure, and function of ecosystems, and threatened species, populations and ecological communities, and their habitats.
BRW	Biodiversity Risk Weighting
CEEC	Critically Endangered Ecological Community
Council	Mid-Western Regional Council
CDCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
CPHR	Conservation Programs, Heritage and Regulation Group
DAWE	Former Commonwealth Department of Agricultural, Water and Environment
DoEE	Former Commonwealth Department of Energy and the Environment.
DPE	Former NSW Department of Planning and Environment
DCCEEW	State Department of Climate Change, the Environment and Water
DPI	NSW Department of Primary Industries
Ecosystem credit	The class of biodiversity credits created or required for the impact on EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur within a vegetation type.
EEC	Endangered Ecological Community

EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
EIS	Environmental Impact Statement
IBRA	Interim Biogeographic Regionalisation for Australia
Important Wetland	An Important Wetland is a wetland listed under the Directory of Important Wetlands of Australia (DIWA, Environment Australia 2001) or an area included under the *State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 2 Coastal Management.*
LLS Act	NSW *Local Land Services Act 2013*
Local Wetland	Local Wetland is defined as an area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle (DPIE 2017a).
HBT	Hollow-bearing tree as defined in the BAM.
DPIE	Former NSW Office of Environment and Heritage.
PFC	Projected Foliage Cover
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
Study Area	The Study Area includes the entirety of Lot 2 DP734669 and Lot 2 DP528667 and a portion of Jackson Lane. The Study Area was investigated to identify areas suitable for development.
Subject Land	The Subject Land consists of the proposed development footprint and associated impacts including upgrades to Jacksons Lane.
Species credit	Class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area based on habitat surrogates.
SVTM	NSW State Vegetation Type Map 2024
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
VIS	Vegetation Integrity Score

Declarations

i. **Certification under clause 6.15 *Biodiversity Conservation Act 2016***

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).

Signature:

Date: 21/05/2025

BAM Assessor Accreditation no: 18147

This BDAR has been prepared to meet the requirements of BAM 2020. **Appendix A** provides an assessment of compliance with the minimum information requirements outlined in BAM Appendix L.

iii. Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

There are no known conflicts of interest between AEP staff or Directors and the proponent of the development or their agents. AEP has received commercial payment from Elgin Energy Pty Ltd for provision of professional consulting services in the assessment and production of this BDAR and other associated documents.

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Signature:

Date: 21/05/2025

BAM Assessor Accreditation no: 18147

Stage 1 – Biodiversity Assessment

1.0 Introduction

1.1 Proposed Development

1.1.1 Development Overview

Elgin Energy Pty Ltd proposes to develop the Mayfair Solar Farm, a solar energy project with a capacity of approximately 60MW AC. The project will also include a hybrid battery energy storage system (BESS) with a capacity of approximately 60MW and 240MWh (4 hours storage).

This Biodiversity Development Assessment Report (BDAR) will accompany an Environmental Impact Statement (EIS) as part of the Secretary's Environmental Assessment Requirements (SEARs). The Mayfair Solar Farm development is classified as a State Significant Development (SSD). Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the assessment framework for SSDs. This BDAR has been prepared in response to the 'Biodiversity' item of the SEARs issued by the Department of Planning, Industry and Environment (DPIE) in July 2023.

The BDAR has been prepared using the Streamlined Assessment Modules for 'scattered trees' and 'small area,' as outlined in Appendix B and Appendix C of the Biodiversity Assessment Method (BAM) (DPIE 2020a). According to Appendix B of the BAM, the scattered tree module can be used where vegetation has '*a percent foliage cover that is less than 25% of the benchmark for tree cover for the most likely plant community type and are on category 2-regulated land and surrounded by category 1-exempt land on the Native Vegetation Regulatory Map under the NSW Local Land Services Act 2013 (LLS Act).* Paddock trees that meet these criteria within the Subject Land have been assessed as scattered trees.

The small area module has been used because the development does not exceed the area clearing threshold for small area developments as prescribed in the BAM, which, in the case of Subject Land with a minimum lot size of 100ha, is 3ha. AEP has produced this report to assess any potential impacts on biodiversity associated with the proposal and recommend appropriate measures to mitigate these impacts, in line with the requirements of the Consent Authority.

1.1.2 Location

The proposed development is located at 204 Jacksons Lane, Stubbo (Lot 2 DP 734669 and Lot 2 DP 528667), with planned road upgrades along Jacksons Lane (**Figure 1**). The Subject Land is situated within the Mid-Western Local Government Area (LGA) in the Central Tablelands of NSW (**Figure 2**). It is approximately 5km north of Gulgong, within the NSW South Western Slopes Bioregion, and falls under RU1 zoning, primarily comprising agricultural land that has been subject to both historical and ongoing farming practices. The proposed roadwork upgrades along Jacksons Lane intersect with Slapdash Creek, which is designated as 'Key Fish Habitat.' The location of the Subject Land in relation to the wider area is shown in **Figure 2.**

1.1.3 Proposed development and the subject land

Elgin Energy Pty Ltd are proposing to develop a solar farm with a capacity of approximately 60 MW AC and will include a hybrid BESS of approximately 60MW capacity and 240MWh (4 hour) storage. Associated infrastructure to be constructed as part of the Project includes a substation to connect the project to the electricity network, all associated power conversion equipment such as inverters and transformers and internal access tracks.

The proposed Project seeks consent for the following:

- Ground mounted solar/photovoltaic (PV) modules. PV modules would be mounted on single axis tracking systems with a maximum height up to 3.5m above ground;
- A series of power conversion units (PCU)/ inverters, with underground cabling connecting each PCU to the on-site substation;

- A hybrid BESS with approximately 60MW capacity and 240MWh (4 hour) storage. The BESS would be in containerised modules adjacent to the on-site substation;
- An on-site 33/66 kV substation to connect the Project to the distribution network via an existing overhead 66 kV powerline;
- Upgrade and sealing of Jacksons Lane from Barney's Reef Road to site access (approximately 1km), including replacement of the existing vehicle crossing over Slapdash Creek with a new culvert; and
- Permanent supporting infrastructure including:
    - Internal access tracks;
    - Security fencing and lighting;
    - Operations and maintenance buildings;
    - Operational vehicle access points;
    - Water tanks;
    - 33,400 m^3 stormwater retention basin; and
    - Landscaping.

Temporary construction facilities may include:

- Construction compound;
- Laydown area;
- Construction materials storage; and
- Site office buildings, amenities and temporary workforce accommodation camp.

Subject to final design, the temporary workforce accommodation camp, with a capacity of up to 150 workers, will include:

- Demountable single-storey 2 or 4-person demountable air-conditioned buildings;
- Various single-storey buildings for supporting facilities including kitchen and dining, amenities, laundry, library, gymnasium, site shop, licenced premises, administration and services, a medical room, cold stores, industrial freezers, storage rooms;
- Temporary on-site utilities;
- Covered recreational areas; and
- Car parking.

The development layout is shown in **Figure 3**.

1.1.4 Other documentation

The Secretary's Environmental Assessment Requirements (SEARs) relating to biodiversity and the relevant sections in this report are listed in **Table 1.**

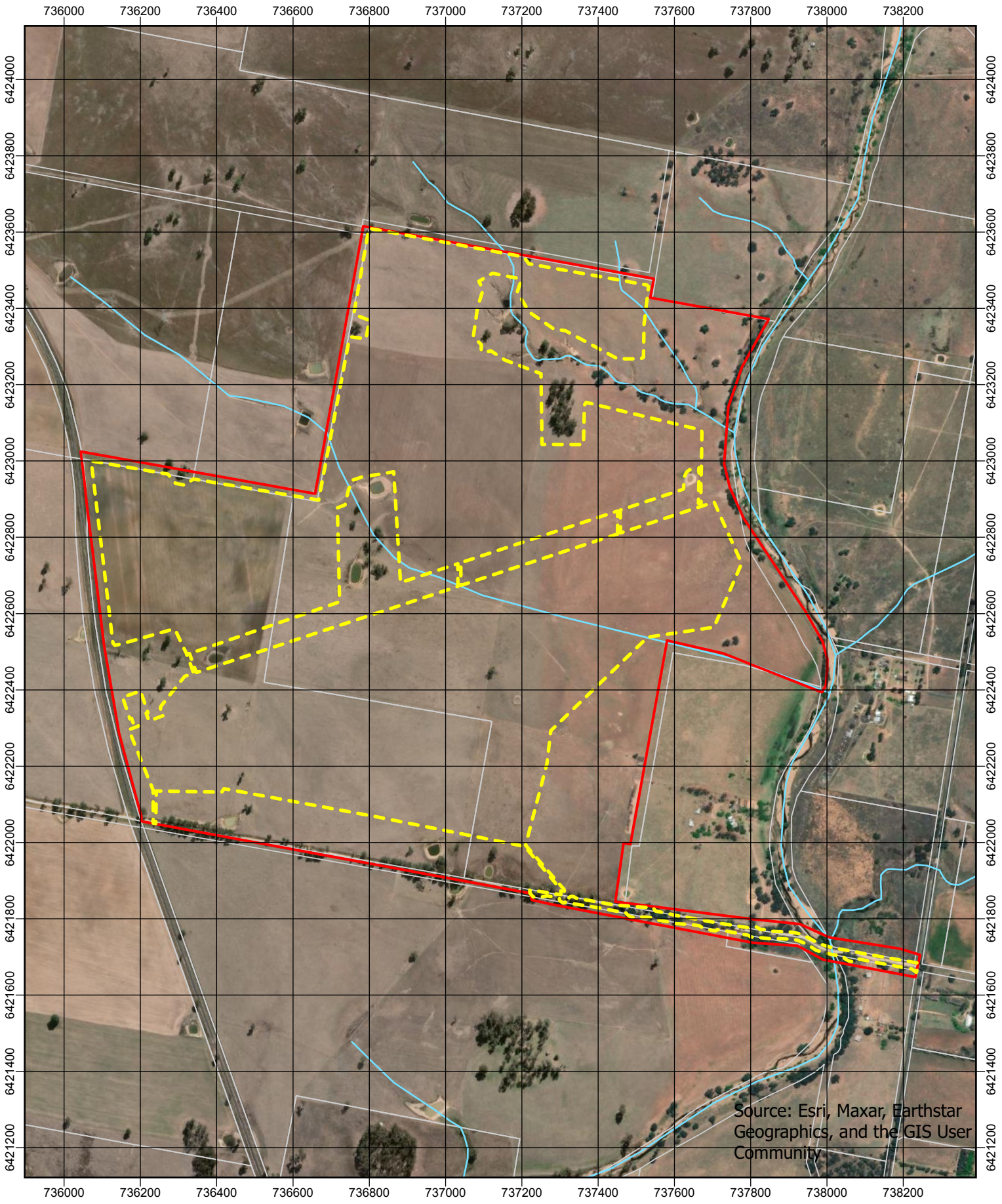
Table 1: Agency Requirements

Assessment requirement	Relevant section
SEARs	
An assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the BC Act, the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR).	Assessment has been undertaken in accordance with the BAM and documented in this BDAR.
The BDAR must: • be prepared using the approved BDAR template; • document the application of the avoid, minimise, and offset framework including assessing all the direct, indirect and prescribed impacts in accordance with the BAM; • assess the impacts associated with all ancillary infrastructure, including the transport route road upgrades;	The format of this BDAR has been derived from the approved BDAR template, with additional information included where relevant. This BDAR includes impacts from ancillary infrastructure including Jackson Lane upgrades, and application of the avoid, minimise, and offset framework is provided in **Section 7.**
An assessment of the likely impacts on listed aquatic threatened species, population or ecological communities, scheduled under the *Fisheries Management Act 1994* including to Slapdash Creek, and a description of the measure to minimise and rehabilitate impacts.	Assessment against the *Fisheries Management Act 1994* has been undertaken in an Aquatic Ecology Report (AEP 2024a). Mitigation and rehabilitation measures are detailed in a Biodiversity Management Plan (AEP 2025).
If an offset is required, details of the measures proposed to address the offset obligation.	Addressed in **Section 10.1.**
Conservation Programs, Heritage and Regulation Group	
Biodiversity impacts related to the proposed development are to be assessed in accordance with Section 7.9 of the *Biodiversity Conservation Act 2016,* the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the *Biodiversity Conservation Act 2016* (s6.12), *Biodiversity Conservation Regulation 2017* (s6.8) and Biodiversity Assessment Method, unless the Department determine that the proposed development is not likely to have any significant impacts on biodiversity values.	Assessment has been undertaken in accordance with the BAM (DPIE 2020a) and documented in this BDAR.
The BDAR must document the application of the avoid, minimise, and offset framework; including assessing all direct, indirect, uncertain and prescribed impacts in accordance with the Biodiversity Assessment Method 2020.	Addressed in **Section 7.**
The BDAR must include details of the measures proposed to address the offset obligation as follows: a. The total number and classes of biodiversity credits required to be retired for the development/project; b. The number and classes of like-for-like biodiversity credits proposed to be retired; c. The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules; d. Any proposal to fund a biodiversity conservation action; e. Any proposal to conduct ecological rehabilitation (if a mining project); f. Any proposal to make a payment to the Biodiversity Conservation Fund.	The total number and class of credits required to be retired to address the offset obligations for the proposed development are detailed in **Section 10.**
The BDAR must be submitted with all spatial data associated with the survey and assessment as per Appendix 11 of the BAM.	Relevant spatial data will be supplied to CPHR.

Assessment requirement	Relevant section
SEARs	
The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the *Biodiversity Conservation Act 2016*.	This BDAR has been prepared and certified by Ian Benson (BAAS 18147).

In addition, the following assessments have been undertaken by AEP which have informed this report:

- Biodiversity Management Plan (BMP) (AEP 2025a)
- Bushfire Threat Assessment (BTA) (AEP 2025b)
- Aquatic Ecology Report (AER) (AEP 2024a)
- Riparian Assessment Report (RAR) (AEP 2024b)
- Arborist Impact Assessment (AIA) (AEP 2024c)



Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline

Figure 1 - Site Map

0 220 440 m

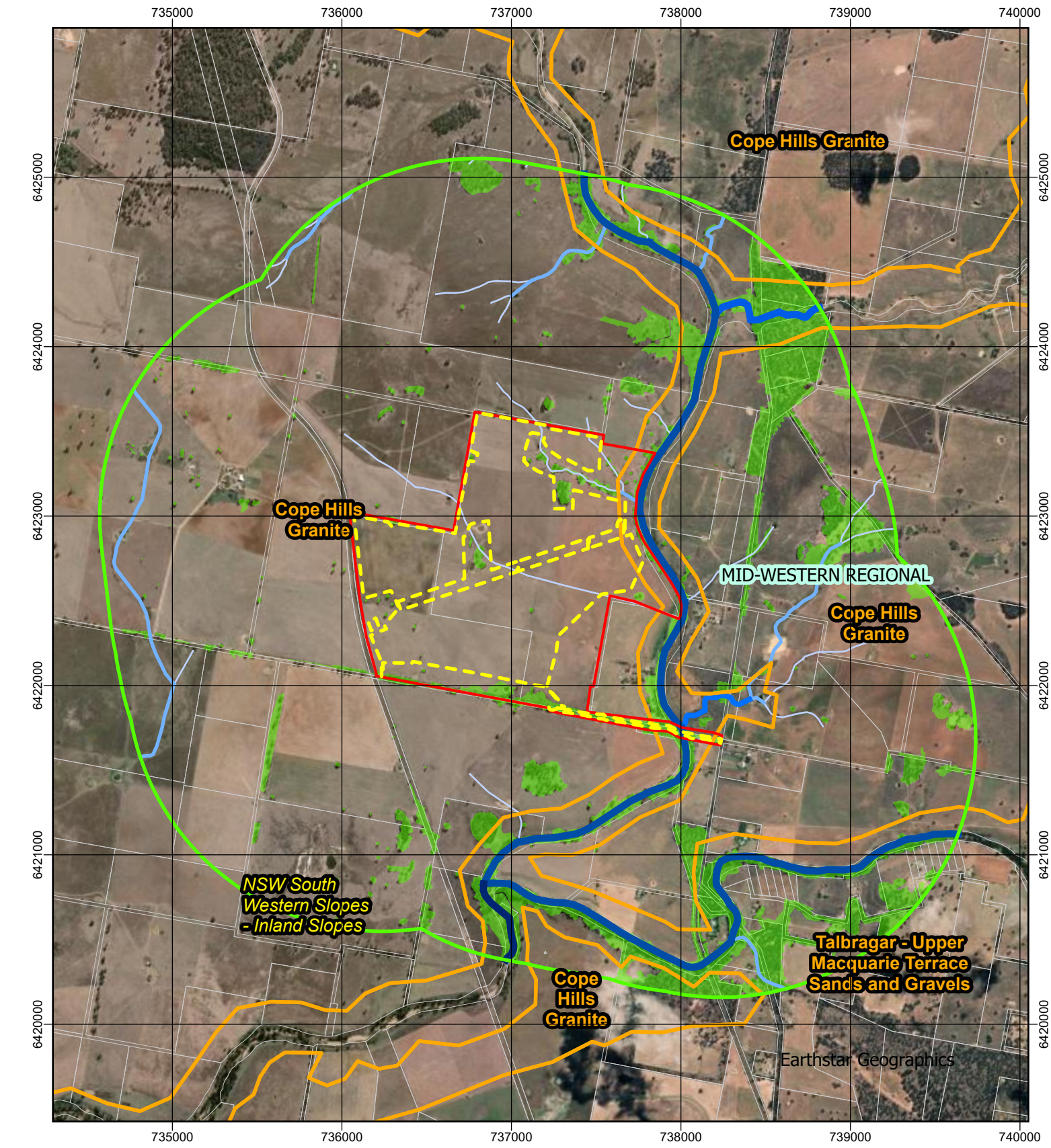
Scale: 1:13,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 16 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55



Legend

- Study Area
- Subject Land
- 1500m Assessment Buffer
- Cadastre
- Local Government Area
- IBRA Region - Subregion
- NSW Landscapes v3.1
- Native Vegetation Extent

Strahler

- 1st Order Stream (10m)
- 2nd Order Stream (20m)
- 3rd Order Stream (30m)
- 4th Order Stream (40m)
- 6th Order Stream (40m)
- 7th Order Stream (40m)

Figure 2 - Site Location

0 510 1,000 m

Scale: 1:30,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

GENERAL LEGEND

- SITE BOUNDARY
- CADASTRE BOUNDARY
- PROPOSED SITE FENCE
- PROPOSED GATE ENTRY
- 6m INTERNAL ROADS (CRUSHED ROCK) - TO MAKE UP OVERALL WIDTH OF FIRE BREAK
- HYDROBUFFER
- HYDROLINE
- SITE ACCESS
- CONTOURS (SHOWN AT 0.5m)
- ECOLOGY EXCLUSION ZONE
- ELECTRICAL EASEMENT
- TEMPORARY WORKERS ACCOMMODATION CAMP & CONSTRUCTION LAY DOWN AREAS
- GWABEGAR RAILWAY TRACK
- EXISTING DAMS. TO BE RETAINED
- EXISTING DAMS. TO BE REMOVED
- PROPOSED STORMWATER RETENTION BASIN
- EXISTING TREES. TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- TREE CLUSTER
- LANDSCAPE BUFFER
- PV CASE INVERTER
- PROPOSED 84PV MODULE
- PROPOSED 56 PV MODULE

GENERAL NOTES

- TOTAL SITE AREA: APPROX. 216 Ha.
- TOTAL DEVELOPMENT AREA: APPROX. 123 Ha.
- TOTAL PROPOSED SETBACK BREAKDOWN
  - 5m LANDSCAPE BUFFER
  - 10m FIRE BREAK (TO BE COMPRISED OF 5m UNVEGETATED BUFFER + 5m INTERNAL ROAD
- INTERNAL ROAD SUBJECT TO TRANSPORT ADVICE. WILL BE A MINIMUM OF 02 ENTRY POINTS.
- DEVELOPMENT SITE TO INCLUDE x2 45,000 LITRE WATER TANKS PER DEVELOPMENT SITE.
- DEVELOPMENT SITE TO INCLUDE PASSING BAYS EVERY 200m ALONG INTERNAL ROAD.
- LANDSCAPE BUFFER EXTENTS & DENSITIES ARE SUBJECT TO LVIA AND GLINT & GLARE ASSESSMENT OUTCOMES.

103 DP750762
219 DP750762
34 DP750765
73 DP750762
215 DP750762
35 DP750765
2 DP734683
133 DP750765
1 DP1097749
1 DP1218313
2 DP528667
2 DP528667
1 DP734669
36 DP661248
26 DP1117518
2 DP108712
2 DP528667

BARNEYS REEF ROAD
JACKSON LN
SLAPDASH CREEK
PP LINE
POWER
EXISTING
PP
Veg Height 6.4m
Veg Height 7.2m
Veg Height 3.5m
66/33kV Substation
Energy storage system
SILO
SHED

POINT OF CONNECTION

SUBSTATION (APPROX 0.30 Ha)

BATTERY ENERGY STORAGE SYSTEM (APPROX 1.60 Ha)

10M APZ BOUNDARY FOR BESS

EMERGENCY SITE ACCESS

INDICATIVE LOCATION OF THE TEMPORARY WORKERS ACCOMMODATION CAMP AND CARPARK

(APPROX 8.0 Ha)

INDICATIVE LOCATION OF LAY DOWN AREA FOR CONSTRUCTION (APPROX 8.0 Ha)

MAIN SITE ACCESS

SEE CS-002 FOR ROAD UPGRADE INSET PLAN

500m RADIUS EXCLUSION ZONE

R2

500m RADIUS EXCLUSION ZONE

R1

URBIS

MAYFAIR SOLAR FARM
SITE LAYOUT PLAN

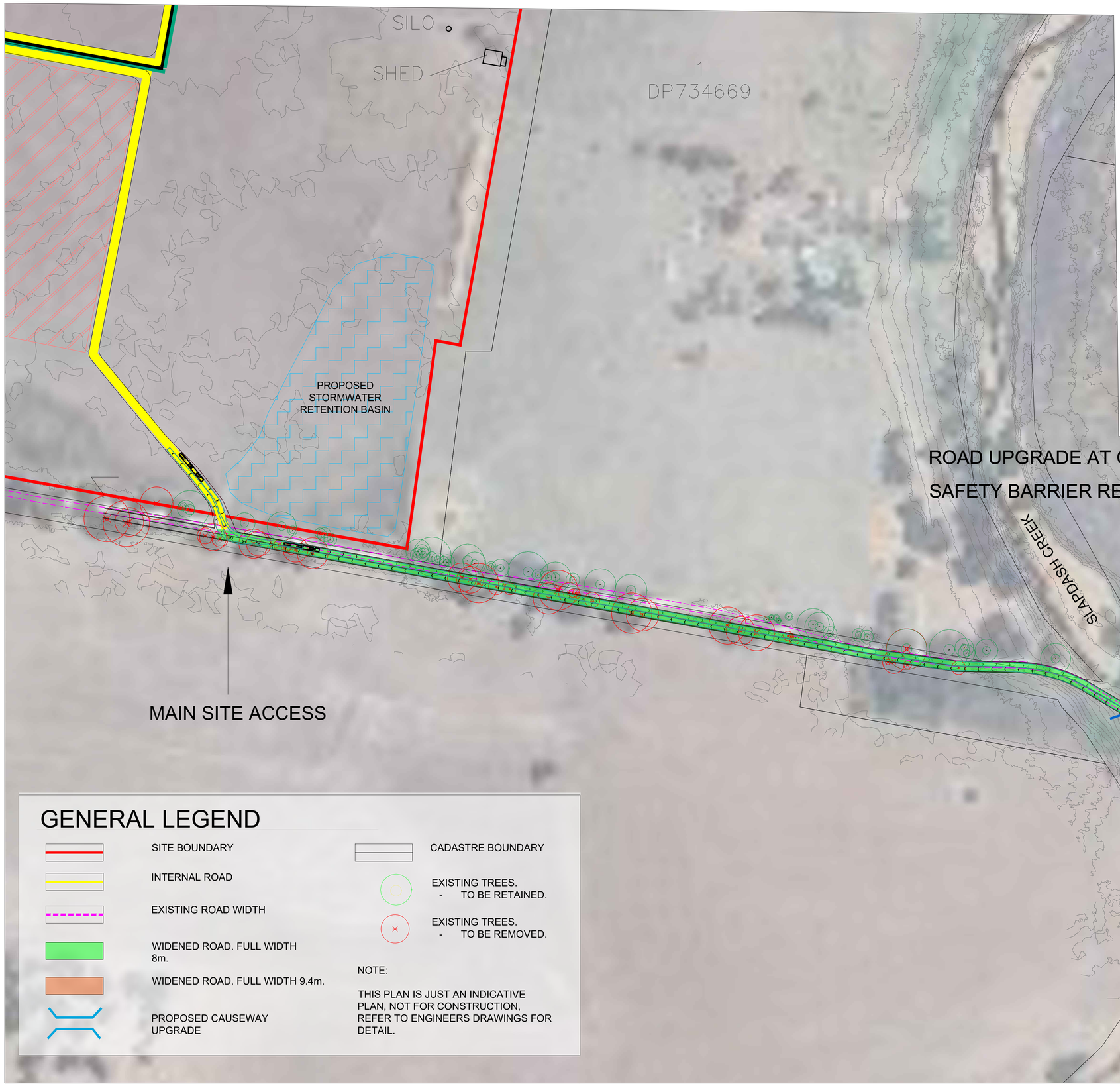
Angel Place, Level 8, 123 Pitt Street | Sydney NSW 2000 Australia | +61 2 8233 9900 | URBIS Pty Ltd | ABN 50 105 256 228

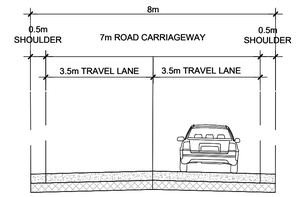
REV	DESCRIPTION	DWN	CHK	DATE
B	ISSUE FOR COORDINATION	HS	YV	08.08.2024
A	FOR REVIEW	OS	YV	10.07.2024

CLIENT
ELGIN ENERGY

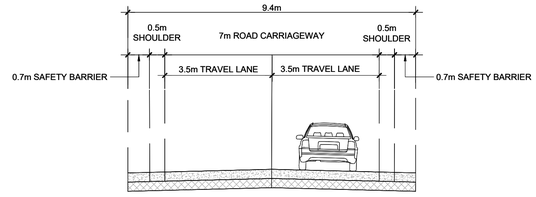
1:5,000 @ A1
1:10,000 @ A3
0 50 100 250m

PROJECT NO. P0046824
DATE 08.08.2024
DRAWING NO. CS-001
REVISION B





TYPICAL ROAD CROSS SECTION 8 METERS
JACKSONS LANE UPGRADE



TYPICAL ROAD CROSS SECTION 9.4 METERS
NEW CULVERT

01
-
TYPICAL ROAD CROSS SECTIONS
SCALE 1:100 @ A1

GENERAL LEGEND

- SITE BOUNDARY
- INTERNAL ROAD
- EXISTING ROAD WIDTH
- WIDENED ROAD. FULL WIDTH 8m.
- WIDENED ROAD. FULL WIDTH 9.4m.
- PROPOSED CAUSEWAY UPGRADE
- CADASTRE BOUNDARY
- EXISTING TREES. - TO BE RETAINED.
- EXISTING TREES. - TO BE REMOVED.

NOTE:

THIS PLAN IS JUST AN INDICATIVE PLAN, NOT FOR CONSTRUCTION, REFER TO ENGINEERS DRAWINGS FOR DETAIL.

URBIS

MAYFAIR SOLAR FARM
SITE DESIGN LAYOUT - ROAD UPGRADE INSET PLAN

Angel Place, Level 8, 123 Pitt Street | Sydney NSW 2000 Australia | +61 2 8233 9900 | URBIS Ltd | ABN 50 105 256 228

REV	DESCRIPTION	DWN	CHK	DATE
B	FOR COORDINATION	HS	YV	08.08.2024
A	FOR REVIEW	OS	YV	10.07.2024

ELGIN ENERGY

1:1,500 @ A1
1:3,000 @ A3
0 10 20 50 70m

P0046824 08.08.2024

CS-002 B

1.2 Biodiversity Offsets Scheme entry

The development is being assessed as an SSD under the EP&A Act which triggers the BOS. The Subject Land contains BV mapped land associated with Slapdash Creek. The BV mapping is presented in **Figure 4**.

1.3 Excluded impacts

The site contains 'Category 1 – exempt land' (Category 1 Land) under the *NSW Local Land Services Act 2013* (LLS Act). A BDAR does not need to assess the impacts of any clearing of native vegetation and loss of habitat on land classified as Category 1 Land. The Native Vegetation Regulatory Map (NVR Map) is still in a draft stage, and there are currently two (2) interim maps:

- *In force*: Transitional Native Vegetation Regulatory Map (DCCEEW 2025c)
- *No legal effect*: Draft Native Vegetation Regulatory Map (DCCEEW 2025d)

A self-assessment commenced in October 2023, it is noted at this time that the Draft NVR Map was not published, and was subsequently released in March 2024. As such, self-assessment was informed by the Transitional NVR Map with due reference to the state guidelines: *Determining native vegetation land categorisation for application in the Biodiversity Offset Scheme* (DPE 2023).

The methodology undertaken is detailed in **Appendix D,** is summarised below and depicted in **Figure 5**.

1.3.1 Desktop Assessment

A review of relevant mapping files, including land use mapping, was conducted to determine historical land use and the extent of woody vegetation. This review also included reviewing of historical imagery datasets, Land Use Mapping and the Transitional NVR Map. The analysis revealed that only a small portion of the Study Area, associated with Slapdash Creek, is mapped as Category 2-regulated land (Category 2 Land), while the rest of the Study Area was unclassified.

During the desktop assessment, several key items were identified, including the presence of mapped vegetation. Based on this, it was determined that areas of the site not mapped under the Transitional NVR Map would likely meet Category 2 Land designation.

1.3.2 Site Assessment

In October 2023, a site assessment was conducted by AEP ecologists to identify native vegetation within the Study Area. The vegetation was ground-truthed using vegetation integrity plots, as described in **Section 2.2.3.** During this assessment, areas of treed native vegetation that were not cleared prior to 1990 were identified within the site, and it was determined that these do not meet the criteria for Category 1 Land designation. Additionally, riparian lands, as identified in the RAR (AEP 2024b), were evaluated and designated as Category 2 Land.

Areas of exotic dominant grassland, which have been subjected to historical and ongoing agricultural practices, including cropping and grazing, were identified as potentially consistent with Category 1 Land. The areas identified as exotic-dominant grassland were assessed using the transect methodology outlined in the '*Interim Grasslands and Other Groundcover Assessment Method*' (OEH 2017). A total of seven (7) transects were conducted to ensure comprehensive coverage of the Subject Lands, with a transect undertaken at each exotic dominant grassland plot meeting the minimum requirements for number of plots per zone as per Table 2 of OEH 2017. The stratification was not informed by the Draft NVR Map, as it was not released at the time of the assessment. Instead, transects were strategically placed to align with areas of exotic-dominant grassland that are widely dispersed throughout the site. This approach was undertaken to capture variations in grassland areas. All plots were classified as low conservation grassland, as detailed in **Appendix D**.

In determining Category 1 land, the potential presence of the Critically Endangered Ecological Community (CEEC) *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland* was considered. An assessment of the exotic-dominant grassland areas against the listing criteria (TSSC 2020) concluded that the vegetation does not meet the attributes required for the

CEEC. This is due to low native species richness, absence of key diagnostic species, dominance of exotic vegetation, and a history of long-term agricultural disturbance. The condition of these areas indicates a loss of ecological function and limited potential for natural regeneration. As such, they have been classified as Category 1 land.

1.4 Matters of national environmental significance

This BDAR assesses impacts to Matters of National Environmental Significance listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in **Appendix E**. No Commonwealth listed entities were identified as occurring on the Subject Land, however, considering the scale of the project, referral should be considered.

1.5 Information sources

Information and spatial data provided within this BDAR has been compiled from various sources including:

- Aerial Photograph Interpretation (API) of the site and surrounding locality (Google 2024, SIX Maps and historical);
- Current and historical photographs of the Subject Land;
- Survey data collected within the Subject Land (October 2023, December 2023, March 2024, August 2024);
- Draft and Transitional Native Vegetation Regulatory (NVR) Mapping;
- Land-use mapping which identifies existing and historical agricultural land use in New South Wales under the Australian Land Use and Management (ALUM) Classification as shown in the NSW Land Use Mapping (2017);
- State survey guidelines (DPIE 2020, DCCEEW 2024c);
- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft* (DEC, 2004).
- NSW *State Vegetation Type Map* (DCCEEW, 2024a);
- eSPADE Soil profiles and Data (https://www.environment.nsw.gov.au/eSpade2Webapp);
- DPE BAM – Important Areas Map to determine whether the site is mapped as Swift Parrot, Regent Honeyeater, Migratory Shorebird and Plains-wanderer Important Areas;
- PlantNET NSW (http://plantnet.rbgsyd.nsw.gov.au/); and
- Anecdotal records.

In addition, database searches were carried out, namely:

- Review of flora and fauna records held by the DCCEEW Atlas of NSW Wildlife within 100km^2 of the site (May 2025) and within the wider Mid-Western Regional LGA; and
- Review of flora and fauna records held by the DCCEEW Protected Matters Search within a 10km radius of the site (May 2025).

1.6 Response to submissions

Following submission of the EIS and accompanying BDAR, the Conservation Programs, Heritage and Regulation Group (CPHR) have requested additional information in a Response to Submission dated 30 January 2025. These matters have been addressed in the latest revision, as detailed in the table below.

Table 2: CPHR recommendations and AEP Response

Reference	Item	Concern	AEP response
1	*Further justification for the PCT allocation and mapping is required.*	PCT allocation and mapping needs to be reviewed, in particular the presence of communities associated with Box Gum Woodland need to be considered.	Following review of the plot data, abiotic factors and PCT classification, AEP have mapped areas of vegetation not dominated by *E. conica* as PCT 281, which is associated with the Box Gum Woodland TEC. PCT determination for this community is detailed in **Table 10** and **Section 4.2.3**. The four (4) scattered trees proposed to be impacted have been mapped as PCT 281. PCT determination for PCT 201 has been updated (**Table 7**). **Figure 6a** and **Figure 6b** have been updated to include all PCTs mapped within the Study Area.
		Occurrence and dominance of *Angophora floribunda* in Plot 1 will need to be justified as to how this area fits in with the wider vegetation mapping given that this area contains species that are not included in PCT 201.	The occurrence of *Angophora floribunda* in Plot 1 is acknowledged; however, its presence is not considered sufficient to reclassify the vegetation from PCT 201. The broader structural and floristic characteristics of the area, particularly the dominance of *Eucalyptus conica* along assessed areas of Jacksons Lane support the current classification. Given the site's degraded condition and the difficulty in delineating clear vegetation boundaries in such degraded landscapes, the assignment of PCT 201 is considered appropriate. Additionally, Plot 1 was undertaken in an area outside the Subject Land and is not proposed for impact. Further justification is provided in **Table 7**.
		However, Plot's 2, 3, 4 and 5 appear to align more closely to PCT 277, PCT 3397 or PCT 281 where *E. conica* is not the dominant species. Also, the presence of *A. floribunda* in some of these plots which are not associated with PCT 201 require further justification as to how these species fit within the PCT.	PCT determinations have been reviewed, with Plots 4 and 5 re-assigned to PCT 281, as detailed in **Table 10**. These areas are located outside the Subject Land and are not proposed to be impacted by the development. Plot 3, situated on the bank of Slapdash Creek, contained water-tolerant species such as *Phragmites australis* and aligns with SVTM mapping as PCT 78, a riparian community typically found along regularly inundated watercourses. Given the landscape position, this classification is considered appropriate. Plot 2 was also reviewed for potential reallocation. However, *Eucalyptus conica* remains present at 12% PFC and is reasonably considered co-dominant with *Eucalyptus melliodora*, recorded at 20% PFC. As with the other plots, Plot 2 is located outside the Subject Land, and the vegetation zones it represents are not proposed for impact.
		The ground-truthed spatial data provided indicates that PCT 78 was mapped outside the development footprint along the drainage line in the	Addressed above.

Reference	Item	Concern	AEP response
		north of the Study Area; however, BAM plot data indicates that these areas do not contain *Eucalyptus camaldulensis* and are more likely to align with PCTs associated with Box Gum Woodland CEEC.	
		Further justification for the PCT alignment, especially in the north-west of the Study Area, needs to be provided in the BDAR.	PCT determination has been reviewed and addressed in **Tables 7** and **10**.
2	*White Box, Yellow Box, Blakely's Red Gum Critically Endangered Ecological Community (Box Gum Woodland CEEC) presence would require revision of the land category assessment, consideration under the BAM and additional SAII assessment*	The presence of Box Gum Woodland needs to be reviewed following re-evaluation of PCT determination and additional SAII assessment. Where Box Gum Woodland CEEC may occur, an assessment should be made against the diagnostic criteria in the NSW Scientific Committee Final Determination for that community.	As stated above, PCT 281 has been assessed as occurring on site. An assessment against the NSW Scientific Committee Final Determination listing criteria for Box Gum Woodland has been undertaken in **Section 4.2.3** Additionally, an SAII assessment for the Box Gum Woodland has been completed in **Section 9.1.1.2**.
		If Box Gum Woodland CEEC is determined to be present on the site, the area of the CEEC will need to be designated as Category 2 land and the BAM applied.	Exotic dominant grasslands were assessed against the listing criteria for Box Gum Woodland and it was determined that the grassland areas do not meet the relevant listing criteria due to the low native species richness, absence of key diagnostic species, and dominance of exotic grasses and weeds. Further justification of the land categorisation is detailed in **Appendix D**.
3	*Native vegetation cover percentage should be reviewed*	It appears that the native vegetation cover percentage within the assessment area has been underestimated. Areas of woody native vegetation have not been included within the native vegetation extent calculations and mapping.	AEP have undertaken refined mapping of native vegetation extent, and it has increased from 11% to 11.89% as detailed in **Table 3** and **Figure 2,** which illustrates the updates. As a conservative approach, AEP have set the NVE score within the BAM-C as 100%.
		If reassessment of the native vegetation percent cover within the buffer area results in an increase in the cover class applying to the project, there may be a change to the predicted threatened species list within the BAM-C.	No additional candidate species were introduced; additional ecosystem credit species have been added into **Table 16**.
4	*Targeted survey effort for threatened flora and fauna may require further review if the*	Feasibility of the streamlined assessment module needs to be reviewed if there are changes to land category designation.	As above and detailed in **Appendix D**, there have been no changes to the land category designation following assessment against the listing criteria for Box Gum Woodland.

Reference	Item	Concern	AEP response
	streamlined assessment module is not applicable		
5	*Update the SAII assessment for Fuzzy Box Woodland*	Revision of the SAII assessment may be required following review of PCT allocations and consideration of Box Gum Woodland CEEC.	The SAII assessment has been reviewed and updated in **Section 9.1.1**.
		Provide clarification and additional information around the proposed revegetation of 25ha of Fuzzy Box Woodland. Additional information should be provided in section 8.4 of the BDAR. Re-vegetation is not a proposed mitigation measure in Table 20 of the BDAR and it is not clear if this re-vegetation will occur within the Study Area in addition to the required offset obligation, or as part of an offsite offset.	A Biodiversity Management Plan (BMP) is proposed and has been included as **Appendix I**. The BMP includes re-vegetation works outside of the Subject Lands but within the Study Area and is proposed in addition to the required offset obligation. Following the reclassification of areas as PCT 281, the revegetation area of Fuzzy Box Woodland is 7.64ha and Box Gum Woodland is 19.03ha. **Table 20**, now **Table 25,** in **Section 8.4** has been updated accordingly.
6	*Minor updates to the mapping are required to support the assessment*	Some minor mapping updates required including provision of spatial dataset showing all proposed infrastructure.	The following has been updated: • **Figure 15** illustrates all candidate SAII entities in the Study Area. • **Figure 2** includes the LGA. Spatial dataset have been provided upon submission of BDAR.
7	*Consider additional mitigation measures*	Additional mitigation measures should be considered for inclusion in Table 20: a) revegetation/rehabilitation/enhancement of areas of Fuzzy Box Woodland EEC included as described in Section 9. b) salvage of hollows for reuse in the proposed rehabilitation/enhancement areas. c) no vegetation will be removed during Spring, to avoid the main breeding period for hollow-dependent fauna.	**Table 20,** now **Table 25,** has been updated. In relation to recommendation c), if clearing is proposed for Spring, pre-clearance surveys are to be conducted to ensure fauna are not present.
8	*Conduct a review of all plot data and update the BDAR and BAM-C case*	Plot data discrepancy in Plot 13.	Plot data has been reviewed and amended. Plot 13 has an increase in forb abundance (1), forb cover (0.1) and high-threat exotic abundance (0.1).
		Appendix F only contains the raw plot data. A copy of the BAM import spreadsheet, as well as the growth form allocated to each species	**Appendix F** has been updated.

Reference	Item	Concern	AEP response
		should be included in Appendix F.	
		The number of hollow bearing trees in each plot is not included in the raw datasheets. Raw datasheets should be reviewed, and the number of hollow bearing trees included.	Hollow bearing tree assessment is detailed in **Table 15**. The raw datasheet has been updated to reflect the number of HBTs identified in the BAM plot.
		The identification of *Eucalyptus molucana* and *Casuarina glauca* should be reviewed as these species often do not occur as far west as the Study Area. The Biodiversity Risk Weighting in Table 25 should be updated from 1.5 to 2.0.	*E. molucana* has been reclassified as *E. melliodora* and *C. glauca* has been reclassified to *C. cunninghamiana subsp. cunninghamiana* **Table 25,** now **Table 30,** has been updated.

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Biodiversity Values
- Biodiversity Values added in the last 90 days

Figure 4 - Biodiversity Values

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 16 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Category 1 - Exempt Land

Figure 5 - Excluded Impacts

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 07 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

2.0 Methods

2.1 Site context methods

2.1.1 Landscape Features

Landscape features were identified according to Section 3.1 of the BAM using a combination of desktop review and field survey methods. This included:

- Review of International Biographic Regionalisation for Australia (IBRA) regions and subregions;
- Assessment of habitat connectivity;
- Assessment of rivers, streams, estuaries and wetlands;
- Review of the register of areas of Outstanding Biodiversity Value;
- Identifying vegetation types, dominant canopy, mid-storey and groundcover species;
- Defining vegetation formation and class; and
- Assessing landform and landscape design.

2.1.2 Native vegetation cover

The percentage native vegetation cover was assessed according to Section 3.2 of the BAM, and a 1500m buffer was applied to the edge of the Subject Land. Native vegetation was ground-truthed within the Study Area through field surveys in October 2023, December 2023, March 2024, and August 2024.

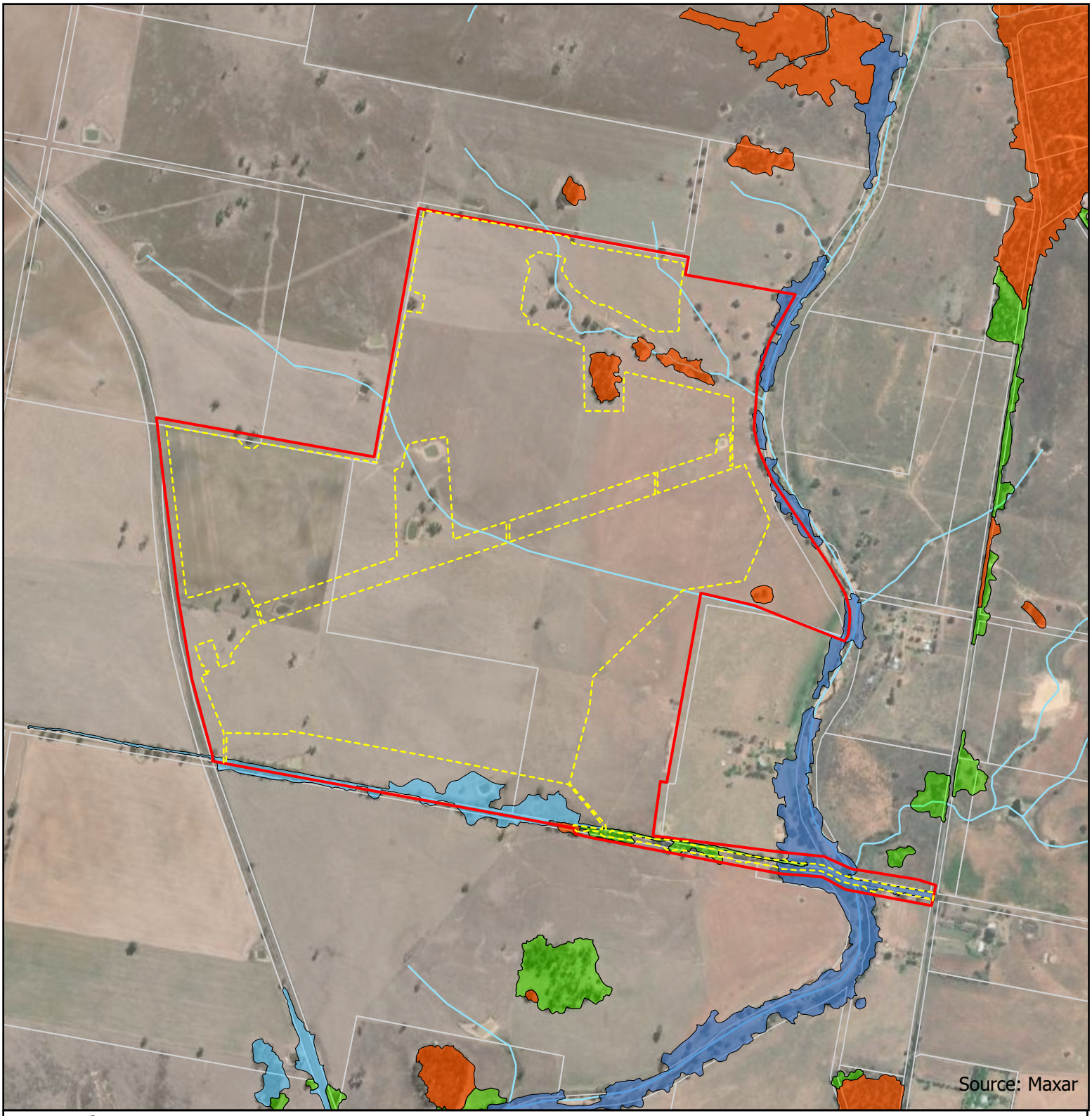
Native vegetation within the broader 1500m was identified through the analysis of vegetation datasets and satellite imagery.

2.2 Native Vegetation

2.2.1 Existing information

Plant Community Types (PCTs) within the Subject Land were determined according to BAM Section 4.2. The State Vegetation Type Map (SVTM) was interrogated to determine the likely ecological communities present within the site as shown in **Figure 6**. Ground-truthing of vegetation by AEP in 2023 and 2024 was the primary source of data for PCT determination in the present assessment. This included an assessment of dominant species, landscape position, geomorphology, and vegetation structure. All vegetation communities within the Subject Land were identified and assessed against relevant threatened ecological communities (TECs).

An assessment of TECs and PCTs is provided in **Sections 4.2** and **4.3** of this report.



Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline

State Vegetation Type Map (DCCEEW, 2024)

- PCT 0 - Not classified
- PCT 78 - River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion
- PCT 81 - Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion
- PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Figure 6a - State Vegetation Type Mapping

0 250 500 m

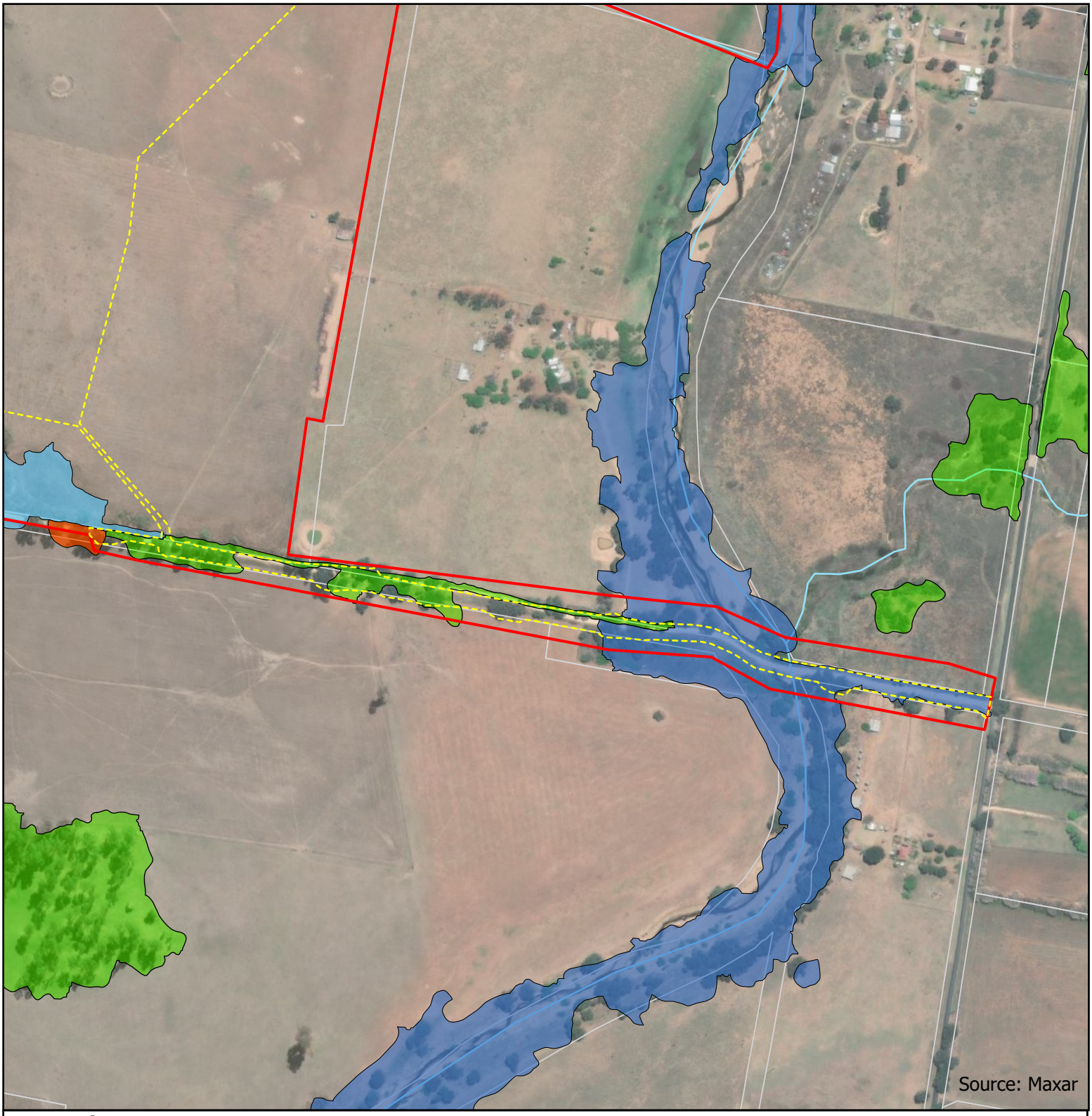
Scale: 1:15,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55



Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline

State Vegetation Type Map (DCCEEW, 2024)

- PCT 0 - Not classified
- PCT 78 - River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion
- PCT 81 - Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion
- PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Figure 6b - State Vegetation Type Mapping

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

2.2.2 Mapping native vegetation extent

Flora surveys were undertaken by AEP from October 2023 to August 2024 to ground-truth native vegetation, determine PCTs and condition classes, derive vegetation community types, and meet relevant survey guidelines. This involved the use of plot-based surveys as described in **Section 2.2.3**.

An assessment of scattered trees, as defined in the BAM, includes vegetation that '*have a percent foliage cover that is less than 25% of the benchmark for tree cover for the most likely plant community type and are on category 2-regulated land and surrounded by category 1-exempt land on the Native Vegetation Regulatory Map under the LLS Act*' (DPIE 2020a). This assessment was conducted throughout the Subject Land, and trees meeting the criteria for scattered trees were recorded using GPS, including the species name, diameter at breast height, and presence of hollows.

Grasslands that were determined to be exotic dominate were further assess utilising Interim Grasslands and other Groundcover Assessment Method (OEH 2017) (IGGAM).

2.2.3 Plot-based vegetation survey

Vegetation Integrity Plots (herewith called BAM Plots) are 50m x 20m quadrats, with a 20m x 20m floristic subplot where all plant species are identified. These plots were used to determine the extent of native vegetation and to populate the BAM-C. A total of 17 BAM plots were undertaken throughout the Study Area. A total of four (4) BAM plots (Plots 13, 14, 16 and 17) were modified to 100m x 10m with a 40m x 10m floristic subplot, as they occurred in a narrow roadside reserve, in accordance with Section 3.3.2 of the Biodiversity Assessment Method Operational Manual – Stage 1 (DPIE 2020c). Plots were sited to be representative of each vegetation condition zone and to avoid ecotones and disturbed areas were possible, noting that the Subject Land is heavily disturbed.

Grassland areas within Lot 2 DP 734669 and Lot 2 DP 528667 that were identified as exotic dominant were further assessed using transects as prescribed by the Interim Grasslands and other Groundcover Assessment Method (OEH 2017) (IGGAM). IGGAM transects were undertaken by recording the number of 'hits' of each exotic perennial or native species at 1m intervals. A hit is recorded if a vertical pin intercepts the live or dead crown of each plant. A total of seven (7) IGGAM transects were undertaken throughout the Study Area and further detailed in **Appendix D.** Plot and transect locations are presented in **Figure 7.**

2.2.4 Vegetation integrity survey

The total area of each vegetation zone was calculated using GIS, and the minimum number of BAM plots required was based on Table 3 of BAM Subsection 4.3.4. BAM plot locations were initially randomly assigned via GIS, given the highly disturbed nature of the site, BAM plots were located within parts of the vegetation zone that were most representative.

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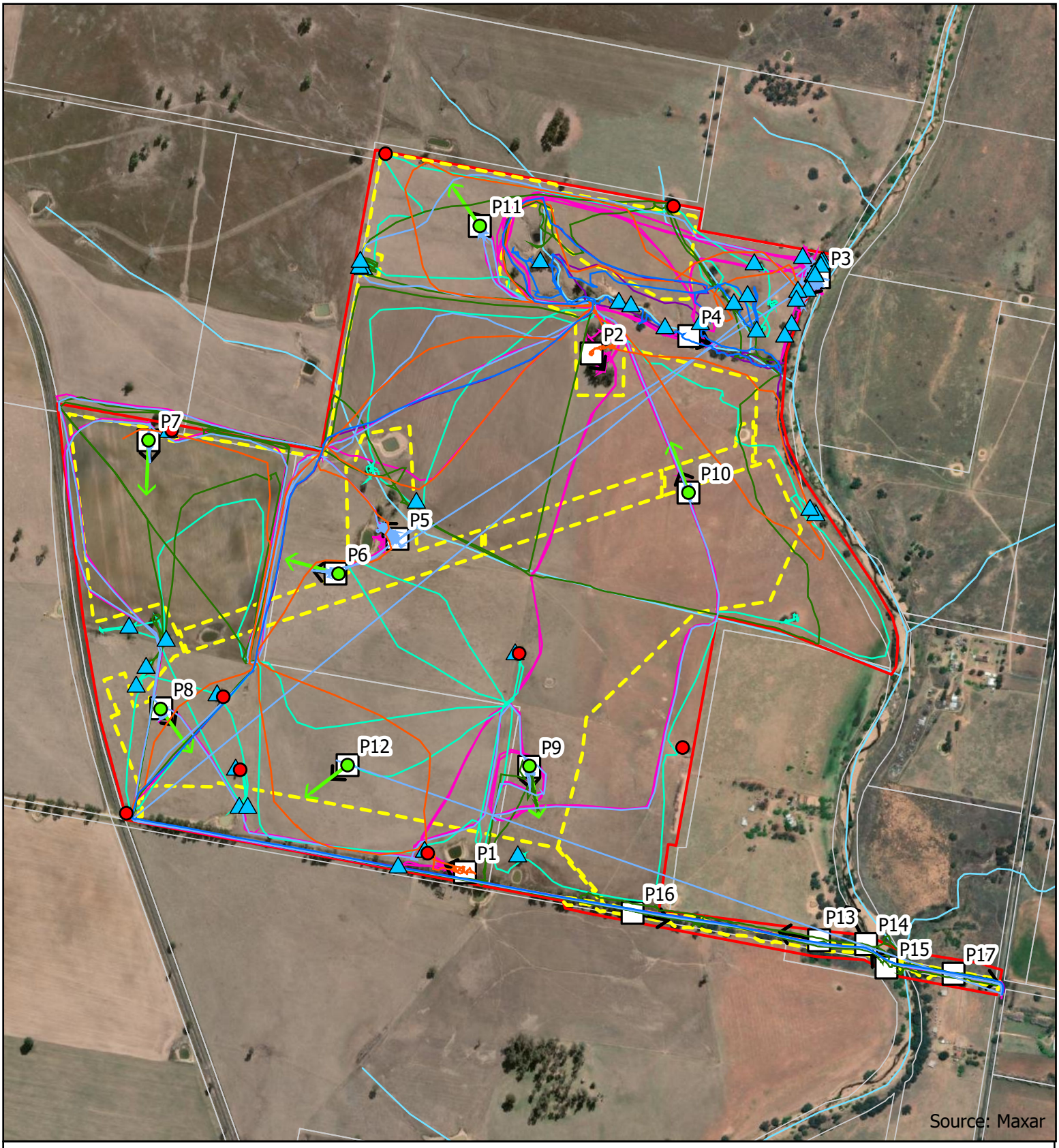


Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- BAM Plot
- BAM Transect
- GGAM Plot
- Scattered Tree
- Hollow Bearing Tree (HBT)
- GGAM Plot Transect
- Aquatic Survey
- Site Assessment and Scattered Tree Assessment
- BAM Survey
- Nocturnal Survey
- GGAM Survey
- BAM, Scattered Tree and Riparian Assessment
- 5m Targeted Flora Survey (March 2023)

Figure 7 - Field Survey Locations

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

2.3 Threatened flora survey methods

2.3.1 Review of existing information

A review of literature and datasets was undertaken to develop a list of species to be targeted during the threatened flora species surveys including:

- NSW BioNet Atlas – searching within 100km^2 search area. Further consideration was given to species that have been recorded with the Mid-Western Regional LGA;
- Protected Matters Search Tool (PMST) (CDCCCEW 2025) within a 10km buffer;
- NSW BioNet Threatened Biodiversity Data Collection (TBDC); and
- The Biodiversity Assessment Method Calculator (BAM-C).

Flora species were assessed against the habitat features identified within Subject Lands to determine the suitability of the area to support these species. This involved cross-referencing species information in the TBDC and scientific literature with relevant information from the site. The small area module only requires assessment of species listed as at risk of Serious and Irreversible Impacts (SAII). Non-SAII species were considered and manually added into the BAM-C.

2.3.2 Habitat constraints assessment

Habitats and microhabitats were assessed in October 2023, December 2023, and March 2024 to identify specific habitats and microhabitats for threatened species within the Subject Land. Exclusions were made based on habitat constraints, geographic limitations, or microhabitat requirements. Out of the four (4) species identified through database and literature searches as potentially occurring on the Subject Land, three (3) threatened flora species were selected for targeted searches.

2.3.3 Field Surveys

Vegetation surveys were conducted on October 2023, December 2023, March 2024 and August 2024 by AEP ecologists. Threatened flora surveys were undertaken in accordance with the BAM and methods described in the threatened flora survey guidelines (DPIE 2020). Threatened flora surveys were conducted within areas of suitable habitat within the Subject Land as shown in **Figure 7.**

2.4 Threatened Fauna Survey Methods

2.4.1 Review of existing information

Threatened fauna were identified utilising information sources described in Section 2.3.

2.4.2 Habitat constraints assessment

Habitat assessment was undertaken by AEP in October 2023, December 2023, and March 2024 which involved analysis of specific habitats that could be used by threatened species such as hollows, Koala feed trees, watercourses and rocky outcrops and other features that could be utilised by threatened species.

2.4.3 Field surveys

No threatened fauna species were identified for inclusion as candidate species. Nevertheless, observations were undertaken including records of any fauna species observed during fieldwork were noted. This included opportunistic sightings of secondary indications (scratches, scats, diggings, tracks etc.) of any resident or migratory species. Searches were also conducted for whitewash, regurgitation pellets and prey remain from Owls, chewed Casuarina cones from Black-Cockatoos, chewed fruit remains from frugivorous birds etc. Stag-watching was undertaken on over three nights in October 2024 to identify potential use by Fauna. No threatened fauna was observed during assessment.

2.5 Limitations

No limitations were recognised for threatened flora or fauna species.

3.0 Site Context

3.1 Assessment area

The Assessment Area for the Project includes the Subject Land and the land located within 1500m of the site as shown in **Figure 2.** The Assessment Area totals 1958.33ha, which primarily consists of agricultural land.

3.2 Landscape features

Landscaped features on the Subject Land are depicted in **Figure 2,** and discussed in further detail below.

3.2.1 IBRA bioregions and IBRA subregions

Subject Lands occur entirely within the NSW South Western Slopes IBRA Bioregion, and Inland Slopes IBRA Subregion. This information was entered into the BAM-Calculator accordingly.

3.2.2 Rivers, streams, estuaries and wetlands

A 6th order stream, Slapdash Creek, borders the northeast of the Study Area, and a proposed causeway upgrade is planned along Jacksons Lane, crossing Slapdash Creek. Slapdash Creek is mapped as 'Key Fish Habitat' under the *Fisheries Management Act 1994,* and an AER (AEP 2024a) has been conducted to assess impacts. As detailed in the AER, the existing waterway crossing is currently a barrier to fish passage, and the creek is currently in a degraded condition with limited native aquatic flora and fauna, and aquatic pest fauna species were observed during assessment.

An assessment of potential waterfront land within the Subject Land was undertaken to ground-truth watercourses within the site (AEP 2024b), which found two 1st order and 2nd order streams flowing towards Slapdash Creek in the north-west of the Study Area, outside Subject Lands. Farm dams are scattered throughout the site, and no wetlands occur within the Subject Land or within proximity to Subject Land.

3.2.3 Habitat connectivity

The Subject Land is situated in a region that has been extensively modified by agricultural activities. The surrounding land consists primarily of large rural lots used for grazing and cropping, with fenced paddocks that restrict fauna mobility. The landscape features small, isolated pockets of canopy, including Cope State Forest, located approximately 5km to the northeast. Larger, more intact vegetation areas are present in Yarrobil National Park and Goulburn National Park, about 10km to the east and west, respectively, but these areas lack connectivity to the Subject Land. The site itself is actively grazed and cropped, with fencing further limiting viable entry points. Additionally, dispersed trees along Jacksons Lane are unlikely to support dispersal for fauna species such as gliders.

The most connected vegetation in the area is associated with Slapdash Creek, which lacks a well-formed riparian vegetation zone, unlike Wialdra Creek located further to the southeast. Roadside vegetation associated Jacksons Lane provides marginal connectivity for moderately mobile species.

3.2.4 Karst, caves, crevices, cliffs, rocks or other geological features of significance

There are no karst, caves, crevices, cliffs, rocks or other geological features of significance on the Subject Land or within the Assessment Area.

3.2.5 Areas of outstanding biodiversity value

No located within, or within close proximity to an area of outstanding biodiversity value.

3.2.6 NSW (Mitchell) landscape

The Subject Land occurs within the Cope Hills Granite NSW Landscape which is characterised by Undulating and rolling hills on Carboniferous granite and granodiorite, general elevation 500 to 740m, local relief 150m.

3.2.7 Additional landscape features in SEARs

No additional landscape features were identified in the SEARs.

3.2.8 Soil hazard features

Reference to the 1:100,000 Sheet Soil Landscapes (eSPADE) indicates that the site is located within the Home Rule and Craigmore Soil Landscapes.

The Home Rule Soil Landscape encompasses the almost the entirety of the Subject Lands and is characterised as undulating low hills on sediments derived from Gulgong and Rouse Granites. The soils have low fertility and water holding capacity, and have a moderate to high erosion hazard under cultivation.

The Craigmore Landscape is mapped as occurring in the southeast, near Slapdash Creek and is characterised as contains alluvial high terraces up to 20m above the floodplain. Soils have a moderate to high fertility and a moderate to high available water holding capacity. These soils also are an erosion hazard under cultivation.

3.3 Native vegetation cover

Native vegetation cover is estimated to be 232.82ha based off SVTM 2024 and aerial imagery. **Table 3** summarises the extent of native vegetation cover within the Assessment Area, as shown in **Figure 2**. As a conservative approach, AEP have assumed 100% native vegetation cover in the BAM-C.

Table 3: Native vegetation cover in the assessment area

Assessment area (ha)	1958.33ha
Total area of native vegetation cover (ha)	232.82ha
Percentage of native vegetation cover (%)	11.89%
Class (0-10, >10-30, >30-70 or >70%)	10-30%

4.0 Native vegetation, threatened ecological communities and vegetation integrity

4.1 Native vegetation extent

Native vegetation within the Subject Land totals 1.75ha and is shown in **Figure 8.**

4.1.1 Changes to the mapped native vegetation extent

State Vegetation Type Mapping identified the majority of the Subject Lands as 'not classified.' Smaller isolated pockets of vegetation and isolated trees were not mapped as native vegetation, and the broad-scale mapping included some areas of exotic vegetation along the southern portion of the site. Ground-truthing provided a more granular representation of native vegetation as shown in **Figure 8.**

4.1.2 Areas that are not native vegetation

Areas on the Subject Land that are not classified as native vegetation include existing infrastructure associated with Jacksons Lane as shown in **Plate 1** below. Additionally, areas of vegetation outside the Subject Lands within the wider Study Area have been designated as "Degraded Grassland' as shown in **Figure 9**. These areas occur in Category 2 land, however, as they occur outside the Subject Land they have not been assessed utilising BAM methodology.

Plate 1: Jacksons Lane

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Native Vegetation Extent

Figure 8a - Native Vegetation Extent

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 16 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Native Vegetation Extent

Figure 8b - Native Vegetation Extent

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 17 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

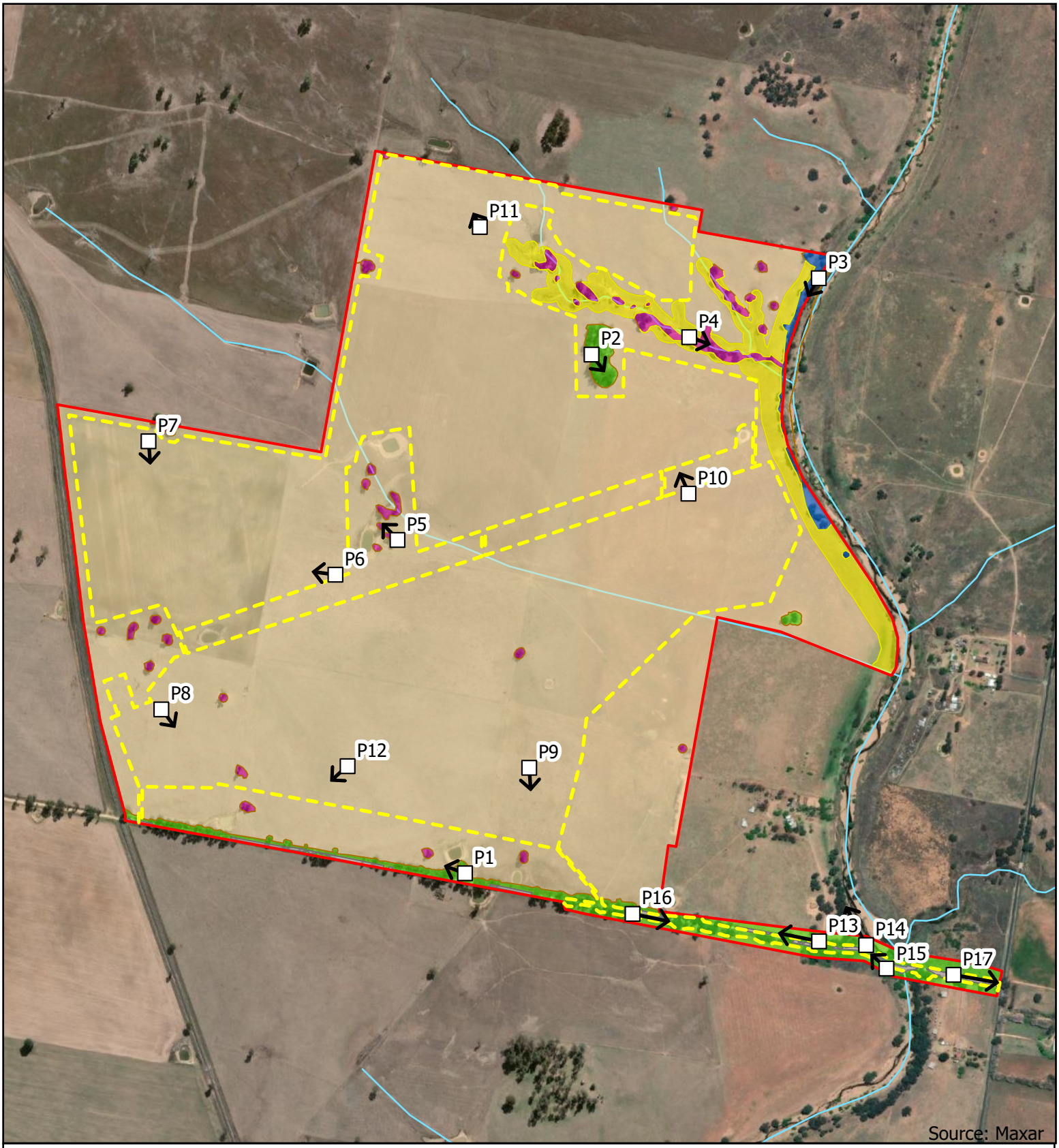
4.2 Plant community types

4.2.1 Overview

Vegetation communities identified on the Subject Land are provided in **Table 4** and depicted in **Figure 9.** PCT 78 was identified outside the Subject Land, in the wider Study Area. Following detailed project design, this area was avoided and has subsequently been excluded from assessment.

Table 4: PCTs identified within the Subject Land

PCT ID	Vegetation name	Vegetation formation	Vegetation class	Extent within Subject Land
201	Fuzzy Box Woodland on alluvial brown loam soils	Grassy Woodlands	Western Slopes Grassy Woodland	1.60ha
281	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats	Grassy Woodlands	Western Slopes Grassy Woodland	0.15ha (4 scattered trees)



Legend

- Study Area
- Subject Land
- NSW Hydroline
- BAM Plot
- BAM Transect

Plant Community Types

- PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- PCT 281 - Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion
- PCT 78 - River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion

- Category 1 Land
- Degraded Grassland
- Infrastructure

Figure 9a - Plant Community Types

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- NSW Hydroline
- BAM Plot
- BAM Transect

Plant Community Types

- PCT 281 - Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion
- PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- Degraded Grassland
- Category 1 Land
- Infrastructure

Figure 9b - Plant Community Types

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

4.2.2 PCT 201 Fuzzy Box Woodland on alluvial brown loam soils

4.2.2.1 PCT Overview

This PCT within the Subject Land contains a characteristic canopy dominated by *Eucalyptus conica,* in conjunction with *Eucalyptus blakely* and *Eucalyptus melliodora*. Within the Subject Lands, this community primarily occurs along Jacksons Lane, where it exhibits an absent shrub layer and an abundance of exotic groundcover, predominantly *Eragrostis curvula*.

Table 5: PCT 201 Fuzzy Box Woodland

PCT	PCT 201
PCT Name	Fuzzy Box Woodland on alluvial brown loam soils
Vegetation Formation	Grassy Woodland
Vegetation Class	Western Slopes Grassy Woodlands
Per cent cleared value (%)	94
Extent within Subject Land (ha)	1.60ha

4.2.2.2 Condition states

PCT 201 occurs in two (2) different condition states throughout the Subject Land as discussed below.

PCT 201 Moderate

This condition is observed in the roadside reserve along Jacksons Lane, where the vegetation is characterised by a canopy dominated by *Eucalyptus conica* and a sparse understorey primarily consisting of exotic species, including a high cover of *Eragrostis curvula* (60% PFC). This zone features a higher canopy cover compared to other areas and is considered the best quality vegetation within the Subject Land. Surrounding the Jacksons Lane causeway, the vegetation also includes *Eucalyptus conica* and some aquatic species, such as *Phragmites australis*. Although these areas are more degraded and likely have a lower integrity, they are ecotonal, containing symptomatic species of PCT 201 along with aquatic species like *Phragmites australis*. Given their ecotonal nature, these areas have been conservatively classified within PCT 201 Moderate.

Plate 2: PCT 201 Moderate

PCT 201 Severely Degraded

The Severely Degraded vegetation zone occurs along Jacksons Lane which is dominated by exotic grasses including *Eragrostis curvula* and *Paspalum dilatatum*. Native cover in these areas is low, with an average PFC of 7.25% cover the two (2) BAM plots undertaken. This area is subject to regular maintenance and has been assigned to PCT 201 due to the proximity of *Eucalyptus conica* adjoining the vegetation.

Plate 3: PCT 201 Severely Degraded

4.2.2.3 Justification of PCT selection

Diagnostic species recorded on site during field work that support the determination of PCTs are shown in **Table 6** below. This is further supported by Vegetation Mapping community designation.

Tables 6 and **7** present the analysis of the floristic composition and landscape position of the BAM plots in the community against the BioNet Vegetation Classification, which concluded with the identification of PCT 201 within the Subject Land. Prior to detailed design, a number of plots were undertaken that were subsequently excluded from the assessment as these areas fall outside the Subject Lands. While these plots were not used in the assessment, they have been considered during the determination to provide holistic assessment of vegetation.

Table 6: Filter data for potential PCT determination

Search Item	Plot 13, 16, and 17
IBRA Region	NSW South Western Slopes
IBRA Subregion	Inland Slopes
Vegetation Formation	Grassy Woodlands / Dry Sclerophyll Forest
Diagnostic Species	*Eucalyptus conica, Eucalyptus melliodora*
Potential PCTs	**201,277,472,3397**

Table 7: Determination of PCT 201

Plots 13, 16, and 17					
Potential PCTs		**201**	**277**	**472**	**3397**
SVTM		Yes – Within Subject Land	Yes – Within Subject Land	No	No
IBRA Region		Cobar Peneplain; **NSW South Western Slopes**; Brigalow Belt South; Darling Riverine Plains;	**NSW South Western Slopes**;	Brigalow Belt South; **NSW South Western Slopes**;	Brigalow Belt South; Nandewar; New England Tablelands; NSW North Coast; **NSW South Western Slopes**; Sydney Basin;
IBRA Subregion		Lachlan Plains; Talbragar Valley; Lower Slopes; Pilliga; Nymagee; Bogan-Macquarie; **Inland Slopes**;	**Inland Slopes**; Lower Slopes;	Talbragar Valley; Pilliga; **Inland Slopes**;	Liverpool Plains; Liverpool Range; Pilliga; Inverell Basalts; Nandewar Northern Complex; Peel; Bundarra Downs; Ellerston; **Inland Slopes**; Hunter; Kerrabee; Wollemi;
LGA		Forbes; Young; Cowra; Harden; **Mid-Western Regional**; Bland; Cabonne; Parkes; Weddin; Lachlan; Dubbo; Wellington;	Upper Lachlan Shire; Junee; Cootamundra-Gundagai Regional; Boorowa; Greater Hume Shire; Harden; Yass Valley; Wagga Wagga; Cootamundra; **Mid-Western Regional;** Young; Cowra; Tumut; Albury City; Coolamon; Cabonne; Tumbarumba; Weddin; Wellington; Parkes;	Dubbo; Wellington; Gilgandra;	Gilgandra; Gunnedah; Gwydir; Inverell; Liverpool Plains; **Mid-western Regional;** Muswellbrook; Tamworth Regional; Upper Hunter; Uralla; Warrumbungle;
Present Diagnostic Species within Study Area	**Canopy Species**	*Eucalyptus conica, Eucalyptus melliodora, Eucalyptus blakelyi*	*Eucalyptus blakelyi, Eucalyptus melliodora, Eucalyptus conica*	*Eucalyptus conica, Eucalyptus blakelyi*	**Canopy** *Eucalyptus melliodora, Angophora floribunda, Eucalyptus blakelyi, Brachychiton populneus, Eucalyptus conica*
	Mid Stratum	Nil	Nil	Nil	**Shrub** *Eremophila debilis, Cassinia sifton*
	Ground Stratum	*Chloris truncata, Eremophila debilis, Carex appressa, Aristida ramosa, Austrostipa verticillata, Glycine clandestina, Einadia nutans subsp. nutans, Wahlenbergia luteola, Atriplex spinibractea, Carex inversa, Glycine tabacina, Cheilanthes sieberi*	*Aristida ramosa, Austrostipa verticillata, Juncus usitatus, Geranium solanderi, Carex inversa, Wahlenbergia luteola, Chloris truncata, Cheilanthes sieberi, Convolvulus graminetinus*	Nil	**Grass** *Austrostipa verticillata, Carex inversa, Aristida ramosa, Microlaena stipoides, Cynodon dactylon, Chloris truncata, Poa sieberiana, Lomandra multiflora subsp. multiflora, Sporobolus creber, Echinopogon ovatus, Eragrostis brownii, Eriochloa pseudoacrotricha, Echinopogon caespitosus, Imperata cylindrica, Juncus usitatus, Themeda triandra* **Forb** *Einadia nutans, Dichondra repens, Einadia trigonos, Wahlenbergia communis, Geranium solanderi, Calotis lappulacea, Alternanthera denticulata, Wahlenbergia gracilis, Wahlenbergia luteola, Acaena novae-zelandiae, Atriplex spinibractea* **Fern** Nil **Other** *Glycine tabacina, Glycine clandestina, Convolvulus graminetinus*
PCT Description		Tall woodland or open forest dominated by Fuzzy Box (*Eucalyptus conica*) often growing with Western Grey Box (*Eucalyptus microcarpa*), Yellow Box (*Eucalyptus melliodora*) or Kurrajong (*Brachychiton populneus subsp. populneus*). Buloke (*Allocasuarina luehmannii*) is common in places. Shrubs are generally sparse and *include Acacia deanei subsp. deanei, Dodonaea viscosa subsp. cuneata, Geijera parviflora, Acacia implexa, Senna artemisioides sens. lat., Myoporum montanum* and *Cassinia aculeata*. Small shrubs include *Maireana enchylaenoides, Maireana microphylla* and *Sclerolaena muricata var. muricata.* The ground cover may be dense after rain but is usually mid-dense and may be dominated by weed	Tall woodland to about 20m high dominated by Blakely's Red Gum (*Eucalyptus blakelyi*) and Yellow Box (*Eucalyptus melliodora*). Blakely's Red Gum or Yellow Box vary in their dominance and either can be absent in some places grading into areas with more Apple Box (*Eucalyptus bridgesiana*), Long-leaved Box (*Eucalyptus goniocalyx*) and rarely *Eucalyptus microcarpa*. Shrubs are sparse or absent and may include *Acacia dealbata*. The ground cover may be dense to sparse depending on rainfall and is dominated by grass species including *Poa sieberiana, Bothriochloa macra, Aristida ramosa, Themeda australis, Austrodanthonia spp* and *Austrostipa spp*. Forbs include *Vittadinia*	Mid-high to tall mid-dense shrubland or woodland dominated by the shrub Thyme Honey-myrtle (*Melaleuca thymifolia*) with other shrubs including *Pultenaea microphylla, Acacia gladiiformis, Acacia spectabilis, Leucopogon biflorus, Hovea lanceolata, Exocarpos cupressiformis* and *Pimelea linifolia*. Over-topping tree species include red gums (*Eucalyptus blakelyi, Eucalyptus chloroclada*), Mugga Ironbark (*Eucalyptus sideroxylon*) and Fuzzy Box (*Eucalyptus conica*). The ground cover is sparse and low in species diversity and includes sedges such as *Gahnia aspera*, *Schoenus ericetorum* and *Lepidosperma laterale* and	A tall sclerophyll woodland, or occasionally open forest, with a patchy mid-stratum and a mid-dense grassy ground layer that occurs on lower slopes and flats in undulating to hilly landscapes of the North-west Slopes and upper Hunter valley, with limited occurrences on the western margin of the New England Tableland. The canopy almost always includes *Eucalyptus melliodora*, occasionally to rarely associated with *Angophora floribunda* or *Eucalyptus blakelyi*. The mid-stratum is sparse and commonly includes scattered individuals of *Maireana microphylla* or rarely *Pimelea neo-anglica, Swainsona galegifolia* or *Notelaea microcarpa*. The mid-dense ground layer is mainly comprised of grasses, sedges and forbs with some twiners, very

Plots 13, 16, and 17				
Potential PCTs	**201**	**277**	**472**	**3397**
	species. Native forbs include *Calotis cuneifolia, Eremophila debilis, Sida corrugata, Einadia hastata, Dianella revoluta var. revoluta* and *Xerochrysum viscosa*. Native grasses include *Austrostipa scabra subsp. scabra, Chloris truncata, Elymus scaber var. scaber, Themeda australis* and *Austrodanthonia setacea.* Weeds may be very common. They include the pepper Tree *Schinus areica* and forb species such as *Plantago lanceolata, Lepidium africanum, Verbena bonariensis* and *Marrubium vulgare* and the grass species *Bromus diandrus, Vulpia myuros, Lolium perenne* and *Paspalum dilatatum.* This community occurs on brown loam or clay, alluvial or colluvial soils on flats, low slopes, prior streams and abandoned channels or slight depressions on the undulating plains mainly in the NSW South-western Slopes Bioregion but extending into the Cobar Peneplain and Brigalow Belt South Bioregions. Outliers occur near Bylong in the east. Most abundant in the Forbes district but extends north to Narromine. This community often occurs upslope from River Red Gum communities just above frequently inundated areas on the floodplain. Less than 5% of this community is estimated to remain compared to pre-European times due to past clearing. Clearing has largely ceased now but other ecological problems prevail such as senescence, lack of fire and weed invasion. It is considered a critically endangered community with less than 0.5% in protected areas. as of 2005 a small stand of 27 ha was represented in a reserve - at Weddin Mountains National Park. This community requires both protection in reserves or on private land and rehabilitation.	*cuneata, Chrysocephalum apiculatum* and *Sida corrugata.* A very widespread community on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite. Occurs on flats, footslopes and hillslopes mainly in the upper slopes sub-region of the NSW South-western Slopes Bioregion mainly east of Wagga Wagga. Grades into White Box (*Eucalyptus albens*) grassy woodland (ID266) on hillslopes and into either ID76 (Western Grey Box woodland) or ID276 (Yellow Box woodland) on parna or alluvial flats. Mainly cleared and subjected to nutrification from fertilizers and associated weed invasion.	the forb *Dampiera lanceolata* and orchid *Cyanicula caerulea*. Occurs on eolian or alluvial clayey sand on flats or drainage depressions where water drainage is impeded in low hill landscapes mainly in the Mendooran and Dapper Nature Reserve regions at the south-western edge of the Brigalow Belt South Bioregion. Small patches of this shrubland may also be present along creeks in the Pilliga forests. Restricted and threatened due to degree of clearing and limited extend. Other threats include altered water tables and inappropriate fire regimes.	frequently including *Austrostipa verticillata, Carex inversa, Aristida ramosa, Sida corrugata, Cyperus gracilis* and *Rumex brownii*, commonly with *Einadia nutans, Boerhavia dominii, Glycine tabacina* and *Oxalis perennans*. This PCT occurs on basalt, colluvial and alluvial deposits and a variety of sedimentary substrates, in hot, dry environments with a mean annual rainfall typically below 800 mm. It primarily survives as small patches in disturbed agricultural landscapes, and has a relatively low median native species richness of 26 per 400 metre squared plot. It is weakly related floristically to PCT 3404 which has a more restricted distribution on river flats around the upper Hunter valley and commonly includes Eucalyptus conica in the canopy. This PCT has a similar distribution and topographic position to PCT 3396, which differs in that *Eucalyptus blakelyi* is common in its canopy and *Maireana microphylla* is rarely present in its shrub layer.
Other Diagnostic Features	Tall woodland or open forest. This community occurs on brown loam or clay, alluvial or colluvial soils It also occurs on colluvium soils on lower slopes and on valley flats.	Tall woodland to about 20 m high. Occurs on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite.	Mid-high to tall mid-dense shrubland or woodland	Not specified
Vegetation Formation	Grassy Woodlands;	Grassy Woodlands;	Dry Sclerophyll Forests (Shrubby sub-formation);	Grassy Woodlands;
Vegetation Class	Western Slopes Grassy Woodlands;	Western Slopes Grassy Woodlands;	Western Slopes Dry Sclerophyll Forests;	Western Slopes Grassy Woodlands;
Geographical Restrictions	Occurs in the NSW South-western Slopes Bioregion but extending into the Cobar Peneplain and Brigalow Belt South Bioregions	Occurs in the NSW South-western Slopes Bioregion mainly east of Wagga Wagga.	Occurs in the in the Mendooran and Dapper Nature Reserve regions at the south-western edge of the Brigalow Belt South Bioregion	North-west Slopes and upper Hunter valley, with limited occurrences on the western margin of the New England Tableland.
Landscape Position	On prior streams and abandoned channels, or slight depressions on the undulating plains or flats, or on lower slopes and on valley flats.	Flats and on gentle slopes mainly in the upper slopes sub-region.	Occurs on eolian or alluvial clayey sand on flats or drainage depressions where water drainage is impeded in low hill landscapes mainly in the Mendooran and Dapper Nature Reserve regions at the south-western edge of the Brigalow Belt South Bioregion.	Occurs on lower slopes and flats in undulating to hilly landscapes of the
Lithology	Alluvial loams and clays, Colluvial sediments	Shale, Limestone, Colluvial sediments, Microgranite, Mudstone, Slate, Phyllite, Granite	Eolian sand or loam, Sand, Sandstone, Alluvial sand	Basalt, colluvial and alluvial deposits and a variety of sedimentary substrates
PCT Determination	PCT 201 was selected as the most appropriate fit for the assessed vegetation. *Eucalyptus conica* was the most abundant canopy species throughout the area, which is characteristic of this vegetation community. The Subject Land is located adjacent to Slapdash	PCT 277 was strongly considered, and has similar levels of floristic overlap to PCT 201 and is known to occur within these landscapes. Both PCT 277 and PCT 201 are associated with threatened ecological communities, and consideration was provided to the	PCT 472 has a poor floristic and geographic overlap with the site despite consistent geomorphology, PCT 472 was **not** chosen as best fit PCT.	PCT 3397 was strongly considered due to the high number of overlapping floristic species with the assessed vegetation. However, several factors informed the final PCT determination. Notably, PCT 3397 is part of the revised PCT classification system,

Plots 13, 16, and 17				
Potential PCTs	**201**	**277**	**472**	**3397**
	Creek, a landscape position consistent with PCT 201, which typically occurs upslope of riparian vegetation. Although *Eucalyptus camaldulensis* was not recorded in the riparian areas (likely due to extensive historical clearing) Slapdash Creek and its tributaries are mapped as PCT 78 through SCTM. PCT 78 represents a River Red Gum riparian tall woodland/open forest wetland community, generally dominated by *Eucalyptus camaldulensis*, and occurring in the Nandewar and Brigalow Belt South Bioregions. The absence of this species in the field supports the likelihood that the riparian zone has been significantly modified. While some mapped areas of PCT 201 contain species not typically associated with this community, such as *Angophora floribunda* in Plot 1, the highly modified nature of the landscape makes it difficult to clearly delineate ecotones or vegetation boundaries. In this context, the classification of PCT 201 has been undertaken considering the broader floristic composition and structure of the vegetation, particularly the consistent presence of *Eucalyptus conica* along Jacksons Lane. As such, PCT 201 has been selected as the best fit PCT.	listing relevant listing advices as detailed in Section 4.3. Ultimately, the dominance of *Eucalyptus conica* was the defining feature that separated these communities, and PCT 201 was selected as the most appropriate reflection of vegetation on site.		which generally includes a broader list of associated species. For example, the BioNet Vegetation Information System (VIS) lists 216 associated species for PCT 3397, compared to 56 for PCT 201 and 42 for PCT 277. Given the differing release dates of these PCTs, it is likely that the more recent development of PCT 3397 allowed for a more comprehensive species list, which may reflect increased sampling effort rather than greater ecological similarity. As such, species abundance and dominance were key considerations in the PCT selection. While abundance data are not available for PCT 201, the community is described as being dominated by *Eucalyptus conica*, indicating that this species should occur with the highest relative abundance. In contrast, PCT 3397 includes *Eucalyptus conica* at a frequency of 4, ranking it as only the sixth most frequently recorded tree species. The assessed vegetation is dominated by *Eucalyptus conica*, and this structural characteristic aligns more closely with PCT 201. Therefore, PCT 201 was ultimately selected as the best fit for the assessed vegetation.
Result	**PCT 201**			
BAM Plots	**13, 16 and 17**			
Estimated Cleared Value of PCT (%)	94%			
Associated TECs	Listed BC Act, E: Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions			
TEC Assessment	Vegetation is considered commensurate with the BC Act listed EEC: *Fuzzy Box Woodland in the Sydney Basin Bioregion* as discussed in Section 4.2.2.4.			

4.2.2.4 PCT 201 Alignment with BC Act TECs

PCT 201 is associated with the BC Act listed endangered ecological community: Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions (Fuzzy Box Woodland).

Fuzzy Box Woodland occurs in the Western Slopes and commonly occurs upslope from River Red Gum communities above frequently inundated areas of the floodplain. As this community occurs in areas typically utilised for agriculture, the remnant community is often highly modified and contains a number of exotics species as observed within the site.

The canopy is typically dominated by *Eucalyptus conica*, often growing with *Eucalyptus microcarpa* and *Eucalyptus melliodora*. Vegetation assessed as PCT 201 within Subject Lands is commensurate with these characteristics, and is considered to meet the requirements for this TEC. This community is SAII listed, and an SAII assessment has been undertaken in **Section 9** to assess the extent of impact.

4.2.2.5 PCT 201 Alignment with EPBC Act listed TECs

A protected matters search within 10km of the Subject Lands was undertaken to identify potential EPBC Act listed TECs that may occur within the Subject Lands. The following TECs were identified for consideration:

- Endangered: *Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions*;
- Endangered: *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*;
- Endangered: *Weeping Myall Woodlands*; and
- Critically Endangered: *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Box Gum Woodland).

PCT 201 is not associated with any EPBC listed TECs, and there is no federal equivalent of Fuzzy Box Woodland TEC. During the determination of vegetation communities, PCTs were considered that are associated with the EPBC listing of Box Gum Woodland.

As such, consideration is provided to the EPBC listing advice (TSSC 2023) to determine if assessed vegetation meets the relevant criteria. The listing advice prescribes key diagnostic characteristics that must be met in order to qualify for EPBC listing including:

- Vegetation has an overstorey which consists of the following species which constitute at least 50% of the canopy cover or stem/trunk density: *Eucalyptus albens, Eucalyptus melliodora* and/or *Eucalyptus blakelyi*; or, it previously had an overstorey dominated or co-dominated by the aforementioned species, and there is no evidence that the area was previously dominated by other tree species; and
- Vegetation has a predominantly native ground layer which is defined as '*at least 50% of the perennial vegetation cover in the ground layer is made up of native species'*.

Only one (1) plot within the wider Study Area (Plot 15) contained at least 50% perennial vegetation in the ground layer, primarily consisting of a high cover of *Phragmites australis* (90% PFC). The only *Eucalyptus* species recorded in this plot was *Eucalyptus conica* (1% PFC) In Plots 13 and 14, which were conducted adjacent to Plot 15, *Eucalyptus conica* was the most abundant species in Plot 13 (30% PFC), while Plot 14 contained *Eucalyptus conica* (15% PFC), *Eucalyptus blakelyi* (7% PFC), and *Casuarina cunninghamiana* (1% PFC). Native ground cover within Plots 13 and 14 was 9.8% and 38.1%, respectively, both below the 50% threshold.

Considering the above, assessed vegetation does not meet the key diagnostic characteristics required for the EPBC listing of Box Gum Woodland TEC.

4.2.3 PCT 281 Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats

4.2.3.1 PCT overview

This PCT occurs as degraded stands near the ephemeral tributaries of Slapdash Creek and as scattered trees throughout the Study Area. It contains a characteristic canopy dominated by *Eucalyptus melliodora* with *Eucalyptus blakelyi,* and *Angophora floribunda* occurring less frequently. Within Subject Lands, this community occurs only as four (4) scattered trees with an exotic understorey and absent shrub layer.

Table 8: PCT 281 Rough-Barked Apple - red gum - Yellow Box woodland

PCT	PCT 281
PCT Name	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats
Vegetation Formation	Grassy Woodland
Vegetation Class	Western Slopes Grassy Woodlands
Per cent cleared value (%)	67
Extent within Subject Land (ha)	0.15ha (4 scattered trees)

4.2.3.2 Condition States

PCT 281 occurs in one (1) condition state throughout the Subject Land as discussed below.

PCT 281 Scattered Trees

A total of four (4) large trees are present within the agricultural lands that meet the criteria for scattered trees. These trees are significant due to their size and the presence of hollows. The location of the scattered trees is presented in **Figure 10**. They are situated within Category 1 Land, which is subject to cattle grazing and cropping. The four (4) tree species are as follows:

- *Eucalyptus conica;*
- *Eucalyptus melliodora;*
- *Eucalyptus blakelyi;* and
- *Angophora floribunda.*

It is noted that *E. conica* is not typically characteristic of PCT 281; however, given that it is a single tree, and adjacent vegetation is mapped as PCT 281, it is considered an appropriate allocation.

Plate 4: PCT 281 Scattered Trees

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Impacted Scattered Tree
- Category 1 - Exempt Land

Figure 10 - Scattered Trees

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 17 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

4.2.3.3 Justification of PCT selection

Diagnostic species recorded on site during field work that support the determination of PCTs are shown in **Table 9** below. This is further supported by Vegetation Mapping community designation.

Tables 9 and **10** present the analysis of the floristic composition and landscape position of the BAM plots in the community against the BioNet Vegetation Classification, which concluded with the identification of PCT 281 within the Subject Land. Prior to detailed design, a number of plots were undertaken that were subsequently excluded from the assessment as these areas fall outside the Subject Lands. While these plots were not used in the assessment, they have been considered during the determination to provide holistic assessment of vegetation.

Table 9: Species data for potential PCT determination

Search Item	Plot 4, 5 and Scattered Trees
IBRA Region	NSW South Western Slopes
IBRA Subregion	Inland Slopes
LGA	Mid-west Regional
Vegetation Formation	Grassy Woodlands / Dry Sclerophyll Forest
Diagnostic Species	*Eucalyptus melliodora, Eucalyptus blakelyi, Wahlenbergia luteola*
Potential PCTs	**201,277,281,282**

Table 10: Determination of PCT 281

Plots 4, 5 and Scattered Trees					
Potential PCTs		**201**	**277**	**281**	**282**
SVTM		Yes – Within Subject Land	Yes – Within Subject Land	No	No
IBRA Region		Cobar Peneplain; **NSW South Western Slopes**; Brigalow Belt South; Darling Riverine Plains;	**NSW South Western Slopes**;	**NSW South Western Slopes**; Brigalow Belt South; Darling Riverine Plains; Nandewar;	**NSW South Western Slopes;**
IBRA Subregion		Lachlan Plains; Talbragar Valley; Lower Slopes; Pilliga; Nymagee; Bogan-Macquarie; **Inland Slopes**;	**Inland Slopes**; Lower Slopes;	Northern Basalts; Nandewar Northern Complex; **Inland Slopes**; Liverpool Plains; Talbragar Valley; Northern Outwash; Pilliga Outwash; Pilliga; Liverpool Range; Castlereagh-Barwon; Inverell Basalts; Kaputar; Peel; Capertee Valley;	**Inland Slopes**; Lower Slopes;
LGA		Forbes; Young; Cowra; Harden; **Mid-Western Regional**; Bland; Cabonne; Parkes; Weddin; Lachlan; Dubbo; Wellington;	Upper Lachlan Shire; Junee; Cootamundra-Gundagai Regional; Boorowa; Greater Hume Shire; Harden; Yass Valley; Wagga Wagga; Cootamundra; **Mid-Western Regional;** Young; Cowra; Tumut; Albury City; Coolamon; Cabonne; Tumbarumba; Weddin; Wellington; Parkes;	Warrumbungle; Tamworth Regional; **Mid-Western Regional**; Gilgandra; Upper Hunter; Wellington; Narrabri;	Coolamon; Weddin; Upper Lachlan Shire; Cowra; Cabonne; Boorowa; Forbes; **Mid-western Regional**; Junee; Greater Hume Shire; Cootamundra-gundagai Regional; Cootamundra; Bland; Tumut; Orange; Harden; Bathurst Regional;
Present Diagnostic Species	**Canopy Species**	*Eucalyptus conica, Eucalyptus melliodora, Eucalyptus blakelyi*	*Eucalyptus conica, Eucalyptus melliodora, Eucalyptus blakelyi*	*Angophora floribunda, Casuarina cunninghamiana subsp. cunninghamiana, Eucalyptus blakelyi, Eucalyptus melliodora*	*Eucalyptus blakelyi, Eucalyptus melliodora*
	Mid Stratum	Nil	Nil	Nil	Nil
	Ground Stratum	*Chloris truncata, Eremophila debilis, Carex appressa, Aristida ramosa, Austrostipa verticillata, Glycine clandestina, Einadia nutans subsp. nutans, Wahlenbergia luteola, Atriplex spinibractea, Carex inversa, Glycine tabacina, Cheilanthes sieberi, Themeda triandra*	*Aristida ramosa, Austrostipa verticillata, Juncus usitatus, Geranium solanderi, Carex inversa, Wahlenbergia luteola, Chloris truncata, Cheilanthes sieberi, Convolvulus graminetinus, Themeda triandra*	*Aristida ramosa, Arundinella nepalensis, Austrostipa verticillata, Calotis lappulacea, Carex appressa, Eragrostis brownii, Geranium solanderi, Glycine clandestina, Haloragis heterophylla, Juncus continuus, Juncus usitatus, Microlaena stipoides, Wahlenbergia luteola*	*Aristida ramosa, Carex appressa, Carex inversa, Chloris truncata, Eucalyptus blakelyi, Eucalyptus melliodora, Geranium solanderi, Glycine clandestina, Glycine tabacina, Microlaena stipoides, Wahlenbergia luteola*
PCT Description		Tall woodland or open forest dominated by Fuzzy Box (*Eucalyptus conica*) often growing with Western Grey Box (*Eucalyptus microcarpa*), Yellow Box (*Eucalyptus melliodora*) or Kurrajong (*Brachychiton populneus subsp. populneus*). Buloke (*Allocasuarina luehmannii*) is common in places. Shrubs are generally sparse and *include Acacia deanei subsp. deanei, Dodonaea viscosa subsp. cuneata, Geijera parviflora, Acacia implexa, Senna artemisioides sens. lat., Myoporum montanum* and *Cassinia aculeata*. Small shrubs include *Maireana enchylaenoides, Maireana microphylla* and *Sclerolaena muricata var. muricata.* The ground cover may be dense after rain but is usually mid-dense and may be dominated by weed species. Native forbs include *Calotis cuneifolia, Eremophila debilis, Sida corrugata, Einadia hastata, Dianella revoluta var. revoluta* and *Xerochrysum viscosa*. Native grasses include *Austrostipa scabra subsp. scabra, Chloris truncata, Elymus scaber var. scaber, Themeda australis* and *Austrodanthonia setacea.* Weeds may be very common. They include the pepper Tree *Schinus areica* and forb species such as *Plantago lanceolata, Lepidium africanum, Verbena bonariensis* and *Marrubium vulgare* and the grass species *Bromus diandrus, Vulpia myuros, Lolium perenne* and *Paspalum dilatatum.* This community occurs on brown loam or clay, alluvial or colluvial soils on flats, low slopes, prior streams and abandoned channels or slight	Tall woodland to about 20m high dominated by Blakely's Red Gum (*Eucalyptus blakelyi*) and Yellow Box (*Eucalyptus melliodora*). Blakely's Red Gum or Yellow Box vary in their dominance and either can be absent in some places grading into areas with more Apple Box (*Eucalyptus bridgesiana*), Long-leaved Box (*Eucalyptus goniocalyx*) and rarely *Eucalyptus microcarpa*. Shrubs are sparse or absent and may include *Acacia dealbata*. The ground cover may be dense to sparse depending on rainfall and is dominated by grass species including *Poa sieberiana, Bothriochloa macra, Aristida ramosa, Themeda australis, Austrodanthonia spp* and *Austrostipa spp*. Forbs include *Vittadinia cuneata, Chrysocephalum apiculatum* and *Sida corrugata*. A very widespread community on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite. Occurs on flats, footslopes and hillslopes mainly in the upper slopes sub-region of the NSW South-western Slopes Bioregion mainly east of Wagga Wagga. Grades into White Box (*Eucalyptus albens*) grassy woodland (ID266) on hillslopes and into either ID76 (Western Grey Box woodland) or ID276 (Yellow Box woodland) on parna or alluvial flats. Mainly cleared and subjected to nutrification from fertilizers and associated weed invasion.	Tall open forest or woodland with trees up to 30 m high dominated by Rough-barked Apple (*Angophora floribunda*) usually with *Eucalyptus blakelyi* or *Eucalyptus melliodora*. Other tree species may include *Callitris glaucophylla, Brachychiton populneus* and various red gum intergrades. River Oak (*Casuarina cunninghamiana* subsp. *cunninghamiana*) may be present but often forms its own riparian community in nearby river banks. The shrub layer is sparse or absent in heavily grazed locations. Shrub species may include wattles such as *Acacia implexa, Acacia decora, Acacia penninervis* var. *penninervis* and *Acacia deanei.* Other shrub species may include *Dodonaea viscosa* subsp. *angustifolia, Bursaria spinosa, Olearia elliptica* subsp. *elliptica* and *Hibbertia obtusifolia.* The ground cover is usually dense to mid-dense. It includes grass species such as *Austrostipa verticillata, Austrostipa scabra, Arundinella nepalensis, Digitaria breviglumis, Echinopogon* spp., *Dichelachne micrantha, Poa labillardierei* var. *labillardierei* and *Themeda australis.* The mat-rush *Lomandra longifolia* may be common. Rush (*Juncus* spp.) occur along creeks and in depressions along with sedges such as *Carex incomitata.* Forb species include *Swainsona galegifolia, Haloragis heterophylla, Dianella revoluta* var. revoluta, *Ranunculus sessiliflorus var. sessiliflorus, Dichondra repens, Epaltes australis, Haloragis heterophylla, Epaltes australis, Calotis cuneifolia,*	Tall grassy woodland co-dominated by Blakelys Red Gum (*Eucalyptus blakelyi*) and White Box (*Eucalyptus albens*) often with either Yellow Box (*Eucalyptus melliodora*) or Apple Box *(Eucalyptus bridgesiana*). Stands of Black Cypress Pine (*Callitris endlicheri)* may be present. The shrub layer is absent or sparse and may include wattles such as *Acacia decora, Acacia dealbata* or *Acacia implexa.* The heath *Lissanthe strigosa* mat be common. The ground cover is mid-dense to dense dominated by grasses and forbs or weeds in disturbed sites. The ground cover in remnants of good condition include grasses such as *Themeda australis, Aristida ramosa, Austrodanthonia racemosa var. racemosa, Austrodanthonia caespitosa, Poa sieberiana, Chloris truncata, Aristida behriana, Bothriochloa macra* and *Elymus scaber.* Forbs species include *Arthropodium minus, Acaena ovina, Bulbine bulbosa, Dichopogon fimbriatus, Asperula conferta, Chrysocephalum apiculatum, Hypericum graminum, Microseris lanceloata, Solenogyne dominii, Stackhousia monogyna and Wurmbea dioica.* In low lying areas the rush *Juncus remotiflorus* and the sedge *Carex appressa* are often present. Weeds are abundant in most remnants due to ground distrubance, application of fertilizer and sowing of exotic pastures. Occurs on shallow clay loam soils, derived from igneous, volcanic (e.g. rhyolite) or fine grained sedimentary lithologies on hillslopes, hillcrests or footslopes on undulating hills in the NSW South-western Slopes Bioregion including in

Plots 4, 5 and Scattered Trees				
Potential PCTs	**201**	**277**	**281**	**282**
	depressions on the undulating plains mainly in the NSW South-western Slopes Bioregion but extending into the Cobar Peneplain and Brigalow Belt South Bioregions. Outliers occur near Bylong in the east. Most abundant in the Forbes district but extends north to Narromine. This community often occurs upslope from River Red Gum communities just above frequently inundated areas on the floodplain. Less than 5% of this community is estimated to remain compared to pre-European times due to past clearing. Clearing has largely ceased now but other ecological problems prevail such as senescence, lack of fire and weed invasion. It is considered a critically endangered community with less than 0.5% in protected areas. as of 2005 a small stand of 27 ha was represented in a reserve - at Weddin Mountains National Park. This community requires both protection in reserves or on private land and rehabilitation.		*Ajuga australis, Dichondra repens, Scutellaria humilis* and *Hydrocotyle laxiflora.* Scramblers include *Desmodium brachypodium, Desmodium repens* and *Glycine clandestina*. A widespread community that occurs on black, brown and grey alluvial and colluvial clay loam, loam or sandy loam soils derived from a range of substrates on valley flats and footslopes in valleys in hill landform patterns mainly in the Brigalow Belt South Bioregion. Some areas also occur north of Mudgee in the Gulgong-Dunedoo area in the NSW South-western Slopes Bioregion. Most of its original extent has been cleared and weeds have invaded many remnants but some stands remain.	the Gundagai - Cootamundra - Cowra - Young - Boorowa region. Grades into Grassy White Box woodland (ID266) on better soils and Blakelys Red Gum - Yellow Box woodland (ID277) of Yellow Box woodland (ID276) on flats and lower hills. Mostly cleared and weed infested. A threatened community.
Other Diagnostic Features	Tall woodland or open forest. This community occurs on brown loam or clay, alluvial or colluvial soils It also occurs on colluvium soils on lower slopes and on valley flats.	Tall woodland to about 20 m high. Occurs on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite.	Tall open forest or woodland.	Tall grassy woodland. Occurs on clayey soils derived from fine grained sedimentary lithologies or colluvium.
Vegetation Formation	Grassy Woodlands;	Grassy Woodlands;	Grassy Woodlands;	Grassy Woodlands;
Vegetation Class	Western Slopes Grassy Woodlands;	Western Slopes Grassy Woodlands;	Western Slopes Grassy Woodlands;	Western Slopes Grassy Woodlands;
Geographical Restrictions	Occurs in the NSW South-western Slopes Bioregion but extending into the Cobar Peneplain and Brigalow Belt South Bioregions	Occurs in the NSW South-western Slopes Bioregion mainly east of Wagga Wagga.	Occurs mainly in the Brigalow Belt South Bioregion. Some areas also occur north of Mudgee in the Gulgong-Dunedoo area in the NSW South-western Slopes Bioregion.	On footslopes or lower slopes in hills or low hills mainly in the NSW South Western Slopes Bioregion.
Landscape Position	On prior streams and abandoned channels, or slight depressions on the undulating plains or flats, or on lower slopes and on valley flats.	Flats and on gentle slopes mainly in the upper slopes sub-region.	Valley floors, flats, drainage lines	Not specified
Lithology	Alluvial loams and clays, Colluvial sediments	Shale, Limestone, Colluvial sediments, Microgranite, Mudstone, Slate, Phyllite, Granite	Colluvial sediments, Basalt, Alluvial loams and clays	Tuff, Rhyolite, Metamorphic rock (unidentified), Granite, Granodiorite, Sedimentary rock (unidentified)
PCT Determination	PCT 201 was not considered appropriate due to the lack of *E. conica* which this PCT is more commonly associated with.	PCT 277 was strongly considered, and has similar levels of floristic overlap to PCT 281 but is known to occur slightly higher on the landscape and is known to predominantly occur closer south near Wagga Wagga. Both PCT 277 and PCT 281 are associated with threatened ecological communities, and consideration was provided to the listing relevant listing advices as detailed in Section 4.3. Ultimately, the presence of *Angophora floribunda* was the defining feature that separated these communities, despite not being recorded in Plots 4 and 5, Angophora floribunda was observed in these areas and as scattered trees and therefore, PCT 277 was **not** selected as the most appropriate reflection of vegetation on site.	PCT 281 was selected as the best fit for vegetation on site for Plots 4, 5 and scattered trees. *Eucalyptus melliodora* was recorded with high canopy cover, which is not uncharacteristic of this vegetation community. Additionally, *Angophora floribunda* was observed in these areas and recorded as scattered trees is an important diagnostic canopy species for PCT 281. This Vegetation Zone is primarily located adjacent to the ephemeral tributaries or drainage channels of Slapdash Creek, an appropriate landscape position for this community. The Quaternary alluvial deposits associated with drainage channels onsite and correct geography are additional abiotic factors that overlap with PCT 281. Given the floristic overlap and the presence of appropriate abiotic factors, PCT 281 was selected as the most suitable fit for the assessed vegetation.	PCT 282 was strongly considered, however, this PCT more commonly occurs on footslopes or lower slopes, rather than flats or drainage lines. As such, this was not selected as the 'best match' PCT.
Result	**PCT 281**			

Plots 4, 5 and Scattered Trees				
Potential PCTs	**201**	**277**	**281**	**282**
BAM Plots	**4 and 5**			
Estimated Cleared Value of PCT (%)	67			
Associated TECs	Listed BC Act, CE: 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 Riverina Bioregions Listed EPBC Act, CE: White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland			
TEC Assessment	Vegetation is considered commensurate with the BC Act listed CEEC: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland as discussed in **Section 4.2.3.4.**			

4.2.3.4 PCT 281 Alignment with BC Act Listed TECs

PCT 281 is associated with the BC Act listed critically endangered ecological community: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland).

Box Gum Woodland has been extensively cleared throughout its range and remnants typically are small, isolated, highly fragmented, occur in predominantly cleared landscapes and exhibit highly modified understoreys the remnant community is often highly modified and contains a number of exotics species as observed within the site.

The canopy is typically dominated by *Eucalyptus albens, Eucalyptus melliodora* and *Eucalyptus blakelyi. Eucalyptus moluccana* may be co-dominant in the Nandewar Bioregion. Vegetation assessed as PCT 281 within Subject Lands is commensurate with these characteristics, and is considered to meet the requirements for this TEC. This community is SAII listed, and an SAII assessment has been undertaken in **Section 9** to assess the extent of impact.

4.2.3.5 PCT 281 Alignment with EPBC Act Listed TECs

An assessment of the vegetation against the relevant listing criteria in the Approved Conservation Advice for Box Gum Woodland (TSSC 2023) is detailed below.

Table 11: Assessment of PCT 281 against the listing criteria for Box Gum Woodland TEC

<table>
<tr><th>Key diagnostic characteristics</th><th>Analysis</th></tr>
<tr><td>The ecological community occurs in the following bioregions (IBRA, DoE 2012): Brigalow Belt South, Murray Darling Depression, Nandewar, New England Tableland, NSW North Coast, NSW South Western Slopes, Riverina, South Eastern Queensland, South East Corner, South East Coastal Plain, South Eastern Highlands, Southern Volcanic Plain, Sydney Basin and Victorian Midlands (TSSC 2006; DECCW 2011; DCCEEW 2022).</td><td>The assessed vegetation occurs within the NSW South Western Slopes IBRA bioregion.</td></tr>
<tr><td>It has, or previously had, an overstorey dominated or co-dominated, on page 5 by:

Eucalyptus albens (white box) and/or *E. melliodora* (yellow box) and/or *E. blakelyi* (Blakely's red gum) (applicable across the entire range of the ecological community); or,

in the Nandewar bioregion (IBRA, DoE 2012), any of the above three species and/or *E. microcarpa* (western grey box) and/or *E. moluccana* (grey box, coastal grey box);</td><td>The scattered trees include *Eucalyptus melliodora* and *Eucalyptus blakelyi*.</td></tr>
<tr><td>It has a predominantly native ground layer.</td><td>The scattered trees occur amongst exotic dominant grassland which has been assessed as Category 1. The cover of exotic species is summarised below.
<table>
<tr><th>Plot #</th><th>Total cover</th><th>Exotic cover</th><th>Exotic cover %</th></tr>
<tr><td>Plot 6</td><td>82.9</td><td>79.8</td><td>96.3</td></tr>
<tr><td>Plot 7</td><td>28.3</td><td>28</td><td>98.9</td></tr>
<tr><td>Plot 8</td><td>29.5</td><td>24.3</td><td>82.4</td></tr>
<tr><td>Plot 9</td><td>36.2</td><td>10.7</td><td>29.6</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td>Plot 10</td><td>29.7</td><td>24.4</td><td>82.2</td></tr>
<tr><td>Plot 11</td><td>40.2</td><td>37.9</td><td>94.3</td></tr>
<tr><td>Plot 12</td><td>30</td><td>25.8</td><td>86.0</td></tr>
</table>
The ground layer is not dominated by native species.
</td></tr>
<tr><td>Tussock grasses are conspicuous in the ground layer (except in some situations, such as under dense groves of shrubs or regenerating trees), usually with several native species from some the following genera: Austrostipa, Bothriochloa, Chloris, Cymbopogon, Dichanthium, Microlaena, Poa, Themeda, Rytidosperma or Sorghum.</td><td>
Tussock forming grasses recorded in BAM Plots 6-12 include:

Chlorus truncata
Microlaena stipoides
Sporobolus creber

These three (3) species have the following covers
<table>
<tr><th>Plot #</th><th>Chloris truncata</th><th>Microlaena stipoides</th><th>Sporobolus creber</th></tr>
<tr><td>Plot 6</td><td>2</td><td></td><td>0.1</td></tr>
<tr><td>Plot 7</td><td></td><td></td><td></td></tr>
<tr><td>Plot 8</td><td></td><td>0.1</td><td>5</td></tr>
<tr><td>Plot 9</td><td>0.3</td><td></td><td>10</td></tr>
<tr><td>Plot 10</td><td>0.1</td><td></td><td>0.1</td></tr>
<tr><td>Plot 11</td><td></td><td></td><td></td></tr>
<tr><td>Plot 12</td><td>0.1</td><td></td><td>4</td></tr>
</table>
</td></tr>
<tr><td>Amongst the grass tussocks and sometimes in swathes, a range of broad-leaved forbs and petaloid monocots (e.g. lilies sens. lat.) may be a major component of the plant diversity.</td><td>
Six (6) broad leaved forbs and no petaloid monocots were recorded in Plots 6-12.
<table>
<tr><th>Plot #</th><th>P6</th><th>P7</th><th>P8</th><th>P9</th><th>P10</th><th>P11</th><th>P12</th></tr>
<tr><td>Mentha diemenica</td><td></td><td></td><td></td><td></td><td></td><td>0.1</td><td></td></tr>
<tr><td>Pseudognaphalium luteoalbum</td><td></td><td>0.1</td><td></td><td>0.1</td><td></td><td>1</td><td>0.1</td></tr>
<tr><td>Rumex spp.</td><td></td><td></td><td>0.1</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Wahlenbergia communis</td><td></td><td></td><td></td><td></td><td></td><td>0.1</td><td></td></tr>
<tr><td>Wahlenbergia gracilis</td><td></td><td></td><td></td><td></td><td>0.1</td><td></td><td></td></tr>
<tr><td>Wahlenbergia spp.</td><td></td><td></td><td></td><td>0.1</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>While shrubs may be dominant locally within areas of the ecological community, areas of native vegetation with a more continuous shrub layer, in which the average shrub cover of the whole patch is greater than 30%, is considered to be a shrubby woodland and so is not part of the listed ecological community. In assessing this, the effects of disturbance need to be considered, for example where heavy grazing may result in high densities of shrubs during a recovery phase (see section 2.2).</td><td>No shrubs were recorded in BAM Plots 6-12.</td></tr>
</table>

The assessed vegetation does not meet the key diagnostic characteristics and, therefore, is not commensurate with the EPBC listed Box Gum Woodland TEC.

4.3 Threatened ecological communities

The following threatened ecological communities have been identified on site as described in **Table 12** and depicted in **Figure 11.**

Table 12: TECs within the Subject Land

TEC name	Profile ID	BC Act status	EPBC Act status	Associated vegetation zones within the Subject Land	Area within subject land
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	10335	EEC	N/A	Moderate Severely Degraded	1.60ha
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 Riverina Bioregions	10837	CEEC	N/A	Scattered Trees	0.15ha (4 trees)

Legend

- Study Area
- Subject Land
- NSW Hydroline
- Cadastre

Threatened Ecological Communities

- PCT 201 = Listed BC Act (E) *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions*
- PCT 281 = Listed BC Act (CE) *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 Riverina Bioregions*

Figure 11a - Threatened Ecological Communities

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- NSW Hydroline
- Cadastre

Threatened Ecological Communities

- PCT 201 = Listed BC Act (E) *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions*
- PCT 281 = Listed BC Act (CE) *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 Riverina Bioregions*

Figure 11b - Threatened Ecological Communities

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

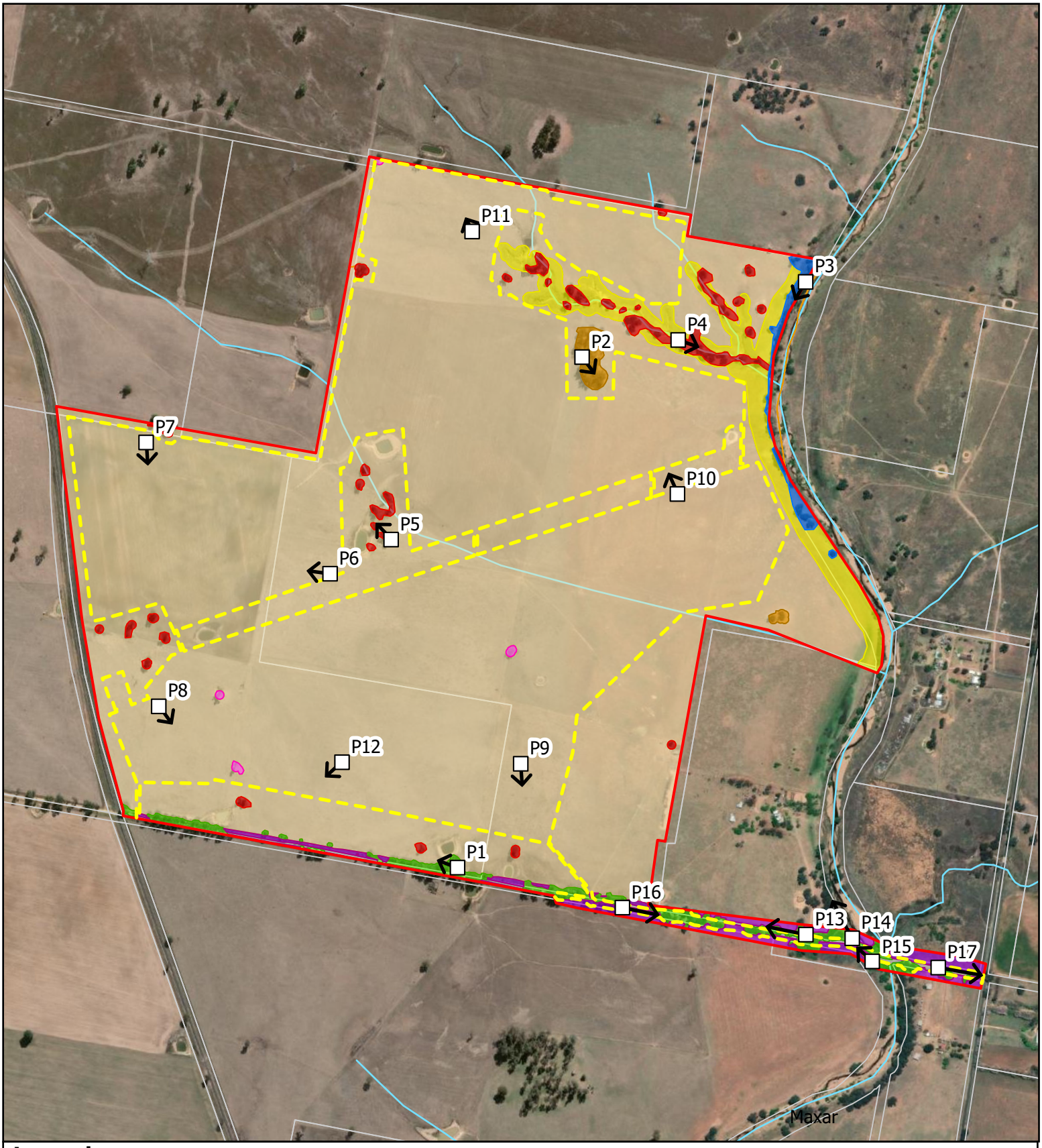
4.4 Vegetation zones

Vegetation was classified into three (3) separate zones within the Subject Land. BAM plots were undertaken throughout the Study Area prior to detailed design to sample a range of difference environments and habitats.

Patch size classes are identified in accordance with BAM Subsection 4.3.2 which states ‘A patch is an area of native vegetation that occurs on the Subject Land and includes native vegetation that has a gap of less than 100m from the next area of native vegetation’. Vegetation along Slapdash Creek meets the above criteria and the largest patch size >100ha was entered into the BAM-C.

Table 13: Vegetation zones and patch size

Vegetation zone ID	PCT ID number and name	Condition / other defining feature	Area (ha) on Subject Land	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
Moderate	PCT 201 - Fuzzy Box Woodland	Moderate	1.05ha	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	1	1	1	Plot 13
Scattered trees	PCT 281 – Box Gum Woodland	Scattered trees	0.15ha	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	N/A	N/A	N/A	N/A
Severely Degraded	PCT 201 - Fuzzy Box Woodland	Severely Degraded	0.54ha	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	1	2	2	Plots 16 and 17



Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- BAM Plot
- BAM Transect

Vegetation Zones

- Category 1 Land
- Degraded Grassland
- Infrastructure
- PCT 201 - Degraded
- PCT 201 - Moderate
- PCT 201 - Severely Degraded
- PCT 281 - Poor
- PCT 281 - Scattered Tree
- PCT 78 - Good

Figure 12a - Vegetation Zones

0 200 400 m

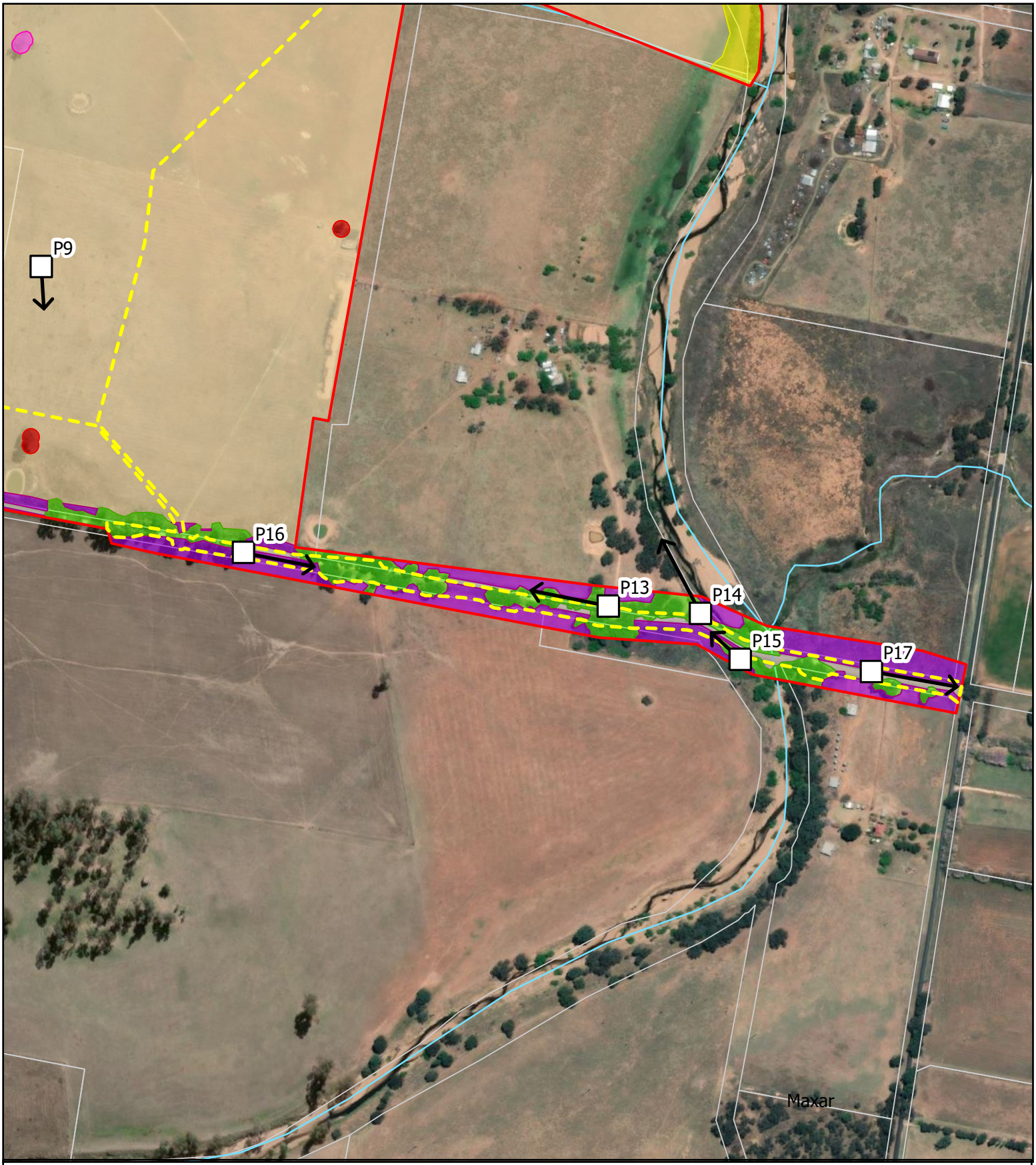
Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55



Legend

- Study Area
- Subject Land
- NSW Hydroline
- Cadastre
- BAM Plot
- BAM Transect

Vegetation Zones

- Category 1 Land
- Degraded Grassland
- Infrastructure
- PCT 201 - Moderate
- PCT 201 - Severely Degraded
- PCT 281 - Poor
- PCT 281 - Scattered Tree

Figure 12b - Vegetation Zones

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

4.5 Vegetation integrity (vegetation condition)

4.5.1 Vegetation integrity survey plots

The minimum number of plots required for each vegetation zone were met in accordance with the BAM. Vegetation plots undertaken in the wider Study Area and outside Subject Land have been excluded from the assessment as they do not represent vegetation impacted by the proposal. Findings from these assessments are still considered when discussing 'Avoid and Minimise' principles and associations with ecological communities.

4.5.2 Scores

Vegetation scores as assessed within the Subject Land are provided in **Table 14** below.

Table 14: Vegetation integrity scores

Vegetation zone ID	Composition condition score	Structure condition score	Function condition score (where relevant)	Vegetation integrity score	Hollow bearing trees present?
PCT 201 – Moderate	73.4	42	72.5	60.7	Yes
PCT 281 – Scattered Trees	-	-	-	-	Yes
PCT 201 – Severely Degraded	18.2	6.4	0	4.9	No

4.5.3 Use of benchmark data

Benchmark data was sourced from the NSW BioNet Vegetation Classification system.

5.0 Habitat suitability for threatened species

5.1 Hollow-bearing Tree Assessment

Hollows are an important resource utilised by a variety of fauna, and are particularly relevant for several of the likely key threatened species in this locality. Vertebrate and invertebrate species use hollows as diurnal or nocturnal shelter sites, for rearing young, feeding, thermoregulation, and to facilitate ranging behaviour and dispersal.

Tree hollows were surveyed within the Study Area utilising the methodology of tree hollow identification set by the BAM (2020), namely:

"A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the entrance width is at least 5 cm; (c) the hollow appears to have depth (i.e. solid wood cannot be seen beyond the entrance); and (d) the hollow is at least 1 m above the ground. Trees must be examined from all angles."

Table 15: Hollow-bearing tree assessment for the Study Area

HBT ID	Number of Hollows					
	XS (5cm)	S (5cm-10cm)	M (10cm-15cm)	L (15cm-20cm)	XL (20cm+)	Remove?
1	-	1	-	-	1	Retain
2	-	2	1	1	-	Retain
3	-	-	1	-	1	Retain
4	-	-	2	-	1	Retain
5	-	-	-	-	1	Retain
6	-	1	-	-	2	Retain
7	1	-	-	-	1	Retain
8	-	-	1	-	1	Retain
9	1	2	2	-	1	Retain
10	-	-	-	1	-	Retain
11	1	1	-	1	-	Retain
12	-	-	-	-	1	Retain
13	-	-	-	-	2	Retain
14	-	1	3	2	-	Retain
15	-	1	1	-	-	Remove
16	-	-	-	1	-	Retain
17	-	-	1	-	-	Retain
18	5	4	-	-	-	Remove
19	-	-	1	1	-	Remove
20	-	1	2	-	4	Retain
21	-	1	2	3	-	Retain
22	-	1	1	-	-	Retain
23	-	-	-	1	-	Retain
24	-	4	-	-	-	Retain
25	-	-	-	1	-	Retain
26	-	1	-	-	2	Retain
27	-	3	1	3	-	Remove

HBT ID	Number of Hollows					
	XS (5cm)	S (5cm-10cm)	M (10cm-15cm)	L (15cm-20cm)	XL (20cm+)	Remove?
28	2	3	1	-	-	Retain
29	1	4	3	-	-	Retain
30	1	2	2	-	-	Retain
31	1	3	-	1	-	Retain
32	-	-	-	1	-	Retain
33	-	1	1	1	-	Retain
34	-	3	4	-	-	Retain
35	-	2	3	-	-	Retain
36	-	2	2	1	1	Retain
37	-	2	3	-	-	Retain
38	-	1	2	1	-	Retain
39	4	2	1	3	-	Retain

5.2 Identification of threatened species for assessment

5.2.1 Ecosystem credit species

As detailed in **Sections 2.3** and **2.4,** both desktop and habitat assessments were undertaken to identify the potential use of the Subject Land by threatened fauna. A total of 31 ecosystem or dual credit species were identified for further assessment, as described in **Table 16**.

Table 16: Predicted ecosystem credit species

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Anthochaera phrygia	Regent Honeyeater	CE	CE	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Artamus cyanopterus	Dusky Woodswallow	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	Moderate
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Chalinolobus picatus	Little Pied Bat	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Chthonicola sagittata	Speckled Warbler	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Circus assimilis	Spotted Harrier	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 281 – Scattered Trees	Moderate
Climacteris picumnus victoriae	Brown Treecreeper	V	V	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Daphoenositta chrysoptera	Varied Sittella	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Dasyurus maculatus	Spotted-tailed Quoll	V	E	No	☒ BAM-C ☒ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High
Falco subniger	Black Falcon	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Glossopsitta pusilla	Little Lorikeet	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Grantiella picta	Painted Honeyeater	V	V	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Hieraaetus morphnoides	Little Eagle	V	-	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Hirundapus caudacutus	White-throated Needletail	V	V	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Lathamus discolor	Swift Parrot	E	CE	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Lophochroa leadbeateri	Pink Cockatoo	V	E	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	Moderate
Lophoictinia isura	Square-tailed Kite	V	-	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	Moderate

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Melanodryas cucullata	South-eastern Hooded Robin	E	E	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Melithreptus gularis gularis	Black-chinned Honeyeater	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High
Neophema pulchella	Turquoise Parrot	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Petaurus australis	Yellow-bellied Glider	V	V	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	High
Petroica boodang	Scarlet Robin	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Petroica phoenicea	Flame Robin	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 281 – Scattered Trees	Moderate
Polytelis swainsonii	Superb Parrot	V	V	Yes	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	Moderate

Scientific name	Common name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	No	☒ BAM-C ☐ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 281 – Scattered Trees PCT 201 – Severely Degraded	High
Stagonopleura guttata	Diamond Firetail	V	V	No	☒ BAM-C ☒ TBDC ☐ Previous survey ☐ Current survey	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded	Moderate

5.2.2 Species credit species

A total of two (2) flora species and five (5) fauna species were returned by the BAM-C for assessment. No threatened entities have been recorded within the 1500m assessment area through BioNet, likely due to the heavily modified agricultural habitat within surrounding lands that limits potential use by threatened species as well as limited targeted threatened species searches occurring within the locality. Consideration was given to the wider locality, and *Acacia ausfeldii* was manually entered into the BAM-C due to the presence of this species in surrounding landscapes. Additionally, *Dichanthium setosum* was manually added due to the presence of disturbed grasslands along the roadside reserve.

Table 17: Predicted species credit species

Scientific Name	Common Name	Listing status		Sources	Paddock Trees Use	Species retained for further assessment?	Reason for exclusion	Vegetation zone ID species retained in
		BC Act	EPBC Act					
Flora								
Acacia ausfeldii	Ausfeld's Wattle	V	N/A	☐BAM-C ☒TBDC ☐Previous Survey ☐Current Survey	No	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded

Scientific Name	Common Name	Listing status		Sources	Paddock Trees Use	Species retained for further assessment?	Reason for exclusion	Vegetation zone ID species retained in
		BC Act	EPBC Act					
Dichanthium setosum	Bluegrass	V	V	☐BAM-C ☒TBDC ☐Previous Survey ☐Current Survey	No	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded
Euphrasia arguta	N/A	CE	CE	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	No	Yes	N/A	PCT 201 – Moderate PCT 201 – Severely Degraded
Prasophyllum sp. Wybong	N/A	-	CE	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	Yes	No	Microhabitat - Nearest records over 100km to the northeast near Wybong in soils derived from Triassic sandstone derived lithology. The Subject Lands are primarily located within Gulgong Granite which is derived from Carboniferous deposits. Considering the distance of records, and Vagrant – this species has not been recorded within the IBRA region. The closest records are approx. 85km to the north-west of the South Western Slopes IBRA region.	N/A

Scientific Name	Common Name	Listing status		Sources	Paddock Trees Use	Species retained for further assessment?	Reason for exclusion	Vegetation zone ID species retained in
		BC Act	EPBC Act					
Fauna								
Anthochaera Phrygia	Regent Honeyeater	CE	CE	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	Yes	No	Habitat constraint – Subject Land not mapped as important habitat	N/A
Chalinolobus dwyeri	Large-eared Pied bat	V	E	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	No	No	Habitat constraint – Subject Land not within proximity to cave or other habitat feature known or suspected to be used for breeding. A culvert was assessed underneath the Slapdash Creek Crossing and it was deemed to be unsuitable for Large-eared Pied Bat due to the size and hydrological flows. See **Appendix G,** for relevant photograph.	N/A
Lathamus discolour	Swift Parrot	E	CE	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	Yes	No	Habitat constraint – Subject Land not mapped as important habitat	N/A
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	No	No	Habitat constraint – Subject Land not within proximity to cave or other habitat feature known or suspected to be used for breeding. A culvert was assessed	N/A

Scientific Name	Common Name	Listing status		Sources	Paddock Trees Use	Species retained for further assessment?	Reason for exclusion	Vegetation zone ID species retained in
		BC Act	EPBC Act					
							underneath the Slapdash Creek Crossing and it was deemed to be unsuitable for Large Bent-wing Bat due to the size and hydrological flows. See **Appendix G,** for relevant photograph.	
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	☒BAM-C ☐TBDC ☐Previous Survey ☐Current Survey	No	No	Habitat constraint – Subject Land not within proximity to rock escarpments or other geological feature suitable for this species.	N/A

5.3 Presence of candidate species credit species

From the remaining list of candidate species credit species, no threatened species were determined to be present within the Subject Land.

5.4 Threatened species surveys

Targeted threatened species surveys were conducted in October 2023, December 2024, and March 2024 during which no threatened species were found to be present within the Subject Land. Survey methodology was undertaken as per **Table 18.**

Table 18: Threatened species surveys for candidate flora species on the Subject Land

Scientific name	Common name	Threatened flora species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method	Timing of survey – within recommended period?		Effort (hours & no. people)		
Acacia ausfeldii	Ausfeld's Wattle	Transects	☒ Yes	☒ No	(3 People 4 hours) (2 People 2 hours)	No	No
Dichanthium setosum	Bluegrass	Transects	☒ Yes	☐ No	(2 People 3 hours)	No	No
Euphrasia arguta	N/A	Transects	☒ Yes	☐ No	(2 People 3 hours)	No	No

Additional details on the survey requirements for each species are provided below.

Acacia ausfeldii

The prescribed survey period for this species is between August and October when it is flowering, as it can be easily confused with *Acacia verniciflua* (TBDC). Surveys were conducted during this flowering period across the majority of the site. After the initial surveys, additional areas were added to the Subject Land to account for proposed upgrades along Jacksons Lane. As a result, an assessment of the vegetation along Jacksons Lane was conducted outside the flowering period to identify the presence of Acacia species. No Acacia species were observed in the roadside vegetation. Since flowering is only necessary to distinguish *Acacia ausfeldii* from similar species, and not because it is an inconspicuous species such as terrestrial orchids, the assessment is considered sufficient to confirm the absence of this species.

Dichanthium setosum

According to the TBDC, this species requires surveying between November and May, specifically three to four weeks after effective rainfall (DCCEEW 2025c). The nearest weather station in Gulgong recorded 56.4mm of rainfall on February 19th, 2024, which was 32 days before the survey conducted on March 22nd, 2024 (BOM 2024). An additional 16.8mm of rainfall was recorded on February 29th, 2024, 22 days prior to the assessment. The climatic conditions during the time of assessment are considered appropriate for this species.

This species is typically found in moderately disturbed areas and is associated with basaltic black soils and red-brown loams. Given that the vegetation within the Subject Lands is generally highly disturbed, and the species was not observed during the surveys, the timing and conditions of the survey are considered adequate for accurately assessing the absence of this species.

Euphrasia arguta

This species has a highly limited distribution and is typically found in eucalyptus forests with a mixed grass/shrub understorey. Populations tend to decline in areas subject to ongoing disturbance. Surveys are recommended following rainfall or in areas with light enhancement (TBDC). Given the disturbed

nature of the vegetation on the Subject Land, light infiltration is high, and a total of 32.4mm of rain fell in the preceding week before survey. Considering these factors, the survey conditions were deemed suitable for assessing the presence of this species. This species was not identified during the surveys. The ongoing management regimes and the highly disturbed state of the Subject Land suggest that it is unlikely to be suitable for supporting this species.

5.5 Expert Reports

No expert reports have been used in place of threatened species surveys.

5.6 More appropriate local data (where relevant)

Local data has not been used to assess habitat suitability for threatened species.

5.7 Area or count, and location of suitable habitat for a species credit species

No threatened species were identified within the Subject Land.

6.0 Identifying prescribed impacts

Prescribed impacts are defined in clause 6.1 of the *Biodiversity Conservation Regulation 2017,* and are additional impacts on threatened species that need to be considered and assessed when a development is proposed. These can include loss of habitat, fragmentation, and other indirect impacts which may affect threatened species.

Table 19: Prescribed impacts identified

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature.
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐ Yes / ☒No	N/A	N/A
Human-made structures	☒ Yes / ☐No	The proposal involves an upgrade to Jacksons Lane and associated water crossing. Jacksons Lane consists of an unsealed road and causeway which could impact Key Fish Habitat.	An aquatic habitat survey was undertaken as part of the AER (AEP 2024a) to inform potential impacts. The assessment found that the proposed crossing upgrades will have a direct impact during construction, and provide recommendations to ensure no blockage of fish habitat during construction. Currently, there is one (1) culvert under Jacksons Lane and it was noted that there is significant in-stream erosion. Recommendations are provided in the AER to mitigate potential risks to this feature.
Non-native vegetation	☒ Yes / ☐No	The majority of the site is regularly cropped and grazed exotic grassland.	Category 1 Land has been assessed within the site, and an assessment has been undertaken for the potential occurrence of critically endangered flora species in **Appendix D**, and it is not anticipated that threatened species would utilise this area to any notable degree.
Habitat connectivity	☒ Yes / ☐No	Due to extensive agricultural practices within the wider area, habitat connectivity within the wider landscape is very poor. Habitat connectivity primarily occurs along Slapdash Creek, which contains scattered pockets of native vegetation.	No threatened entities were identified utilising this corridor, and due to the existing conditions, it is likely that it would only be used intermittently by more mobile species.
Waterbodies, water quality and hydrological processes	☒ Yes / ☐No	Several small farm dams and Slapdash Creek will be impacted.	No threatened entities were identified utilising these features.
Wind turbine strikes (wind farm development only)	☐ Yes / ☒No	N/A	N/A
Vehicle strikes	☐ Yes / ☒No	N/A	N/A

Stage 2 Impact assessment (biodiversity values and prescribed impacts)

7.0 Avoid and minimise impacts

7.1 Avoid and minimise direct and indirect impacts

7.1.1 Project location

The project location is the result of a carefully considered and iterative design process that prioritises the avoidance of impacts on areas of high biodiversity value. Engaged in October 2023, AEP conducted a site assessment to identify assess areas of biodiversity value, leading to the identification of several key ecological features.

Among these is the endangered Fuzzy Box Woodland, a community reduced to less than 5% (estimated) of its original extent and identified as at risk of Significant and Irreversible Impact (SAII). Given its sensitivity, the project design was strategically developed to minimise impacts by situating development primarily in cleared areas and avoiding intact vegetation. An Arboricultural Impact Assessment (AEP 2024d) guided the retention of trees along Jacksons Lane to maximise the retention of vegetation. Additionally, the critically endangered Box Gum Woodland community is present in the Study Area and also identified as at risk of SAII. The development has been placed to avoid a larger tract of this community in the northeast corner of the Lot and trees scattered across the site, with impacts restricted to four (4) scattered trees.

Recognising the sensitivity of the Fuzzy Box Woodland and Box Gum Woodland, a Biodiversity Management Plan (BMP) (AEP 2025) is proposed to manage retained lands, with the objective of achieving a 'Nature Positive' outcome. A central aim of this BMP is to ensure a net increase in the extent of both threatened ecological communities within the Study Area.

Additionally, the project identified and assessed watercourses and riparian areas within the Study Area. To avoid impacts, the development was located outside vegetated riparian zones, with the exception of necessary upgrades to Jacksons Lane. Slapdash Creek was assessed to determine its current condition, with mitigation measures proposed for construction impacts and strategies to enhance ecological outcomes post-construction. Re-vegetation efforts, as detailed in the BMP, are aimed at improving the condition of riparian areas following development.

7.1.2 Project design

As detailed in **Section 7.1.1**, the project has been strategically located to avoid sensitive native vegetation and riparian areas. Ancillary facilities, such as the temporary works accommodation, have been placed in Category 1 Land. Proposed rehabilitation activities, including the re-vegetation of Fuzzy Box Woodland, Box Gum Woodland and riparian areas, aim to enhance habitat connectivity, improve vegetation quality, and contribute to an overall increase in biodiversity values.

7.2 Avoid and minimise prescribed impacts

7.2.1 Project location

As outlined in **Section 7.1.1**, the proposed development has been strategically located to avoid impacts on sensitive environmental features.

To protect water bodies and maintain hydrological integrity, the development avoided riparian lands. The upgrade to Slapdash Creek was informed by aquatic assessment, which deemed the location of the existing crossing as the area most suitable for development.

Habitat connectivity in the wider landscape offers limited opportunity for fauna dispersal. The remaining connectivity is mostly confined to riparian corridors, including Slapdash Creek, although it has been cleared in many sections. To address this, the project avoided development in riparian zones where practical, particularly in the northeast of the site.

Category 1 Land was assessed for its potential use by threatened species. However, due to the extensive agricultural practices in the area, it offers highly limited habitat and is considered the most

suitable location for development. The non-native vegetation on the proposal site may only support mobile fauna species adapted to open country. Raptors and microbats may sporadically forage over these areas, however, adjacent vegetation to support these species is limited.

7.2.2 Project design

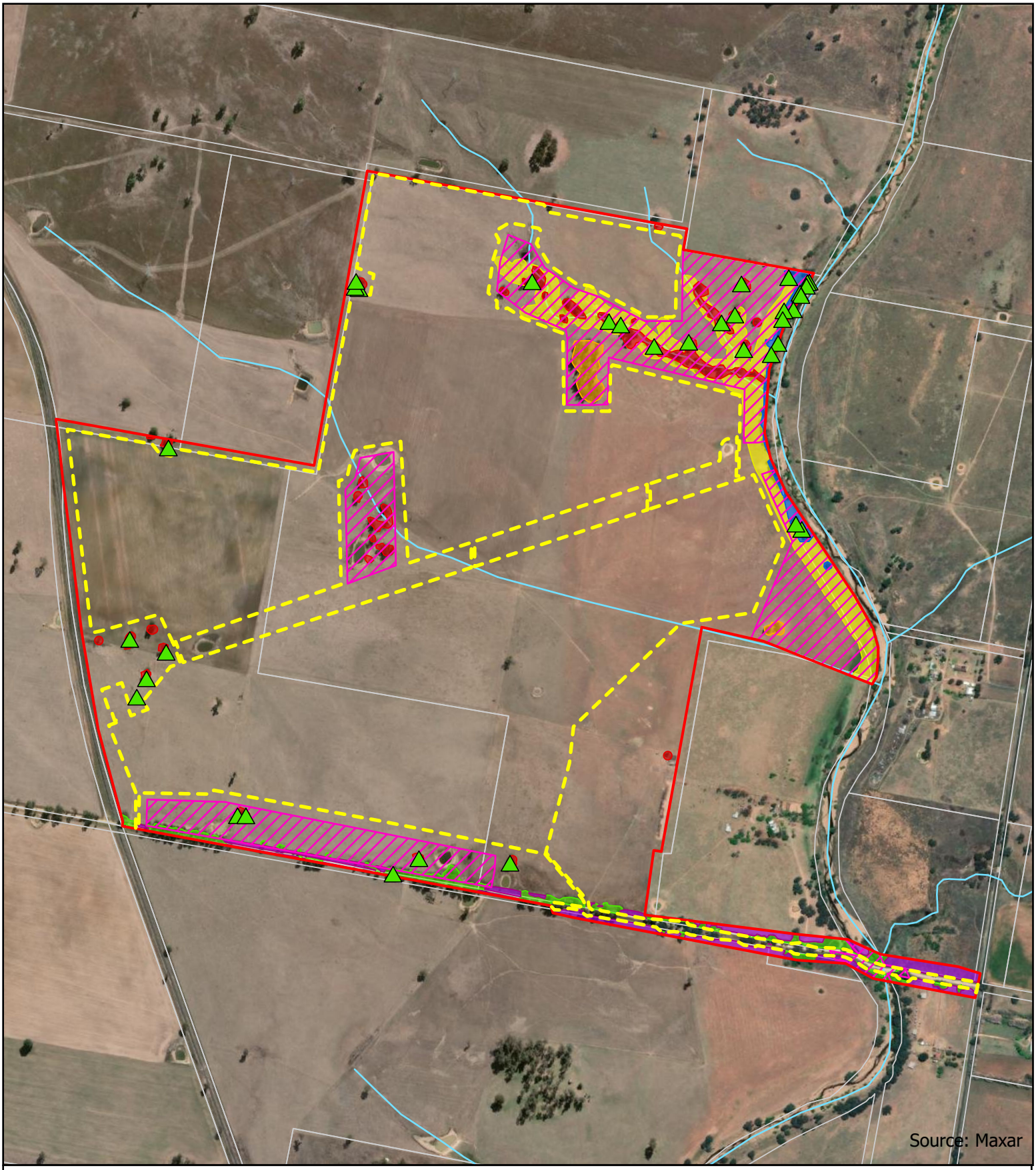
A Biodiversity Management Plan (BMP) has been incorporated with a focus on restoring riparian areas and enhancing habitat connectivity along Slapdash Creek and is provided in **Appendix I**. The BMP outlines targeted re-vegetation and restoration efforts designed to:

- Regenerate physical and biological functions of the remnant bushland present within the BMP Lands to improve habitat values and connectivity for locally occurring biota;
- Enable natural and facilitated regeneration where appropriate, ensuring the structural and trophic complexity of the vegetation community is adequately represented;
- Reconstruct highly disturbed areas that cannot naturally regenerate to stabilise and reinstate landforms and vegetation communities that are generally representative of those present prior to disturbance;
- Improve the state of the riparian corridor to strengthen the resilience of Key Fish Habitat as identified within Slapdash Creek;
- Develop management actions detailed using the 'SMART' goals approach (Specific, Measurable, Achievable, Reasonable and Time bound); and
- Ensure the site is maintained until vegetation in rehabilitated areas achieves a self-sustaining state requiring nominal maintenance.

7.3 Summary of measures to avoid and minimise impacts

Table 20: Avoidance and minimisation measures for direct, indirect and prescribed impacts

Action	Outcome	Timing	Responsibility
Avoidance of riparian areas	Completed. The project design has avoided impacts to riparian areas where possible.	Design phase	The proponent
Avoidance of TECs	Completed. Fuzzy Box Woodland and Box Gum Woodland areas have been avoided where practicable to minimise impacts.	Design phase	The proponent
Avoidance of hollow bearing trees	Completed. The project location has avoided 35 HBTs in the Study Area.	Design phase	The proponent
Restoration of vegetation	To be managed under a BMP, focusing on re-vegetation of TECs and habitat restoration.	5-year biodiversity management plan	The proponent, BRC, and Project Ecologist



Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- BMP Lands
- Retained Hollow Bearing Tree

Retained Vegetation

- Degraded Grassland
- PCT 201 - Degraded
- PCT 201 - Moderate
- PCT 201 - Severely Degraded
- PCT 281 - Poor
- PCT 78 - Good

Figure 13 - Avoid and Minimise

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

8.0 Impact assessment

8.1 Direct impacts

8.1.1 Residual direct impacts

Residual impacts on native vegetation associated with the development have been significantly reduced following the avoidance measures detailed above. Threatened species impacts have been avoided through avoidance of suitable habitat identified in the wider Study Area. The proposal would predominately impact Category 1 Land, with relatively small patches of remnant vegetation proposed to be removed. In total, the proposal would remove 1.75ha of native vegetation as summarised in **Table 21** below.

Table 21: Summary of residual impacts

Direct impact	BC Act status	EPBC Act status	SAII entity	Project phase/timing of impact	Extent (ha)
Removal of 1.05ha of PCT 201 – Moderate	Endangered	Does not conform to EPBC Act criteria	Yes	Construction	1.05
Removal of 0.54ha PCT 201 – Severely Degraded	Endangered	Does not conform to EPBC Act criteria	Yes	Construction	0.54
Removal of four (4) PCT 281 – scattered trees.	Critically Endangered	Does not conform to EPBC Act criteria	Yes	Construction	4 trees (0.15ha)

8.1.2 Change in vegetation integrity scores

Residual impacts on vegetation condition after avoidance and minimisation measure have been carried out are document in **Table 22.**

Table 22: Impacts to vegetation integrity

Vegetation zone	PCT ID	Area (ha)	Before development				After development				Change
			Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	Change in VI score
PCT 201 – Moderate	201	1.05	73.4	42	72.5	60.7	0	0	0	0	-60.7
PCT 201 – Severely Degraded	201	0.54	18.2	6.4	0	4.9	0	0	0	0	-4.9

8.1.3 Scattered tree module

After avoidance, four (4) scattered native trees will be cleared form the Subject Land. The data as entered in the BAM-C is summarised in **Table 23** below.

Table 23: Scattered trees to be impacted by the proposal

PCT code	Species	DBHOB category	Hollows	No. of trees	Class
281	*Eucalyptus conica*	>=50cm	Yes	1	3
	Eucalyptus melliodora	>=50cm	Yes	1	3
	Angophora floribunda	>=50cm	Yes	1	3
	Eucalyptus blakelyi	>=50cm	Yes	1	3

8.2 Indirect impacts

Indirect impacts have been assessed with respect to each stage of the project. Possible indirect impacts are primarily associated within the construction phase, and future impacts will be mitigated through measures provided in this report.

Table 24: Summary of residual indirect impacts

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
Indirect impacts associated with construction works i.e dust and other indirect impacts associated with construction	PCT 201 (Fuzzy Box Woodland TEC) PCT 281 (Box Gum Woodland TEC)	Adjacent vegetation	During construction	Short term	Construction	Indirect impacts are considered likely during construction. This includes machinery access and laydown areas. To account for this, a 5m buffer has been provided to the proposed road upgrade and included within the Subject Land.
Indirect impacts to Slapdash Creek during construction of causeway including changes to water regimes and flow	N/A	Unknown	During construction	Short term	Construction	The likelihood of indirect impacts to Slapdash Creek, such as changes in water flows, is considered likely due to the necessary upgrades to the creek crossing. These changes could potentially alter the hydrology of the creek, affecting water quality and aquatic habitats. The Aquatic Ecology Report (AEP 2024a) has provided specific recommendations to mitigate these risks, including measures to stabilise water flow, control erosion, and protect aquatic ecosystems. Implementing these recommendations is expected to minimise the consequences of altered water flows and preserve the ecological integrity of Slapdash Creek.
Weed invasion and edge effects	PCT 201 (Fuzzy Box Woodland TEC) PCT 281 (Box Gum Woodland TEC)	All PCT 201 zones and PCT 281 - Poor	During construction	Short term	Construction	The vegetation on the proposal site is already impacted by weeds, and additional edge effects from the development are not expected to be significant. While edge effects, such as changes in vegetation structure, increased exotic plant growth, and altered fauna behaviour, can result from construction activities, the site and surrounding areas have already been extensively cleared for agriculture. Remnant

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
						vegetation patches, may experience some additional edge effects, but these will be offset through active management under a BMP.
Pests and pathogens	PCT 201 (Fuzzy Box Woodland TEC) PCT 281 (Box Gum Woodland TEC)	Unknown	During construction	Short term	Construction	Construction activities can potentially introduce or spread pathogens like Phytophthora (*Phytophthora cinnamomi*), Myrtle Rust (*Austropuccinia psidii*), and Chytrid fungus (*Batrachochytrium dendrobatidis*) into native vegetation. Although the risk of impact from these pathogens is low due to the already disturbed nature of much of the Subject Lands, appropriate measures such as equipment and machine washdowns should be implemented.
Noise, light and vibration	Fauna utilising the site	Unknown	During construction	Short term	Construction	Construction of the proposal will introduce additional vehicles and machinery to the site, leading to temporary increases in noise and vibration. While the site currently has limited existing noise pollution, the fauna inhabiting the area may still be sensitive to these disturbances. However, given the temporary nature of these activities, the impact on resident fauna is expected to be minimal and unlikely to result in significant long-term effects
Sedimentation and erosion	N/A	Unknown	During construction	Short term	Construction	The proposed causeway upgrade to Slapdash Creek has the potential to cause sedimentation and erosion in both the construction site and adjacent aquatic habitats due to soil disturbance during the upgrades to Jacksons Lane. To mitigate these risks, appropriate soil and erosion control measures should be implemented, ensuring that all activities adhere to the recommendations provided in the Aquatic Ecological Report.

8.3 Prescribed impacts

Prescribed impacts relevant to the proposal are described below.

8.3.1 Human made structures

The project involves upgrades to existing human-made structures, notably the upgrade of the current crossing over Slapdash Creek. These activities are confined to already disturbed areas and are designed to improve functionality while minimising environmental disturbance. The construction impacts will be localised and temporary, and are not anticipated to impact any threatened entities.

8.3.2 Non-native vegetation

Development activities are primarily situated within Category 1 Land, which is dominated by non-native vegetation due to extensive historical agricultural use. This area offers highly limited habitat value and the impact on non-native vegetation is considered appropriate and sustainable, as it avoids significant disturbance to higher quality habitat.

8.3.3 Habitat connectivity

The existing habitat connectivity within the broader landscape is notably fragmented, predominantly due to extensive agricultural activities, with remaining connectivity largely restricted to riparian corridors like Slapdash Creek, which itself has experienced substantial clearing. The project has been planned to avoid riparian zones, particularly in the northeastern sections, thereby minimising additional fragmentation. While some minor impacts on already limited connectivity may occur, these are mitigated through the implementation of a BMP that aims to restore and enhance habitat linkages over time, contributing to improved ecological connectivity in the locality.

8.3.4 Waterbodies, water quality and hydrological processes

The proposed causeway upgrade at Slapdash Creek presents potential risks to local water quality and hydrological processes through possible sedimentation and erosion during construction activities. Recommendations are provided in the Aquatic Ecology Report (AER) (AEP, 2024a) to mitigate impacts, and re-vegetation efforts are designed with the aim of improving hydrological processes in the long term. A total of three (3) farm dams will be impacted by the proposal, these are not anticipated to provide habitat for threatened species.

8.4 Mitigating residual impacts – management measures and implementation

Proposed measures to mitigate residual indirect impacts on habitat are detailed in **Table 25**.

Table 25: Summary of proposed mitigation and management measures for residual impacts

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES
Implementation of recommendations detailed in the AER (AEP 2024a) for the Slapdash Creek upgrade	Established pre-clearance protocols	Pre-construction / clearing	Continuous during construction	Construction contractor / Project Manager	High (Low risk of failure)	N/A
Environmental induction for all workers covering ecological values and protection measures	Training and induction sessions	Pre-construction / clearing	Once before work begins	Construction contractor	High (Low risk of failure)	N/A
Regular inspection and maintenance of erosion and sediment control measures	Inspections and routine maintenance	Pre-construction / clearing	Regular intervals during work	Construction contractor	High (Low risk of failure)	N/A
Fence off or mark trees and areas of native vegetation to be retained	Erect physical barriers and markers	Pre-construction / clearing	Once before clearing	Construction contractor / Arborist	High (Low risk of failure)	N/A
Establishment of appropriate buffers around retained trees	Avoidance of Structural Root Zones	Pre-construction / clearing	Once before clearing	Construction contractor / Site ecologist	High (Low risk of failure)	N/A
Restriction of stockpiles to existing cleared areas	Stockpile management in designated areas	Construction / clearing	Continuous during construction	Construction contractor	High (Low risk of failure)	N/A
Application of water to stockpile areas during windy conditions	Dust suppression by watering	Construction / clearing	As needed during windy conditions	Construction contractor	High (Low risk of failure)	N/A
Construction traffic restricted to existing roads and tracks	Traffic management and routing	Construction / clearing	Continuous during construction	Construction contractor	High (Low risk of failure)	N/A
Implementation of a Biodiversity Management Plan (BMP) (AEP 2025a) to protect and enhance	Re-vegetation and weed control	Pre-, during, post-	Over 5-years (refer AEP 2025)	Construction contractor / Bush	High (Low risk of failure)	N/A

Mitigation measure	Method/technique	Timing	Frequency	Responsibility	Likely efficacy	MNES
threatened ecological communities and riparian areas in retained lands within the Study Area.		construction / clearing		Regenerator Contractor		
Implementation of a BMP (AEP 2025a) to reduce impacts to fauna.	Staged clearing utilising soft-felling techniques, avoid clearing during breeding seasons, salvage of hollows for reuse in BMP Lands where possible, and pre-clearance surveys.	Pre-, during, post-clearing	Continuous during clearing	Construction contractor / Project Ecologist	High (Low risk of failure)	N/A
Implementation of a BMP (AEP 2025a) to reduce the spread and introduction of pests and pathogens	Hygiene protocols (i.e equipment, PPE and machinery washdown) for *Phytophthora cinnamomi*, Amphibian Chytrid Fungus and Myrtle Rust.	Pre-, during, post-construction / clearing	Before and after entering and leaving the site.	Construction contractor	High (Low risk of failure)	N/A

9.0 Serious and irreversible impacts

9.1 Assessment for serious and irreversible (SAII) impacts on biodiversity values

The determination of a serious and irreversible impact (SAII) on biodiversity values must be made by the decision-maker, following the four (4) principles outlined in the *Biodiversity Conservation Regulation 2017*. This section identifies which biodiversity values could be at risk of an SAII due to the Project and evaluates the impact's extent and severity. **Table 26** outlines the biodiversity values considered at risk of an SAII in relation to the proposed development.

Table 26: Entities at risk of an SAII

Common name	Scientific name	Reason for inclusion in assessment
Fuzzy Box Woodland	Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Included in current list of entities at risk of an SAII and will be directly impacted by the proposal.
Box Gum Woodland	White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Included in current list of entities at risk of an SAII and will be directly impacted by the proposal.

9.1.1 Additional impact assessment provisions for TECs at risk of an SAII

9.1.1.1 Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions

The proposed development has taken steps to avoid and minimise both direct and indirect impacts on Fuzzy Box Woodland. During the design phase, the project was planned to avoid areas of this ecological community, especially where pockets of intact vegetation were present. In cases where development could not be completely avoided, such as necessary infrastructure upgrades, efforts were made to minimise disturbance, including the careful placement of construction activities and the establishment of protective buffer zones.

To further reduce potential indirect impacts, re-vegetation efforts are proposed. These actions aim to reduce the risk of habitat degradation, prevent the spread of invasive species, and support the restoration and of Fuzzy Box Woodland within the Study Area. The proposal will impact a total of 1.60ha of Fuzzy Box Woodland. However, this will be offset by the re-vegetation of approximately 7.64ha of land under a BMP, leading to a net increase in both the extent and quality of Fuzzy Box Woodland in the long term.

Fuzzy Box Woodland is listed as an Endangered Ecological Community under the BC Act and has been listed as a potential SAII due to the following principles:

i. Principle 1: The species or ecological community is currently experiencing a rapid rate of decline.

ii. Principle 2: The species or ecological community has a very small population size.

iii. Principle 3: Known from ≤ 3 locations and/or an AOO < 10km^2 or EOO < 100km^2.

An evaluation of Principles 1 - 3 and the SAII assessment following BAM (DPIE 2020a) Section 9.1.1. (sub-clauses 2-5) is presented in **Table 27** below.

Table 27: Fuzzy Box Woodland Impact Assessment

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
2a	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	The Final Determination (NSW TSSC 2011) for the listing of Fuzzy Box Woodland states that less than 5% of the original extent remains due to extensive clearing. While no areas are provided for the geographic extent, Kerr et al. (2003) mapped 28,650ha as the pre-clearing extent around Dubbo, noting that this community extends further south of the Dubbo area. Following this, Kerr et al. (2003) estimates that only 1,330ha remains near Dubbo, which equates to ~5% of the original extent. Seddon et al. (2002) calculated that only 3% (366ha of an original 13,865ha) of Fuzzy Box Woodland remains in the Littler River Catchment in central NSW. It is noted that these investigation areas do not cover the entirety of the area of occupation of this species; however, reflect a reduction in geographic distribution of the community. With reference to the BioNet Vegetation Classification System, there are four (4) PCTs associated with Fuzzy Box Woodland: • PCT 201: The estimated pre-European extent is 100,000ha (30% accuracy) • PCT 202: The estimated pre-European extent is 10,000ha (50% accuracy) • PCT 1384: No estimates provided • PCT 3404: The estimated pre-European extent is 6,313ha (no accuracy provided). The combined total of these pre-European estimates is 116,313ha. While not all vegetation is within these areas, these are considered the best historical area of this community for the purposes of this assessment. As less than 5% of this community remains per the listing advice, it is estimated that the current extent is <5,816ha. **As such, the community does meet the criteria outlined in Principle 1.**
2b	Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: vii. change in community structure viii. change in species composition ix. disruption of ecological processes x. invasion and establishment of exotic species xi. degradation of habitat, and	The Final Determination for this community states that the species composition of a site will be influenced by the size of the site, recent rainfall or drought conditions and by its disturbance (including fire) history. Fluctuations in these factors elicit natural changes in the community such as presence and absence of above ground individuals and seed species present within the seed bank. However, two (2) Key Threatening Processes (KTPs) listed under the EPBC Act (1999) exacerbate disruptions to biotic processes, which includes clearing of native vegetation and invasion of native plant communities by exotic perennial grasses, with the primary threat to this community being broadscale clearing. While this has largely ceased, clearing of isolated paddock trees and further remnants, including regrowth, remain threats. Other indications of degradation include the senescence of relict plants, lack of regeneration due to grazing, lack of fire and weed invasion.

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
	xii. fragmentation of habitat	Clearing, weed invasion, grazing and altered fire regimes have caused fragmentation and degradation of habitat, loss of native species, and changes in floristic community structure and floristic composition, leading to the reduced ecological functioning of the community. As per the community's threatened species profile (OEH, 2022), species diversity, composition and structure will be impacted by long term climate change. **As such, the community does meet the criteria outlined in Principle 2.**
2c	Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the: iv. extent of occurrence v. area of occupancy, and vi. number of threat-defined locations	Ecological communities with a very limited geographic distribution have an area of occupancy of less than or equal to two 10 x 10 km grid cells or an extent of occurrence of ≤1000 km2 and one of the following: (1) an observed or inferred continuing decline in spatial extent, environmental quality, or biotic interactions characteristic to the ecological community; (2) observed or inferred threatening processes that are likely to cause continuing declines in geographic distribution, environmental quality or biotic interactions within the next 20 years; (3) exists only at one location. According to the TBDC, the TEC is known from ≤ 3 locations and/or an AOO <10km^2 or an EOO of <100km^2. From the Final Determination, only one small stand is currently known from a conservation reserve, at Weddin Mountains National Park near Grenfell (NSW TSSC 2011). **As such, the community does meet the criteria outlined in Principle 3.**
2d	Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation)	There are two (2) key considerations for whether an entity is unlikely to respond to management actions: • The first is based on the life history traits and characteristics which may limit the community to respond to management; and • The second element considers whether there are any key threatening processes affecting the ecological community that cannot be effectively managed. Known reproductive characteristics of this ecological community are unlikely to severely limit the ability to increase its area of occupancy/extent (OEH, 2022). A Saving Our Species conservation project is currently being developed for this species; however, activities to assist the community are proposed by OEH (2022) including: • Encourage and facilitate improved management of remnants, initially the highest priority and later working down the list as funds permit. • Weed control.

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
		• Develop a database of sites, owners and management action required. • Prioritise the list of sites for action. • Identification and survey of remnants. • Research required into appropriate fire regimes to optimise species diversity, composition and structure. The Final Determination (NSW TSSC 2011) states the community is likely to become extinct in nature in NSW unless the circumstances and factors threatening its survival cease to operate. As a recovery plan is being prepared, the majority of clearing has ceased, and its life history traits facilitate its recovery, it is expected that this community will respond to management actions. **As such, the community does not meet the criteria outlined in Principle 4.**
3	Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Subsection 9.1.1(2.), the assessor must record this in the BDAR or BCAR.	N/A
4a	In relation to the impacts from the proposal on the TEC at risk of an SAII, the assessor must include data and information on: The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: i. in hectares, and ii. as a percentage of the current geographic extent of the TEC in NSW. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal. The assessor should consider for example, changes to fire regime (frequency, severity), hydrology, pollutants, species interactions (increased competition, changes to pollinators or dispersal), fragmentation, increased edge effects and disease, pathogens and parasites, which are likely to contribute to the loss of flora and/or fauna species characteristic of the TEC	The total area to be impacted by the proposal is 1.60ha, equating to 0.03% of its current geographic extent which is estimated at 5,816ha. The area to be impacted is comprised of discontinuous areas of vegetation in varying conditions in proximity to one another (<100m) forming one patch, providing marginal habitat connectivity. The patch is not considered to be highly functional habitat due to the fragmentation and disturbance experienced from historical agricultural practices, reflected in areas which are in a severely degraded condition. Additional indirect impacts to Fuzzy Box Woodland are not expected to be substantial or significant as a result of the development and, therefore, only the direct impacts are considered in the calculation of the proposal's impact on the geographic extent of the TEC.

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
4b	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by: i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: • distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and • estimated maximum dispersal distance for native flora species characteristic of the TEC, and • other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development iii. describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	To estimate the size of the remaining TEC within 500m of the development footprint, the SVTM (DCCEEW 2024a) was utilised in conjunction with field verified areas and GIS analysis, with the results detailed below. Identified and potential Fuzzy Box Woodland within 500m of the development footprint: • Total area: 13.72ha • Average patch size: 3.43ha • Number of patches: 4 To investigate the impacts of the proposal on connectivity and fragmentation, GIS analysis determined the average distance between isolated areas of the TEC pre- and post-development: • 1.34km between isolated areas of the TEC if the impacted area is retained. • 1.34km between isolated areas if the remnant is removed as proposed. From the above distances, the proposed vegetation removal will not result in an increase of the average separation distance between patches of the TEC. Seed dispersal of characteristic flora species occurs via wind or transportation via fauna; therefore, the estimated maximum dispersal distance is difficult to estimate. Areas of intact vegetation within the site are to be retained and managed under a BMP, enabling the dispersal and proliferation of flora species characteristic of the community. Where the TEC will be impacted the vegetation is in moderate condition, with a vegetation integrity score of 60.7 derived from the below scores: • Composition: 73.4 • Structure: 42 • Function: 72.5 Areas of this TEC in a severely degraded condition will also be impacted and have a vegetation integrity score of 1.1 derived from the below scores: • Composition: 18.2 • Structure: 6.4 • Function: 0

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
5	The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAII is not accurate.	N/A

9.1.1.2 White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

As discussed in **Section 9.1.1.1**, the proposed development has taken steps to avoid and minimise direct and indirect impacts through infrastructure placement. Re-vegetation efforts are proposed to allow for a net increase in the extent and quality of Box Gum Woodland in the long term.

Box Gum Woodland is listed as a Critically Endangered Ecological Community under the BC Act and EPBC Act and is listed as an SAII due to the following principles:

i. Principle 1: The species or ecological community is currently experiencing a rapid rate of decline.

ii. Principle 2: The species or ecological community has a very small population size.

An evaluation of Principles 1 - 3 and the SAII assessment following BAM (DPIE 2020a) Section 9.1.1. (sub-clauses 2-5) is presented in **Table 28** below.

Table 28: Box Gum Woodland Impact Assessment

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
2a	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	The Final Determination for the listing of Box Gum Woodland as a CEEC under the BC Act states that the community has undergone "a very large reduction in geographic distribution", and the community has been extensively cleared throughout its range. Based on the compilations of maps available at the time of assessment, less than 5% of the original distribution remained in sufficient size and condition, having undergone a decline of 95% or more (NSW TSSC 2006). There are no specific assessments of the reduction since 1970; however, it has been estimated that the community has been reduced to less than 10% of its pre-1750 distribution (Tozer & Simpson 2020). The following regarding its clearing has been noted by NSW DPIE (2019): • During 2009 – 2016, an average of 395ha of Grassy Woodland (sensu Keith 2004) was lost annually across NSW to agriculture-related activities within the range of the community, and a further 155ha/annum due to infrastructure developments; • During 2016 – 2017, loses due to agriculture and infrastructure rose to 654ha and 216ha, respectively; and • During 2017 – 2018, loses due to agriculture rose again to 1,344ha while losses attributable to infrastructure rose to 589ha. Indicative estimates of the historical decline in geographic distribution compiled by the Commonwealth TSSC (2006) for state jurisdictions from sub-jurisdictional vegetation maps show the total reduction in NSW as approximately 93% of the pre-1750 distribution of the community, with the current area estimated to be 250,729ha remaining from the historical area of 3,717,366ha. While the above metrics assess grassy woodland communities as a whole, and Box Gum Woodland only forms a sub-component of these impacted figures, the data illustrates that there are ongoing pressures on these communities and an expected ongoing reduction in geographic extent of the TEC since 1970. **As such, the community does meet the criteria outlined in Principle 1.**
2b	Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: vii. change in community structure	As detailed in the NSW TSSC Final Determination, Box Gum Woodland is subject to a number of threatening processes that have caused severe declines in biotic processes and interactions throughout its range and are likely to cause continuing decline in future. Multiple sources attest to an almost complete conversion of the community to agricultural production (Prober 1996,

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
	viii. change in species composition ix. disruption of ecological processes x. invasion and establishment of exotic species xi. degradation of habitat, and xii. fragmentation of habitat	Prober and Thiele 2004, Keith 2004, Benson 2008). Key factors as outlined in the Final Determination that disrupt this community include: • Grazing - the impacts of grazing vary depending on the historical grazing regime, pasture improvement practices and associated impacts to soil structure (i.e erosion) and biota. Continued exposure to grazing by the introduced European rabbit (*Oryctolagus cuniculus*) exacerbates the effects of grazing by livestock. Less than 10% of the original distribution of the community is likely to have avoided long-term impacts of pastoralism in areas confined to cemeteries, railway easements and travelling stock routes (TSRs). Increases in the duration of grazing in TSRs and reductions in the period of rest have resulted in increased degradation of remnants. Grazing leads to a reduction in understorey species diversity and richness due to the suppression or loss of native species that are both highly palatable and intolerant of grazing by domestic stock (Keith 2004), dualistically allowing for the invasion of exotic species. Shifts in the dominance of pasture species are also attributed to differential palatability and resilience to grazing among species. • Pasture improvement practices – fertiliser application has led to elevated soil nitrogen, increasing cover and abundance of exotic plant species, particularly from the north to the south of its range, causing more dieback and weed invasion (Benson 2008). • Dryland salinity – arises as a consequence of elevated water tables (Yates and Hobbs 1997). The impacts of salinity are particularly pronounced where the species *Eucalyptus melliodora* and *E. blakelyi* previously dominated, as these species occur at lower areas of the water table. Elevated soil salinity leads to dieback and death of understorey species and invasion by exotic species. • Fire regimes mediate competitive interactions among understorey species and prolonged absence of fire may result in declines in species diversity as less competitive species are excluded. Additionally, the extensive clearing of the vegetation communities which comprise this TEC has led to the fragmentation and isolation of remnant patches, reducing ecological functionality for fauna through the loss of habitat (i.e foraging, nesting, roosting opportunities) and habitat connectivity. Cumulatively, the disruption of biotic processes and interactions caused by the implementation of management for agricultural production is very severe and the impacts are estimated to apply to over more than 90% of the community's pre-1750 distribution. The key factors delineated above have been a catalyst for compositional changes, exotic species invasion and establishment, and ultimately a reduction in the ecological functionality of the community.

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
		As such, the community does meet the criteria outlined in Principle 2.
2c	Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the: iv. extent of occurrence v. area of occupancy, and vi. number of threat-defined locations	Ecological communities with a very limited geographic distribution have an area of occupancy of less than or equal to two 20km x 10km grid cells, or an extent of occurrence of <1000km2. The Final Determination (Tozer & Simpson 2020) states that the geographic distribution of Box Gum Woodland CEEC is not restricted. The best estimate of extent of occurrence is 702,800 km^2 based on a minimum convex polygon enclosing likely occurrences of the community, the method of assessment recommended by Bland et al. (2017). The best estimate of the area of occupancy (AOO) is 151,100km^2 based on 10x10km grid cells, whilst the community does not have a very small number (<5) of locations. **As such, the community does not meet the criteria outlined in Principle 3.**
2d	Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation)	There are two (2) key considerations for whether an entity is unlikely to respond to management actions: • The first is based on the life history traits and characteristics which may limit the community to respond to management; and • The second element considers whether there are any key threatening processes affecting the ecological community that cannot be effectively managed. The Final Determination (Tozer & Simpson 2020) lists 11 Key Threatening Processes listed under the EPBC Act which potentially affect the community; however, also states that after the cessation of threatening processes alongside the regeneration of remnant vegetation, this community can be at least partially restored. The determination highlights 11 priority recovery and threat abatement actions for the community. There is a national recovery plan for this community in place; *National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (DECC 2009), with actions including increasing landscape functionality of the ecological community through management and restoration of degraded sites. As a recovery plan is in place, it is expected that this community will respond to management actions. **As such, the community does not meet the criteria outlined in Principle 4.**
3	Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Subsection 9.1.1(2.), the assessor must record this in the BDAR or BCAR.	N/A

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
4a	In relation to the impacts from the proposal on the TEC at risk of an SAII, the assessor must include data and information on: The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: i. in hectares, and ii. as a percentage of the current geographic extent of the TEC in NSW. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal. The assessor should consider for example, changes to fire regime (frequency, severity), hydrology, pollutants, species interactions (increased competition, changes to pollinators or dispersal), fragmentation, increased edge effects and disease, pathogens and parasites, which are likely to contribute to the loss of flora and/or fauna species characteristic of the TEC.	Box Gum Woodland TEC to be impacted by the development is present as four (4) scattered trees to be removed, with a combined area of 0.15ha. Additional indirect impacts to Box Gum Woodland are not expected to be substantial or significant as a result of the development and, therefore, only the direct impacts are considered in the calculation of the proposal's impact on the geographic extent of the TEC. As discussed above, the current geographic extent of Box Gum Woodland is estimated at 250,729ha. The proposal will remove 0.15ha of Box Gum Woodland, which equates to <0.00% of the geographic extent of this community.
4b	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by: i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: • distance between isolated areas of the TEC, presented as the average distance if the remnant is	To estimate the size of the remaining TEC within 500m of the development footprint, the SVTM (DCCEEW 2024a) was utilised in conjunction with field verified areas and GIS analysis, with the results detailed below. Identified and potential Box Gum Woodland within 500m of the development footprint: • Total area: 4.61ha • Average patch size: 0.91ha • Number of patches: 4 The area impacted by the development (0.15ha) is considerably smaller than the size of the patches of the TEC present within 500m of the development footprint (4.61ha) and those being retained and managed under a BMP. The areas proposed for removal are four (4) isolated trees scattered across the development footprint and do not constitute patches, as they do not form continuous vegetation and do not

BAM s 9.1.1 Sub Clause	BAM s9.1.1 Provision	Assessment
	retained AND the average distance if the remnant is removed as proposed, and • estimated maximum dispersal distance for native flora species characteristic of the TEC, and • other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development iii. describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	constitute five (5) or more trees with <75m between canopy (Tozer & Simpson 2020). Therefore, these trees do not contribute to habitat connectivity as they stand, nor will their removal promote fragmentation. Therefore, the proposed vegetation removal will not result in an increase of the average separation distance between patches of the TEC, whilst the area to perimeter ratio of the remaining patches of the TEC will be maintained. Seed dispersal of characteristic flora occurs via wind or transportation via fauna; therefore, the estimated maximum dispersal distance of this TEC is difficult to estimate. Areas of intact vegetation outside of the development footprint are to be retained and managed under a BMP, enabling the dispersal and proliferation of flora species characteristic of the community. A condition has not been assigned to the areas of this TEC to be impacted as they occur as scattered trees, not patches; therefore, do not have a composition, structure and function score.
5	The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAII is not accurate.	N/A

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- PCT 281 - Box Gum Woodland SAII
- PCT 201 - Fuzzy Box Woodland SAII

Figure 14a - Serious and Irreversible Impacts

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- PCT 281 - Box Gum Woodland SAII
- PCT 201 - Fuzzy Box Woodland SAII

Figure 14b - Serious and Irreversible Impacts

0 100 200 m

Scale: 1:6,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 21 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

10.0 Impact summary

10.1 Determining an offset requirement for impacts

10.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

Impacts on native vegetation that do and do not require an offset are provided in **Table 29** and **Table 30**, respectively, and **Figure 15**.

Table 29: Impacts that do not require offset - ecosystem credits

Vegetation zone	PCT name	TEC	Impact area (ha)	TEC association	Entity at risk of an SAII?	Current VI score
PCT 201 – Severely Degraded	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Yes	0.54	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Yes	4.9

Table 30: Impacts that require an offset - ecosystem credits

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
PCT 201 – Moderate	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Yes	1.05	60.7	0	60.7	2	32
PCT 281 – Scattered Trees	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Yes	0.15 (4 trees)	N/A	N/A	N/A	1.5	4
							Total credits	36

10.2 Impacts that do not need further assessment

Areas which will be impacted by the Project but do not need further assessment for ecosystem credits are identified in **Table 31** and **Figure 15.**

Table 31: Impacts that do not need further assessment for ecosystem credits

Impact	Extent within Subject Land (ha)	Justification why no further assessment is required
Clearing of Category 1 Land	143.74	Exotic dominant grasslands have been assessed as low conservation value grasslands.
Clearing of Infrastructure	0.35	Areas devoid of vegetation due to existing tracks (i.e unsealed roads) and infrastructure.

Legend

- Study Area
- Subject Land
- Cadastre
- NSW Hydroline
- Extent of SAII Entities
- Areas Requiring an Offset
- Areas Not Requiring An Offset
- Areas Not Requiring Assessment

Figure 15a - Thresholds for Assessing and Offsetting Impacts

0 200 400 m

Scale: 1:12,000

N

AEP

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 08 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Legend

- Study Area
- Subject Land
- NSW Hydroline
- Cadastre
- Extent of SAII Entities
- Areas Requiring an Offset
- Areas Not Requiring An Offset
- Areas Not Requiring Assessment

Figure 15b - Thresholds for Assessing and Offsetting Impacts

Address: Mayfair Solar Farm, Stubbo NSW
Client: Elgin Energy Pty Ltd
AEP Ref: 3345 | Date: 08 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

0 100 200 m

Scale: 1:6,000

N

AEP

11.0 Biodiversity credit report

The following credits are required for offset as part of the development. The credits will either be discharged by seeking credits on the open marker or via payment to the Biodiversity Conservation Fund.

Table 32: Ecosystem credit class and matching credit profile

Ecosystem Credit	Attributes shared with matching credits						
	PCT Name	PCT Vegetation Class	PCT Vegetation Formation	Associated TEC or EC	Offset trading group (BAM Section 10.2, Tables 4 & 5)	Hollow bearing trees present?	IBRA Subregion
PCT 201 - Moderate	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Western Slopes Grassy Woodland	Grassy Woodlands	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Yes	Inland Slopes
PCT 201 – Severely Degraded	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Western Slopes Grassy Woodland	Grassy Woodlands	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	No	Inland Slopes
PCT 281 – Scattered Trees	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Western Slopes Grassy Woodland	Grassy Woodlands	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 Riverina Bioregions	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 Riverina Bioregions	Yes	Inland Slopes

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Appendix A: BDAR requirements compliance

Biodiversity Development Assessment Report: Streamlined Assessment Module (Small Area)

BAM Reference	Information	BDAR Section	Completed
Report			
Introduction - Chapters 2 and 3	Introduction to the biodiversity assessment including: brief description of proposed development identification of subject land boundary, including: operational footprint and construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure general description of the subject land	**1.1.1, 1.1.3**	✓
	Sources of information used in the assessment, including reports and spatial data	**1.5**	✓
	Identification of assessment method applied (i.e., linear or site-based)	**2.1**	✓
Landscape - Section 3.1, 3.2 and Appendix E	General description of subject land topographic and hydrological setting, geology and soils	**2.1.1**	✓
	Percent native vegetation cover in the assessment area (as described in BAM Subsection 3.2(4.)	**3.3**	✓
	IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	**3.2.1**	✓
	Rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3–4.) and Appendix E)	**3.2.2**	✓
	Wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(4.))	**3.2.2**	✓
	Connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	**3.2.3**	✓
	Areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(10.)	**3.2.4**	✓
Native vegetation, TECs and vegetation integrity - Chapter 4	Patch size (in accordance with BAM Subsection 4.3.2)	**4.4**	✓
	Identification of the dominant PCT on the subject land and extent (ha) with justification of method used (existing information or plot-based survey data)	**2.2.3 4.2**	✓
	Identification of any TEC associated with the PCT (BAM Subsection 4.2.2)	**4.2**	✓
	Estimate of percent cleared value of dominant PCT (BAM Subsection 4.2.1(5.)	**4.2.2.**	✓

BAM Reference	Information	BDAR Section	Completed
	Identification of any TEC on site that is not associated with the dominant PCT (Note: This TEC is required to be assessed and offset.)	**N/A**	
	Equivalence with mapping units of previous vegetation maps reviewed as part of the assessment (i.e., equivalent mapping units)	**2.2.1**	✓
	Vegetation integrity of the PCT(s) on the subject land as individual vegetation zones	**4.5**	✓
	Justification for how this was determined (i.e., qualitatively by observing values for the condition attributes set out in Table 2 of the BAM or quantitatively by collecting field data for the condition attributes at a plot in accordance with BAM Subsection 4.3.4)	**2.2.3**	✓
	Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsections 4.3.3(5.)) Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A): • identify the PCT or vegetation class for which local benchmark data will be applied • identify published sources of local benchmark data (if benchmarks obtained from published sources) • describe methods of local benchmark data collection (if reference plots used to determine local benchmark data) • provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	**4.5.3**	✓
Chapter 5 and Section 9.1	Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land	**2.4.2**	✓
	Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits	**5.2**	✓
	List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2)	**5.2**	✓
	Identification of candidate species credit species that are at risk of an SAII and therefore, must be further assessed (BAM Section 9.1). Note: Candidate species credit species that are not at risk of an SAII and not incidentally recorded on the subject land do not require further assessment.	**N/A**	
	For candidate species credit species that are at risk of an SAII, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including:	**N/A**	

BAM Reference	Information	BDAR Section	Completed
	• justification for determining that a candidate species credit species at risk of an SAII is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM) • determination of the presence of remaining candidate species credit species at risk of an SAII (by assuming presence, conducting a threatened species survey or an expert report). • Note: If the subject land is mapped on an important habitat map for a species, or for a component of its habitat, the subject land is considered to have suitable habitat for the species to be present. • species polygons identifying the location and area of suitable habitat for each candidate threatened species at risk of an SAII that is recorded on the subject land and is measured by area, OR • species polygons identifying the area of suitable habitat and targeted surveys identifying the count and location of individuals on the subject land for each candidate threatened flora species at risk of an SAII that is recorded on the subject land and is measured by count • species polygons for each threatened species identified on the subject land that is not at risk of an SAII (i.e., incidentally observed during site visit)		
	Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAII or incidentally observed during the site visit (Step 6 of BAM Section 5.2)	**N/A**	
	For flora species credit species at risk of an SAII or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(4.))	**N/A**	
Prescribed impacts Chapter 6	Any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	**8.3**	✓
Avoid and minimise impacts – Chapter 7	Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative: • modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology • alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location • alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	**7.0**	✓

BAM Reference	Information	BDAR Section	Completed
	Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Subsections 7.1.2 and 7.2.2	**7.0**	✓
	Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.)	**7.0**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	Determine the impacts on native vegetation and threatened species habitat, including: • description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Sections 8.1) • description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2	**8.1, 8.2**	✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Subsections 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.): • techniques, timing, frequency and responsibility • identify measures for which there is risk of failure • evaluate the risk and consequence of any residual impacts • document any adaptive management strategy proposed	**8.4**	✓
	Identification of measures for mitigating impacts related to: displacement of resident fauna (as described in BAM Subsection 8.4.1) indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.)) mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	**8.4**	✓
	Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	**N/A**	
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Information from the TBDC and/or other sources to report on the current status of threatened species, threatened populations at risk of an SAII and TEC/s for the proposal, and	**9.1**	✓
	Report on impacts of the proposal on TEC/s in accordance with BAM Subsection 9.2.1	**10.1.1**	✓
	Report on impacts of the proposal on threatened species and/or threatened populations at risk of an SAII in accordance with BAM Section 9.1	**N/A**	✓
	Identification of impacts requiring offset in accordance with BAM Section 9.2	**10.1.1**	✓
	Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	**10.1.1**	✓

BAM Reference	Information	BDAR Section	Completed
	Identification of areas not requiring assessment in accordance with BAM Section 9.3	**10.2**	✓
Applying the no net loss standard - Chapter 10	Description of the impact on PCTs/TECs	**10**	✓
	Description of the impact on threatened species at risk of an SAII or incidentally observed via site visit	**N/A**	
	Number of ecosystem credits required for impacts on biodiversity values according to BAM Subsection 9	**10.1.1**	✓
	Number of species credits required for impacts on biodiversity values according to BAM Subsection 10.1.3, including any species credit species that has been incidentally observed on the subject land Note: Species credits for any species at risk of an SAII are calculated in the event that the decision-maker forms the opinion that the proposed impact is unlikely to be serious and irreversible and therefore can be offset.	**N/A**	
	Identification of credit class for ecosystem credits and species credits according to BAM Section 10.2 (this can be generated from BAM-C)	**11**	✓
Maps			
Introduction - Chapters 2 and 3	Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure.	**Figure 1**	✓
Landscape - Section 3.1, 3.2 and Appendix E	Site Map • boundary of subject land • cadastre of subject land • landscape features identified in BAM Subsection 3.1.3 • areas of outstanding biodiversity value within the subject land	**Figure 2**	✓
	Location Map - digital aerial photography at 1:1,000 scale or finer boundary of subject land: • 1500 m buffer area *or* 500 m buffer for linear development • landscape features identified in BAM Subsection 3.1.3 • additional detail (e.g., local government area boundaries) relevant at this scale • areas of outstanding biodiversity value within the assessment area	**Figure 2**	✓
	Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or • IBRA bioregions and subregions • rivers, streams and estuaries	**Figure 2**	✓

BAM Reference	Information	BDAR Section	Completed
	• wetlands and important wetlands • connectivity of different areas of habitat • areas of geological significance and soil hazard features		
Native vegetation, TECs and vegetation integrity - Chapter 4	Map of native vegetation extent for the subject land (as described in BAM Section 3.1)	**Figure 8**	✓
	Map of PCT/vegetation zones within the subject land (as described in BAM Section 4.2(1.)	**Figure 9, Figure 12**	✓
	Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	**Figure 12**	✓
	Map of TEC distribution on the subject land	**Figure 11**	✓
	Patch size of native vegetation (as described in BAM Subsection 4.3.2)	**N/A**	
Chapter 5 and Section 9.1	Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAII or incidentally observed during the site visit (as described in BAM Subsection 5.2.5(1–7.))	**NA**	
Prescribed impacts Chapter 6	If relevant, maps showing location of any prescribed impact features (i.e., karst, caves, crevices, cliffs, rocks, humanmade structures, etc.)	**NA**	
Avoid and minimise impacts – Chapter 7	Map of final proposal footprint, including construction and operation	**Figure 3**	✓
	Maps demonstrating indirect impact zones where applicable	**N/A**	
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	No Maps		
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	No Maps		
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Map showing the extent of TECs at risk of an SAII within the subject land	**Figure 14**	✓
	Map showing the location of threatened species at risk of an SAII within the subject land	**N/A**	
	Map showing location of: • impacts requiring offset	**Figure 5, Figure 15**	✓

BAM Reference	Information	BDAR Section	Completed
	• impacts not requiring offset • areas not requiring assessment		
Applying the no net loss standard - Chapter 10	No Maps		
Tables			
Native vegetation, TECs and vegetation integrity - Chapter 4	Table of current vegetation integrity scores for vegetation zone within the site including: • composition condition score • structure condition score • function condition score	**Table 14**	✓
	Report from BAM-C including vegetation integrity scores (BAM Section 4.4)	**Appendix H**	✓
Chapter 5 and Section 9.1	Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and: identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3 identifying the sensitivity to gain class of each species (BAM Section 5.4)	**Table 16**	✓
	Table detailing species credit species within the subject land at risk of an SAII (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2–5.4)	**Table 17**	✓
Prescribed impacts Chapter 6	Table showing the prescribed impacts.	**Table 19**	✓
Avoid and minimise impacts – Chapter 7	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	**Table 20**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	**Table 22**	✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	**Table 25**	✓

BAM Reference	Information	BDAR Section	Completed
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	No Tables		
Applying the no net loss standard - Chapter 10	Table of BC Act listing status for PCTs and threatened species requiring offset	**Table 12**	✓
	Table of PCTs requiring offset and number of ecosystem credits required (Subsection 10.2.1)	**Table 30**	✓
	Table of species at risk of an SAII or incidentally observed on site assessed for species credits and the number of credits required	**N/A**	
	BAM-C credit report	**Appendix H**	✓
Data			
Landscape - Section 3.1, 3.2 and Appendix E	All report maps as separate jpeg files / Individual digital shape files of: • subject land boundary • assessment area (i.e., buffer area) boundary • cadastral boundary of subject land • areas of native vegetation cover • areas of habitat connectivity	Attached Files	✓
Native vegetation, TECs and vegetation integrity - Chapter 4	All report maps as separate jpeg files • Plot field data (MS Excel format) • Digital shape files for all maps and spatial data • Field data sheets (if relevant) for determining vegetation integrity (BAM Subsection 4.3.4)		✓
Chapter 5 and Section 9.1	• Digital shape files of species polygons • Species polygon map in jpeg format • Expert reports and any supporting data used to support conclusions of the expert report • Field data sheets (if relevant) for threatened species surveys		✓

BAM Reference	Information	BDAR Section	Completed
Prescribed impacts Chapter 6	• If relevant, digital shape files of prescribed impact feature locations • Prescribed impact features map in jpeg format		✓
Avoid and minimise impacts – Chapter 7	Digital shape files of: • final proposal footprint • direct and indirect impact zones • Maps in jpeg format		✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2			✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5			✓
Thresholds for assessing and offsetting the impacts of the proposal - Chapter 9	Digital shape files of: extent of TECs at risk of an SAII within the subject land threatened species at risk of an SAII within the subject land boundary of impacts requiring offset boundary of impacts not requiring offset boundary of areas not requiring assessment Maps in jpeg format		✓
Applying the no net loss standard - Chapter 10			✓

Biodiversity Development Assessment Report: Streamlined Assessment Module (Scattered Trees)

BAM Reference	Information	BDAR Section	Completed
Report			
Introduction - Chapters 2 and 3	Introduction to the biodiversity assessment including: • brief description of proposed development • identification of subject land boundary, including: operational footprint and construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure • general description of the subject land	**1.1.1, 1.1.3**	✓
	Sources of information used in the assessment, including reports and spatial data	**1.5**	✓
	Identification of assessment method applied (i.e., linear or site-based)	**2.1**	✓
Landscape - Section 3.1, 3.2 and Appendix E	General description of subject land topographic and hydrological setting, geology and soils	**3.2**	✓
	Percent native vegetation cover in the assessment area (as described in BAM Subsection 3.2(4.)	**3.3**	✓
	IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	**3.2.1**	✓
	Rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3–4.) and Appendix E)	**3.2.2**	✓
	Wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(4.))	**3.2.2**	✓
	Connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	**3.2.3**	✓
	Areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(10.)	**3.2.4**	✓
Definition of scattered trees	Justification of how the trees proposed to be cleared or impacted meet the definition of scattered trees (BAM Appendix B, Section B.1 (a–c))	**2.2.2**	✓
Scattered tree class assessment	Genus and species of each tree impacted.	**8.1.3**	
Chapter 5 and Section 9.1	Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land	**2.4.2**	✓

BAM Reference	Information	BDAR Section	Completed
	Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits	**5.2.1**	✓
	List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2)	**5.2.1**	✓
	Identification of candidate species credit species that are at risk of an SAII and therefore, must be further assessed (BAM Section 9.1). Note: Candidate species credit species that are not at risk of an SAII and not incidentally recorded on the subject land do not require further assessment.	**N/A**	
	For candidate species credit species that are at risk of an SAII, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including: • justification for determining that a candidate species credit species at risk of an SAII is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM) • determination of the presence of remaining candidate species credit species at risk of an SAII (by assuming presence, conducting a threatened species survey or an expert report).	**N/A**	
	Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAII or incidentally observed during the site visit (Step 6 of BAM Section 5.2)	**N/A**	
	For flora species credit species at risk of an SAII or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(4.))	**N/A**	
Prescribed impacts Chapter 6	Any prescribed impacts from the scattered tree proposal must be set out in the BDAR consistent with Appendix K	**8.3**	✓
Avoid and minimise impacts – Chapter 7	Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative: • modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology • alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	**7.1, 7.2**	✓

BAM Reference	Information	BDAR Section	Completed
	• alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site		
	Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Subsections 7.1.2 and 7.2.2	**7.1, 7.2**	✓
	Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.)	**7.1, 7.2**	✓
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	Determine the impacts on native vegetation and threatened species habitat, including: • description of direct impacts of clearing of scattered trees and threatened ecological communities (as described in BAM Section 8.1) • description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2	**8.1, 8.2**	✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Subsections 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.): • techniques, timing, frequency and responsibility • identify measures for which there is risk of failure • evaluate the risk and consequence of any residual impacts • document any adaptive management strategy proposed	**8.4**	✓
	Identification of measures for mitigating impacts related to: • displacement of resident fauna (as described in BAM Subsection 8.4.1) • indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.)) • mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	**8.4**	✓
	Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	**N/A**	
Offset requirements	• Record of results of visual assessment (field based) of all class 2 and 3 scattered trees for hollows • Record the number of ecosystem credits required for clearing all class 2 and 3 scattered trees	**8.1.3**	✓
Maps			
Introduction - Chapters 2 and 3	Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure.	**Figure 1**	✓
	• Site Map	**Figure 2**	✓

BAM Reference	Information	BDAR Section	Completed
Landscape - Section 3.1, 3.2 and Appendix E	• boundary of subject land • cadastre of subject land • landscape features identified in BAM Subsection 3.1.3 • areas of outstanding biodiversity value within the subject land		
	• Location Map - digital aerial photography at 1:1,000 scale or finer boundary of subject land • 1500 m buffer area *or* 500 m buffer for linear development • landscape features identified in BAM Subsection 3.1.3 • additional detail (e.g., local government area boundaries) relevant at this scale • areas of outstanding biodiversity value within the assessment area	**Figure 2**	✓
	Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or • IBRA bioregions and subregions • rivers, streams and estuaries • wetlands and important wetlands • connectivity of different areas of habitat • areas of geological significance and soil hazard features	**Figure 2**	✓
Scattered Tree Assessment	Map of scattered trees proposed to be cleared or impacted on the Subject Land	**Figure 10**	✓
Chapter 5 and Section 9.1	Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAII or incidentally observed during the site visit (as described in BAM Subsection 5.2.5(1–7.))	**NA**	
Prescribed impacts Chapter 6	If relevant, maps showing location of any prescribed impact features (i.e., karst, caves, crevices, cliffs, rocks, humanmade structures, etc.)	**NA**	
Avoid and minimise impacts – Chapter 7	Map of final proposal footprint, including construction and operation	**Figure 3**	✓
	Maps demonstrating indirect impact zones where applicable	**N/A**	
Assessment of Impacts - Chapter 8, Section 8.1 and 8.2	No Maps		
Mitigation and Management of Impacts -	No Maps		

BAM Reference	Information	BDAR Section	Completed
Chapter 8, Section 8.4 and 8.5			
Tables			
Scattered tree class assessment	Table of scattered trees proposed to be cleared or impacted	**Table 18**	✓
Assessment of entities at risk of an SAII	Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and: identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3 identifying the sensitivity to gain class of each species (BAM Section 5.4)	**Table 23**	✓
	Table detailing species credit species within the subject land at risk of an SAII (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2–5.4)	**N/A**	
Prescribed impacts Chapter 6	Table showing the prescribed impacts.	**Table 19**	✓
Avoid and minimise impacts – Chapter 7	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	**Table 20**	✓
Mitigation and Management of Impacts - Chapter 8, Section 8.4 and 8.5	Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	**Table 25**	✓
Data			

BAM Reference	Information	BDAR Section	Completed
Landscape - Section 3.1, 3.2 and Appendix E	All report maps as separate jpeg files / Individual digital shape files of: • subject land boundary • assessment area (i.e., buffer area) boundary • cadastral boundary of subject land • location of scattered trees	Attached Files	✓
Prescribed impacts Chapter 6	If relevant, digital shape files of prescribed impact feature locations Prescribed impact features map in jpeg format		✓
Avoid and minimise impacts – Chapter 7	Digital shape files of: • final proposal footprint • direct and indirect impact zones • Maps in jpeg format		✓

Appendix B: Biodiversity Values Map and Threshold tool report

Department of Planning and Environment

Biodiversity Values Map and Threshold Report

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

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

There are two pathways for determining whether a BDAR is required for the proposed development:

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

Biodiversity Values Map and Threshold Report

Date of Report Generation		21/05/2025 4:39 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	**Does the development Footprint intersect with BV mapping?**	yes
1.2	Was ALL BV Mapping within the development footprinted added in the last 90 days? (dark purple mapping only, no light purple mapping present)	no
1.3	**Date of expiry of dark purple 90 day mapping**	N/A
1.4	**Is the Biodiversity Values Map threshold exceeded?**	yes
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	**Size of the development or clearing footprint**	2,229,253.5 sqm
2.2	**Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint)	118,762.1 sqm
2.3	**Method for determining Minimum Lot Size**	Lot size
2.4	**Minimum Lot Size** (10,000sqm = 1ha)	569 sqm
2.5	**Area Clearing Threshold** (10,000sqm = 1ha)	2,500 sqm
2.6	**Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance)	yes
REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area? (Your local council will determine if a BDAR is required)		**yes**

What do I do with this report?

• If the result above indicates the BOS Threshold has been exceeded, your local council may require a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor.

• If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is '"likely to significantly affect threatened species" as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.

• If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.

• If all Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

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

Review Options:

• If you believe the Biodiversity Values mapping is incorrect please refer to our BV Map Review webpage for further information.

• If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the Guide for reviewing area clearing threshold results from the BMAT Tool.

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: _____

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

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Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the Biodiversity Values Map webpage.

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the Biodiversity Values Map Review webpage.

If you need help using this map tool see our Biodiversity Values Map and Threshold Tool User Guide or contact the Map Review Team at map.review@environment.nsw.gov.au or on 1800 001 490.

Biodiversity Values Map

4,049.9 0 2,024.95 4,049.9 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.

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

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

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

Appendix C: Other Legislation

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 3 Koala Habitat Protection 2020

The Subject Land occurs on land zoned RU1 within the Mid-Western Council LGA and comprises more than one (1) hectare. Therefore, potential impacts to Koala must be assessed under the provisions of *State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 3 Koala Habitat Protection 2020 – Part 3.2 Development controls for Koala habitat* as follows.

3.6 Step 1—Is the land potential koala habitat?

"(1) Before a council may grant consent to a development application for consent to carry out development on land to which this Part applies, the council must be satisfied as to whether or not the land is a potential koala habitat.

(2) The council may be satisfied as to whether or not land is a potential koala habitat only on information obtained by it, or by the applicant, from a person who is qualified and experienced in tree identification.

(3) If the council is satisfied—

(a) that the land is not a potential koala habitat, it is not prevented, because of this Chapter, from granting consent to the development application, or

(b) that the land is a potential koala habitat, it must comply with section 3.7."

Under section *3.2 Definitions* of *State Environmental Planning Policy (Biodiversity and Conservation) 2021 Chapter 3 Koala Habitat Protection 2020* (BC SEPP): "*potential koala habitat means areas of native vegetation where trees of the types listed in Schedule 1 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component*".

The following trees are listed under Schedule 1 of the BC SEPP:

- *Eucalyptus tereticornis*
- *Eucalyptus microcorys*
- *Eucalyptus punctata*
- *Eucalyptus viminalis*
- *Eucalyptus camaldulensis*
- *Eucalyptus haemastoma*
- *Eucalyptus signata*
- *Eucalyptus albens*
- *Eucalyptus populnea*
- *Eucalyptus robusta*

No trees listed under Schedule 1 were identified within the Subject Land, and as such the site does not constitute potential Koala habitat. No further assessment is required under the SEPP.

Appendix D: Determination of excluded impacts

AEP

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NEWCASTLE SYDNEY

Land Category Assessment

204 Jacksons Lane, Stubbo, NSW

Prepared for: Elgin Energy Pty Ltd
C/- Urbis

21 May 2025

AEP Ref: 3345
Revision: 03

Newcastle | Sydney
10 Darvall St Carrington 2294 | 275 Stanmore Rd Petersham 2049
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Document Control

Document Name	Land Category Assessment for 204 Jacksons Lane, Stubbo, NSW
Project Number	3345
Client Name	Elgin Energy Pty Ltd C/- Urbis
AEP Project Team	Ian Benson Darcy Kilvert Edouard Loisance Joelan Sawyer Tim Mouton (former staff)

Revision

Revision	Date	Author	Reviewed	Approved
01	15/04/2024	Joelan Sawyer	Darcy Kilvert	Darcy Kilvert
02	23/08/2024	Joelan Sawyer	Darcy Kilvert	Ian Benson
03	21/05/2025	Joelan Sawyer	Darcy Kilvert	Ian Benson

Distribution

Revision	Date	Name	Organisation
01	15/04/2025	Pablo Yague	Urbis
02	23/08/2024	Pablo Yague	Urbis
03	21/05/2025	Pablo Yague	Urbis

Contents

Tables

Figures

Appendices

1.0 Introduction

Anderson Environment & Planning (AEP) have been engaged by Urbis on behalf of Elgin Energy Pty Ltd (The Proponent) to undertake the necessary investigations to inform land category mapping at 204 Jacksons Lane, Stubbo NSW (refer **Figure 1**), to inform ecological assessment associated with SSD-60074458.

This document details the works and efforts undertaken to delineate vegetation categorisation within the site. This assessment has been undertaken with reference to the *Local Land Services Act 2013* (LLS Act), *Local Land Services Regulation 2014* (LLS Reg) and the *Biodiversity Conservation Act 2016* (BC Act).

Section 6.8(3) of the BC Act provides:

> *(3) The biodiversity assessment method is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on category 1-exempt land (within the meaning of Part 5A of the Local Land Services Act 2013), other than any impacts prescribed by the regulations under section 6.3.*
> ***category 1-exempt land** means areas of the State to which this Part applies designated as category 1-exempt land on the native vegetation regulatory map.*
> ***category 2-regulated land** means areas of the State to which this Part applies designated as category 2-regulated land on the native vegetation regulatory map (including category 2-vulnerable regulated land that is so designated).*
> ***60E Purpose of native vegetation regulatory map***
> *The purpose of the native vegetation regulatory map is to designate areas of the State to which this Part applies—*
>
> > *(a) where the clearing of native vegetation is not regulated under this Part (category 1-exempt land), and*
> > *(b) where the clearing of native vegetation is regulated under this Part (category 2-regulated land), and*
> > *(c) where the clearing of native vegetation is regulated under this Part but (because of its vulnerability) is subject to additional restrictions and extended to the clearing of dead and non-native plants (category 2-vulnerable regulated land).*

At the time of writing, the Native Vegetation Regulatory (NVR) Map has not been finalised, and two maps have been produced for transitional period:

- (no legal effect) Draft NVR Map;
    - Includes mapping for *Category 1 – exempt land* (Category 1 Land) and *Category 2 – regulated land* (Category 2 Land)
- (in force) Transitional NVR Map;
    - Includes mapping for Category 2 land; and
    - Covers the entirety of NSW.

This assessment commenced prior to the release of the Draft NVR Map within the locality, and ground-truthing was undertaken in reference to the Transitional NVR Map. Revision 1 of this report was provided to BCS and the following recommendation as provided:

> *Provide the reasoning and evidence used to support a Category 1 - Exempt land designation for land mapped as Category 2 on the draft NVR map. Otherwise ensure the BAM is applied to all land mapped as Category 2.*

Recommendations from BCS (now CPHR) have been incorporated into this report, including further justifications for land categorisation.

In the response to submissions for SSD-60074458, BCS have recommended that the presence of the CEEC *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland - Critically Endangered Ecological Community* (Box Gum Woodland) be considered within the Subject Site. AEP have amended the vegetation mapping to include PCT 281 which is associated with the CEEC, and an assessment of grassland vegetation against the relevant listing criteria has been undertaken in **Section 3.1.1**.

The majority of the Subject Site is not classified under the Transitional NVR Map, except for a small portion in the northeast of the site associated with Slapdash Creek which is mapped as Category 2 Land (**Figure 2**). The Subject Site is mapped as Category 1 and Category 2 Land within its boundaries, as shown on the Draft NVR Map (**Figure 3**).

This report outlines the processes used to map Category 1 and Category 2 land within the Subject Site.

AEP

Figure 1 - Site Location

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

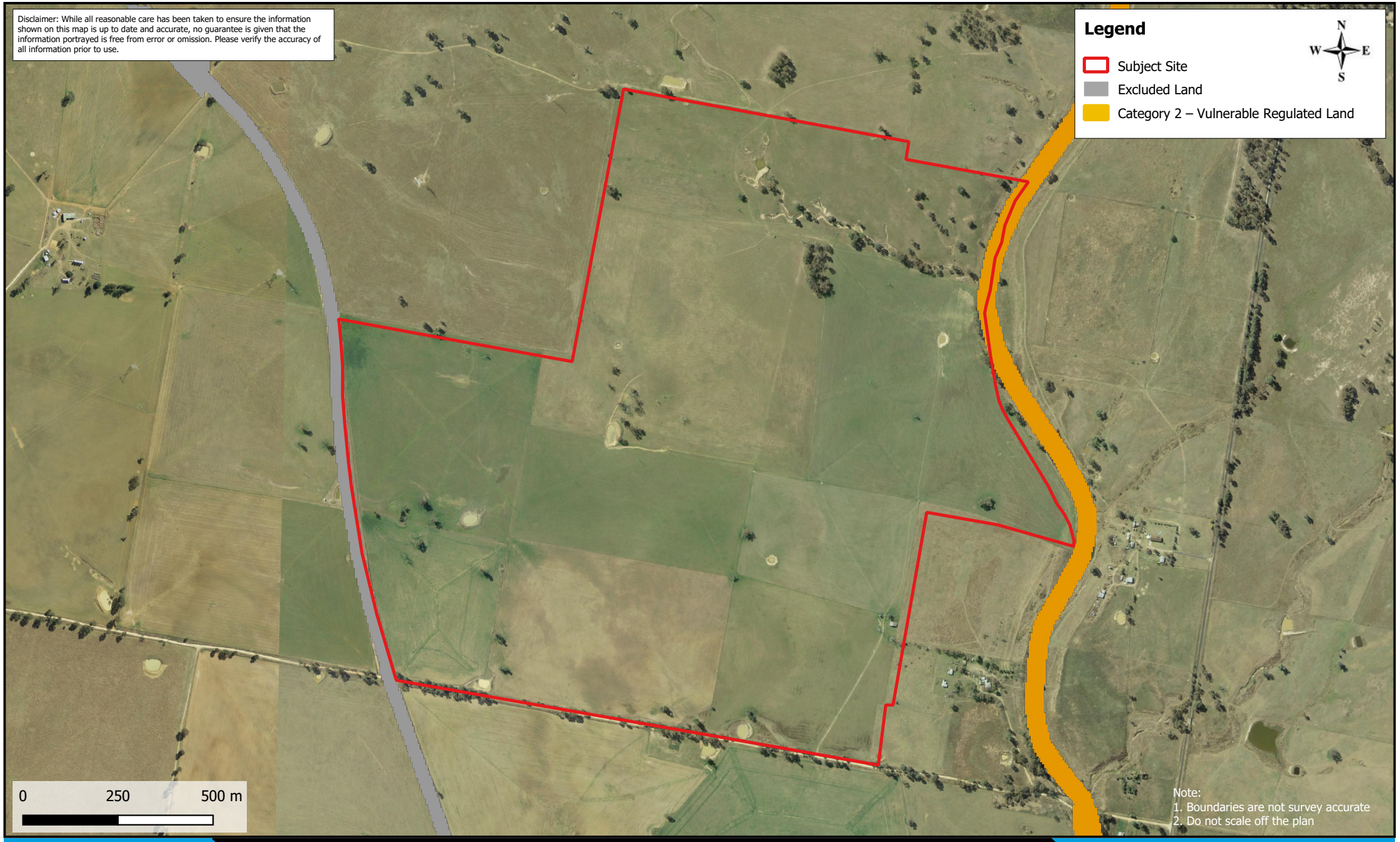

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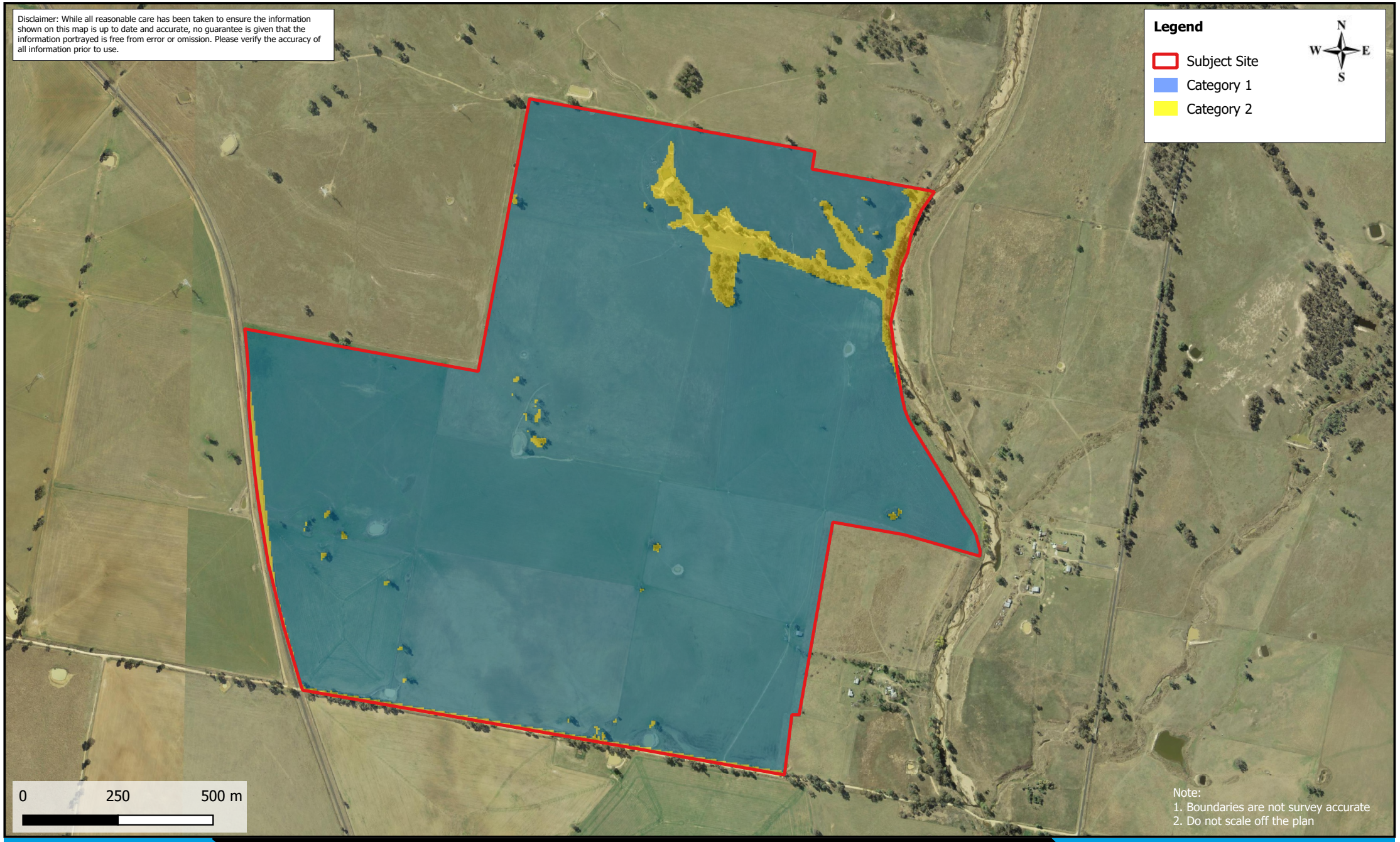
Figure 2 - Transitional NVR Map

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345



AEP

Figure 3 - Draft NVR Map

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

2.0 Methodology

2.1 Considerations of the LLS Act

Both Category 1 and Category 2 lands are defined within the LLS Act. The specific criteria of each category have informed the assessment method.

Category 1-exempt land is defined in Part 5A, Division 2 (60H) of the LLS Act as:

> *(1) Land is to be designated as category 1-exempt land if the Environment Agency Head reasonably believes that—*
>
> *(a) the land was cleared of native vegetation as at 1 January 1990, or*
>
> *(b) the land was lawfully cleared of native vegetation between 1 January 1990 and the commencement of this Part.*
>
> *(2) Land is to be designated as category 1-exempt land if the Environment Agency Head reasonably believes that—*
>
> *(a) the land contains low conservation value grasslands, or*
>
> *(b) the land contains native vegetation that was identified as regrowth in a property vegetation plan referred to in section 9 (2) (b) of the Native Vegetation Act 2003, or*
>
> *(c) the land is of a kind prescribed by the regulations as category 1-exempt land.*
>
> *(3) Land is to be designated as category 1-exempt land if the land is biodiversity certified under Part 8 of the Biodiversity Conservation Act 2016 or under any Act repealed by that Act.*

Category 2-regulated land is defined in Part 5A, Division 2 (60I) of the LLS Act as:

> *(1) Land is to be designated as category 2-regulated land if the Environment Agency Head reasonably believes that—*
>
> *(a) the land was not cleared of native vegetation as at 1 January 1990, or*
>
> *(b) the land was unlawfully cleared of native vegetation after 1 January 1990.*
>
> *(2) Land is to be designated as category 2-regulated land if the Environment Agency Head reasonably believes that—*
>
> *(a) the land contains native vegetation that was grown or preserved with the assistance of public funds (other than funds for forestry purposes), or*
>
> *(b) the land is eligible for designation as category 2-vulnerable regulated land, or*
>
> *(c) the land is subject to a private land conservation agreement under the Biodiversity Conservation Act 2016, or*
>
> *(d) the land is subject to be set aside under a requirement made in accordance with a land management (native vegetation) code under this Part, or*
>
> *(e) the land contains grasslands that are not low conservation value grasslands, or*
>
> *(f) the land is or was subject to a requirement to take remedial action to restore or protect the biodiversity values of the land under this Part or the Biodiversity Conservation Act 2016 or under the Native Vegetation Act 2003 or the National Parks and Wildlife Act 1974, or*
>
> *(g) the land is subject to an approved conservation measure that was the basis for other land being biodiversity certified under Part 8 of the Biodiversity Conservation Act 2016 or under any Act repealed by that Act, or*
>
> *(h) the land is an offset under a property vegetation plan under the Native Vegetation Act 2003 or is a set aside under a Ministerial order under Division 3 of Part 6 of the Native Vegetation Regulation 2013, or*
>
> *(i) the land is in the coastal wetlands and littoral rainforests area of the coastal zone referred to in the Coastal Management Act 2016, or*

(j) the land is identified as koala habitat (of a kind prescribed by the regulations) in a plan of management made under State Environmental Planning Policy No 44—Koala Habitat Protection, or
(k) the land is a declared Ramsar wetland within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth, or
(l) the land has (subject to the regulations) been mapped by the Environment Agency Head as land containing critically endangered species of plants under the Biodiversity Conservation Act 2016, or
(m) the land has been mapped by the Environment Agency Head as land containing a critically endangered ecological community under the Biodiversity Conservation Act 2016, or
(n) the land is of a kind prescribed by the regulations as category 2-regulated land.

Information and spatial data provided within the assessment have been compiled from various sources including:

- Aerial Photograph Interpretation (API) of the Subject Site and surrounding locality (current and historical);
- Current and historical photographs of the Subject Site;
- Survey data collected by AEP within the Subject Site;
- Approval documentation and/or statutory declarations demonstrating history of authorisation of clearing and/or development on the Subject Site;
- State Vegetation Type Map;
- Draft and Transitional Native Vegetation Regulatory (NVR) Mapping;
- Land-use mapping which identifies existing and historical agricultural land use in New South Wales under the Australian Land Use and Management (ALUM) Classification as shown in the NSW Landuse Mapping (2017);
- NSW Woody Vegetation Extent;
- DCCEEW Threatened Species, Populations and Ecological Communities website; and
- Collective knowledge gained from previous ecological survey and assessment over the past 25 years.

2.2 Cleared Land

Land can be designated as Category 1 if it was cleared of native vegetation as of 1 January 1990. This classification is typically applied to areas where there is clear evidence of the complete removal of all trees and shrubs before 1990.

Analysis of historical aerial from 1964 and 1988 (**Figures 4 & 5**) shows the majority of the site as cleared with scattered paddock trees, and small patches of native vegetation along the riparian corridor and centre of the site. The Subject Site is situated in an agricultural area that has historically been used for cropping, grazing and other agricultural purposes. The NSW Landuse mapping identifies the majority of the site as containing 'Cropping land' with areas in the north-west of the site containing 'Grazing native vegetation' and 'Grazing modified pastures' (refer **Figure 6**).

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Figure 4 - Historic Aerial Imagery (1964)

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

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Figure 5 - Historic Aerial Imagery (1988)

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

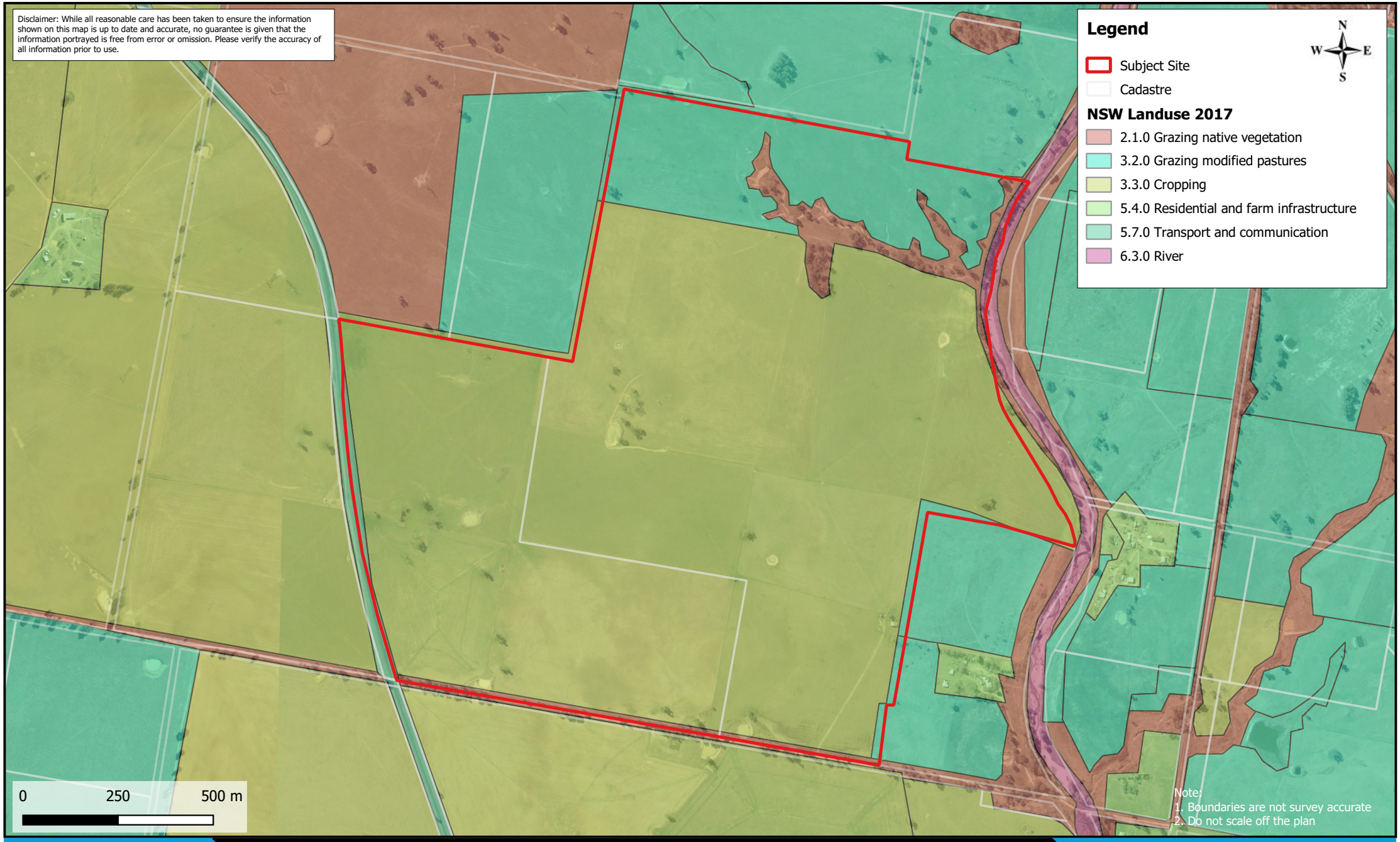

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Figure 6 - NSW Landuse 2017

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

2.3 Field Survey

2.4 Vegetation Assessment

Flora Assessments were undertaken by Joelan Sawyer (BSc (Bio), BAAS23016) and Tim Mouton (BEnvSc, BAAS19083) who have 7 and 16-years' experience undertaking flora surveys in NSW respectively.

Vegetation was surveyed within the site utilising a variety of methods including:

- Consideration of regional mapping for the site by SVTM (DCCEEW, 2024);
- Aerial Photo interpretation (API) to identify any notable variations within the site;
- A total of 15 BAM plots as prescribed by the Biodiversity Assessment Method (DPIE 2020a) were undertaken throughout the site to record floristic composition, structure and function, including seven (7) plots in grassland areas; and
- A total of seven (7) transects as prescribed by the Interim Grasslands and other Groundcover Assessment Method (IGGAM) (OEH 2017).

In October 2023, AEP ecologists conducted a site assessment to identify areas of native vegetation. This vegetation was ground-truthed using vegetation integrity plots to verify the presence of native vegetation. During this assessment, areas of treed native vegetation that had not been cleared before 1990 were identified within the site which as not consistent with Category 1 Land. Areas of exotic dominant grassland were identified and assessed using IGGAM methodology. The IGGAM outlines the methodology for assessing the conservation value of grassland vegetation, categorising it into three levels:

- Low conservation value;
- Moderate conservation value; and
- High conservation value.

For an area of land to qualify as Category 1-exempt, grassland vegetation must satisfy the criteria for low conservation value.

The assessment process for Land Categorisation is divided into three stages:

- Stage 1: Assessment of suitability - is an assessment of whether this method is appropriate to use. This includes if the vegetation meets the definition of 'groundcover vegetation;
- Stage 2: Exotic assessment - is an assessment of exotic perennial cover using a transect-intercept method to determine whether vegetation is regarded as native vegetation or not; and
- Stage 3: Native species assessment - is an assessment of vegetation condition relative to the PCT benchmark using the vegetation integrity method.

Grassland areas identified in Stage 1 were assessed using the exotic assessment (Stage 2) to assess the proportion of exotic perennial and native vegetation. The following methodology was employed:

- Establishing points on a map, and establishing transects around points. Transects were placed at the location of each grassland vegetation plots to ensure sufficient coverage.
- Walking a random distance into the vegetation zone and establishing the transect in a random direction at this point; and
- Recording the 'hits' of each exotic perennial or native species.

Transects were spaced at 1m intervals for 100m, and the presence of each exotic perennial and/or native species was recorded every metre. The results have been averaged and are presented in **Table 1**.

2.5 Riparian Assessment

As described in the Land categories and the Land Management Framework Factsheet, protected riparian areas constitute a component of Category 2 land. An evaluation of riparian areas across the site was conducted using the Waterfront land e-tool (DPIE). This assessment involved the identification of hydrological features, including erosion, the presence of a bed and bank, swales, and other indicators signifying the existence of waterfront land.

3.0 Results

3.1 Vegetation Communities

Fieldwork was conducted to identify flora species and determine the occurrence of any Plant Community Types (PCTs) on the Subject Site. Vegetation within the Subject Site is largely characterised as agricultural grassland, containing exotic dominant vegetation. Site conditions reflected historical imagery, with scattered paddock trees and small patches of native vegetation as shown in **Figure 7**.

The vegetation zones on site were identified as:

- PCT 78 - *River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion* (approx. 1.14ha);
    - Not associated with any threatened ecological communities;
- PCT 201 - *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion* (approx. 7.69ha);
    - Associated with the BC Act listed Endangered Ecological Community: *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions;*
- PCT 281 - *Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion* (approx. 2.92ha)
    - Associated with BC Act listed Critically Endangered Ecological Community: *White Box - Yellow Box – Blakelys 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 Riverina Bioregions* (Box Gum Woodland);
    - Associated with EPBC Act listed Critically Endangered Ecological Community: *White Box-Yellow Box-Blakelys Red Gum Grassy Woodland and Derived Native Grassland*
- Exotic Dominant Grassland (approx. 210ha)

Vegetation categorised as PCT 78, PCT 201 and PCT 281 broadly corresponds to the pre-1990 existing vegetation, and does not meet the criteria for Category 1 land. For the purposes of this assessment, it is designated as Category 2 land. A total of seven (7) grassland plots were undertaken in exotic dominant grassland. The highest native cover observed was 25.5%, with an average across all seven plots being 6.5%. It is noted that that presence of *Cynodon sp.* (either *Cynodon dactylon* (Couch) or a *Cynodon* cultivar; in either case used for pasture improvement) increased native cover scores. The highest count of native hits occurred in Transect 5, with 42 native hits as opposed to 66 hits of exotic perennials. Across all transects, the average number of native hits was approximately 16, while the average for exotic perennial hits was approximately 69.

Table 1: Transect-intercept Data Sheet

Transect	Native Hits	Exotic Perennial Hits
1	20	56
2	1	81
3	13	78

Transect	Native Hits	Exotic Perennial Hits
4	17	71
5	42	66
6	15	54
7	5	76
Average	**16.1**	**68.9**

The data was entered into the IGGAM Calculator, utilising PCT 281 due to its identification in the remnant vegetation surrounding the grassland, indicating it as the likely historical vegetation community within this area. The resulting VIS score was 8.7, indicating a low conservation value. Scores below 15 are categorised as low, as shown below.

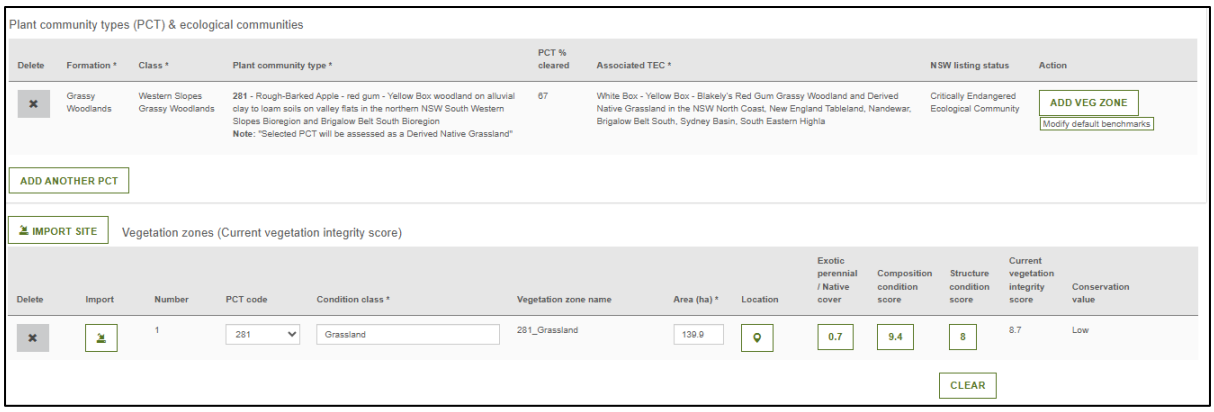

Plate 1: GGAM Calculator Output

It is noted that critically endangered communities meet the criteria of Category 2 Land. PCT 281 has been assessed as associated with the BC Act listed CEEC Box Gum Woodland. An assessment is undertaken below for the association of grassland areas with the final determination of this community.

3.1.1 CEEC Assessment

An assessment has been undertaken to determine whether the exotic-dominant grassland areas within the site meet the criteria for the following Critically Endangered Ecological Communities (CEECs):

- NSW BC Act-listed CEEC: *White Box - Yellow Box – Blakelys 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 Riverina Bioregions* (Box Gum Woodland)
- Commonwealth EPBC Act-listed CEEC: *White Box-Yellow Box-Blakelys Red Gum Grassy Woodland and Derived Native Grassland*

Under the EPBC Act, the approved Conservation Advice (TSSC 2023) outlines specific key diagnostic characteristics that must be met for an area to be considered part of the listed community. One such diagnostic is that the ground layer must be predominantly native, defined as having at least 50% of the perennial vegetation cover comprised of native species. As shown in **Appendix C**, the grassland areas are dominated by exotic species, and do not meet this requirement. Therefore, the grassland vegetation does not qualify as the EPBC Act-listed CEEC.

While the NSW Final Determination (TSSC 2020) does not set out fixed thresholds for native cover, it provides guidance on recognising the community and describes factors that may lead to the loss of ecological function, resulting in a non-viable state.

> *Part 3.1.2*
>
> *The loss of detectable tree cover is a reasonably reliable proxy for overall decline of community distribution because there is evidence that the removal of trees has historically been associated with other land management practices that have been transformative of the ecological community as a whole. However, the loss of tree cover alone does not preclude continued ecological function. Loss of understory diversity may also be symptomatic of loss of function, however the extent to which this reflects a permanent or temporary loss depends on the mechanism and severity of disturbance as well as any measures that are undertaken to reverse decline."*

This statement indicates that the absence of trees alone does not necessarily exclude an area from being part of the CEEC, provided that ecological function, particularly a diverse and characteristic groundcover, is maintained or recoverable. Grassland areas that meet this characteristic would constitute derived native grasslands, and the presence of characteristic species and potential for natural regeneration needs to be considered.

Survey results recorded a total of 44 species within the grassland plots, of which only 11 species were native. Among these, only three species (*Microlaena stipoides*, *Sporobolus creber*, and *Wahlenbergia communis*) are listed as characteristic species in the Final Determination (refer **Appendix C**). For intact examples of the community, the groundcover is expected to be dominated by perennial native tussock grasses interspersed with a diverse range of forb species from families such as Asteraceae and Fabaceae, and orders such as Liliales and Asparagales. These structural and floristic attributes were not observed within the assessed grassland vegetation.

Furthermore, agricultural practices are identified as a key threat to the persistence of the community, with the Final Determination noting that:

> *Restoration of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland or Derived Native Grassland following conversion to cropping is unlikely.*

Site inspections identified the presence of the exotic cover crop *Lolium perenne*, and confirmed that the site has been subject to ongoing grazing and cropping practices. Historical imagery from as early as 1964 depicts the site in an agricultural condition similar to that observed today, suggesting a long-term disturbance regime that would have severely diminished or eliminated the native soil seedbank necessary for natural regeneration.

Considering the long-term agricultural management, low native species richness, absence of key diagnostic species, dominance of exotic species, and the lack of regeneration potential, the grassland areas within the site are assessed as being too degraded to qualify *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.

Accordingly, the exotic-dominant grassland areas are not considered commensurate with the listed Critically Endangered Ecological Community.

3.2 Riparian Assessment

The riparian assessment identified the presence of a riparian zone along the north-east boundary of the site, characterised by a headwater stream originating within the site and flowing eastward. Watercourses and their corresponding VRZ's do not constitute Category 1 Land. Riparian zones are depicted in **Figure 7**.

3.3 Database Searches

Searches of databases within the Mid-Western Regional Local Government Area were undertaken in the TBDC (DCCEEW 2024a) and a likelihood of occurrence assessment was undertaken to determine the likelihood of critically endangered flora species occurring within grassland areas. The potential for critically endangered flora species is considered in **Table 2.**

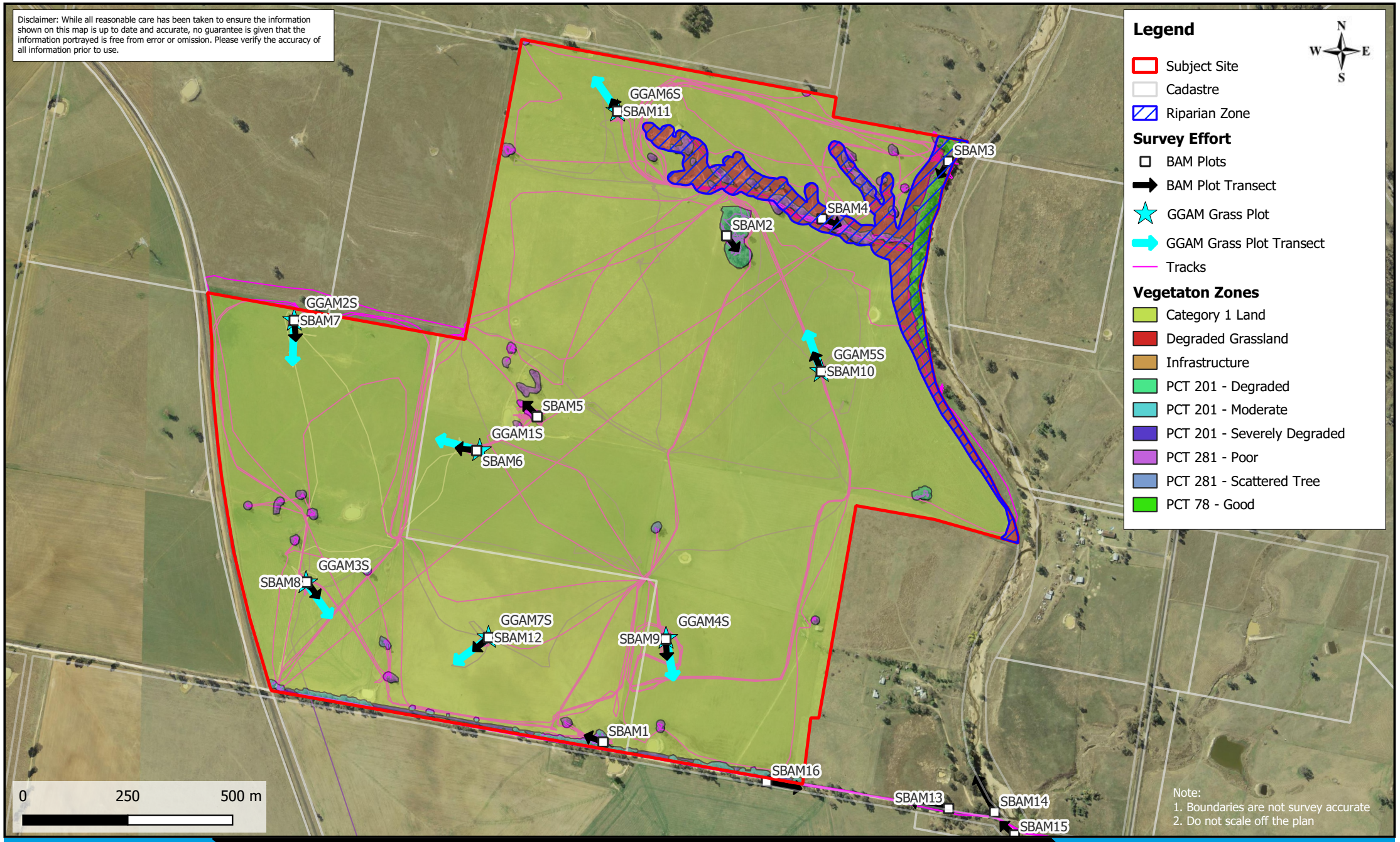

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Figure 7 - Survey Effort

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

Table 2: Threatened Species Appraisal

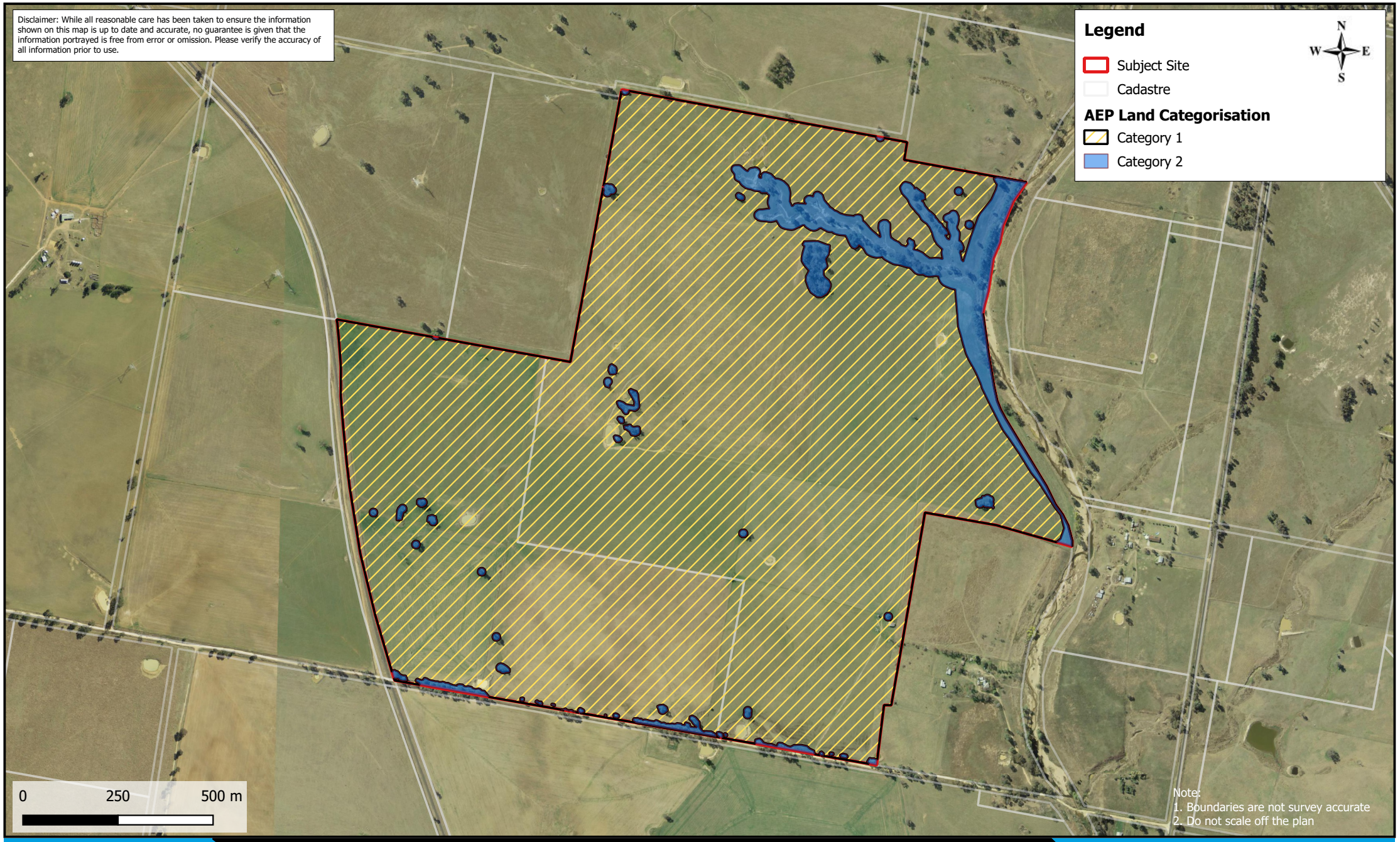
Scientific Name	Common Name	BC Act Status*	EPBC Act status**	BioNet Records	Likelihood of Occurrence
Caladenia attenuata	Duramana Fingers	E	CE	3	A total of three (3) records from 2022 have been recorded with the Mid-Western LGA, approximately 47km southeast of the Subject Site. This species has a highly restricted distribution and the area of occupancy is estimated to be 8km^2. Little is known regarding the ecology of *Caladenia attenuata*, however, considering its highly restricted occupation and distance from the Subject Site, it is not considered likely to occur especially in such a modified site such as the Subject Lands. Grasslands assessed as Category 1 Land are highly modified, and subject to cropping and grazing.
Euphrasia arguta	-	E	CE	2	A total of two (2) BioNet records are located approximately 49km southeast of the Subject Site. These specimens were recorded in 1890 and 1892, with no additional specimens recorded within the LGA since this time. This species has been documented in open forest and grassy areas near Bathurst, and it has been observed that populations are declining at sites subject to ongoing disturbance. Given the level of disturbance at the site and the absence of recent local records, the species is not considered likely to occur within Category 1 Lands

*BC Act status: CE: critically endangered, E: endangered, V: vulnerable, P: protected

**EPBC Act status: CE: critically endangered, E: endangered, V: vulnerable, CD: conservation dependent.

3.4 Land Category Assessment

Land categorisation has been conducted using the methods described above. Areas characterised by exotic-dominant grassland, and possessing low conservation value, have been designated as Category 1 Land. Self-assessed land categorisation is illustrated in **Figure 8**.



AEP

Figure 8 - Land Category Assessment

Date: May 2025

Location: 204 Jacksons Lane, Stubbo

Client: Urbis

AEP ref: 3345

3.5 Consistency with Draft NVR Map

Following assessment of land categorisation, lands within 204 Jacksons Lane Stubbo were included with the Draft NVR Map. The assessment made by AEP generally aligns with the Draft NVR Map. A larger area of the site than that shown in the draft mapping has been mapped and assessed Category 2, including more granular mapping around scattered trees, and riparian lands associated with Slapdash Creek and its tributaries.

A small portion of land assessed as Category 1 by AEP (approx. 0.1ha) has been mapped as Category 2 Land in the Draft NVR Map and is shown in **Plate 2** below. At the time of assessment, this area was considered consistent with adjoining areas and the vegetation composition is considered to be reflected in the BAM plots and IGGAM transects undertaken

Plate 2: Grassland Mapped as Category 2 (Draft NVR)

Additionally, a small area (approximately 0.007ha) within the central portion of the site is mapped as Category 2 Land. Analysis of historical imagery (**Plate 3**) indicates that a tree was present at this location. Comparing Six Maps imagery from 2011, a tree is still visible at this location, and appears to lack canopy, suggesting this tree was either dead or in the process of dieback. Google satellite imagery from 2024 shows the tree is no longer present at this location, indicating that the stag was likely removed or fell over due to its deteriorated condition.

Plate 3: Scattered Tree.
Top Left: *Historical Imagery from 1998.* Top Right: *Six Maps Imagery from 2012*. Bottom: *Google Earth Imagery from 2024*.

4.0 Conclusion

An evaluation against the pertinent criteria outlined in the LLS Act, employing the IGGAM methodology, has led to the classification of Category 1 and Category 2 lands within the Subject Site. Ground-truthed surveys in conjunction with historical imagery analysis, demonstrated that vegetation is generally commensurate with the LLS Draft NVR Map. Grassland vegetation that has a low conservation value, and doesn't meet the criteria for Category 2 land is considered to be commensurate with Category 1 – Exempt Land.

5.0 References

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TSSC (2020) Notice of and reason for the Final Determination - 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 Riverina Bioregions as a CRITICALLY ENDANGERED ECOLOGICAL COMMUNITY in Part 1 of Schedule 2 of the Act. NSW Threatened Species Scientific Committee.

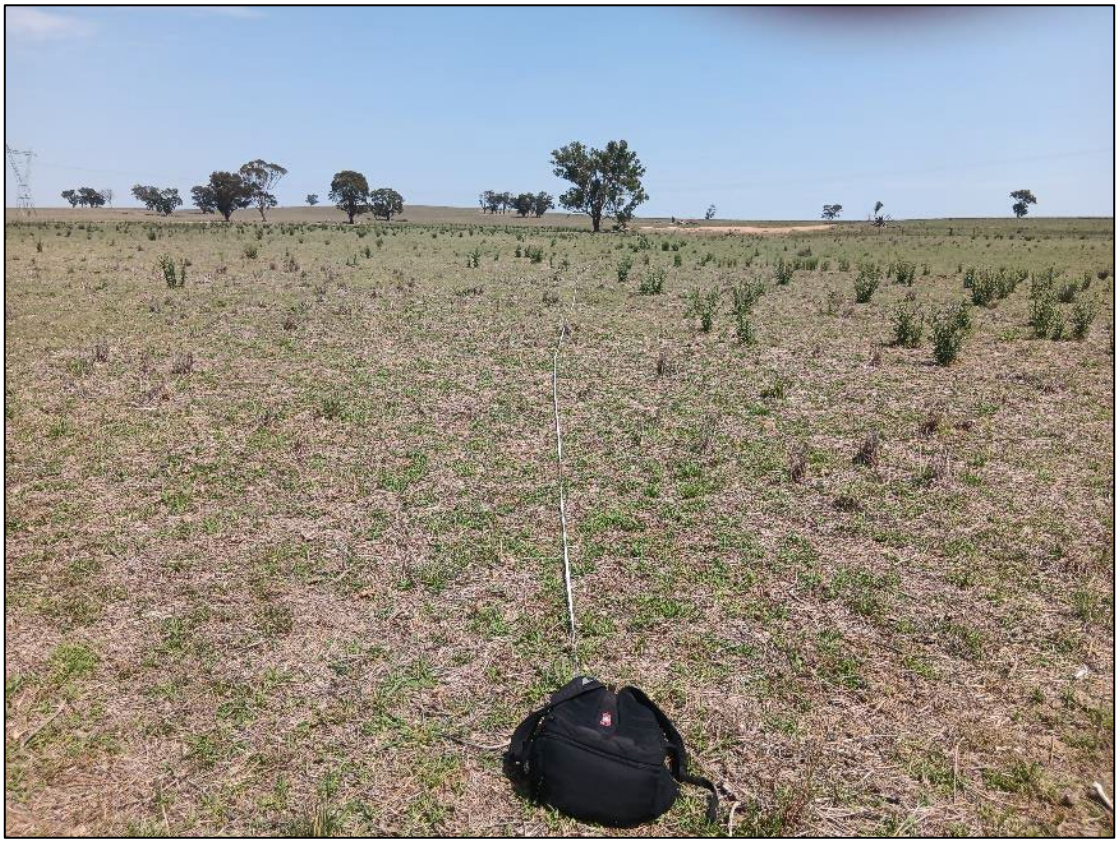
Appendix A: Photographs

Above: Transect 1

Below: Transect 2

Above: Transect 3

Below: Transect 4



Above: Transect 5

Below: Transect 6

Above: Transect 7

Appendix B: Transect Data

Plot 1	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 2	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 3	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 4	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 5	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 6	Native groundcover	Exotic perennial groundcover	Non-vegetation	Plot 7	Native groundcover	Exotic perennial groundcover	Non-vegetation
1			Bare ground	1		Exotic Grass		1		*Avena barbata*		1			Bare ground	1		*Rumex acetosella*		1		*Hypochaeris glabra*		1			Bare ground
2		*Paronychia brasiliana*		2		*Lepidium bonariense*		2		*Setaria parviflora*		2		Crop Species Unknown		2		*Rumex acetosella*		2		*Setaria parviflora*		2		*Setaria parviflora*	
3			Bare ground	3		*Avena sativa*		3		*Setaria parviflora*		3			Bare Ground	3		*Rumex acetosella*		3			Bare ground	3		*Lolium perenne*	
4		*Echinocloa colona*		4		*Avena sativa*		4		*Setaria parviflora*		4	*Dysphania pumilio*			4			Bare ground	4			Bare ground	4		*Lolium perenne*	
5		*Echinocloa colona*		5		*Avena sativa*		5		*Hypochaeris glabra*		5			Bare Ground	5		*Hypochaeris glabra*		5			Bare ground	5		*Setaria parviflora*	
6		*Paronychia brasiliana*		6		*Avena sativa*		6		*Setaria parviflora*		6	*Portulaca oleracea*	Crop Species Unknown		6		*Lepidium bonariense*		6		*Setaria parviflora*		6		*Setaria parviflora*	
7	*Chloris truncata*			7		*Avena sativa*		7		*Setaria parviflora*		7		*Echinochloa colona*		7		*Setaria parviflora*		7			Bare ground	7		*Lolium perenne*	
8			Bare ground	8		*Avena sativa*		8		*Setaria parviflora*		8		Crop Species Unknown		8		*Setaria parviflora*		8			Bare ground	8		*Setaria parviflora*	
9		*Hypochaeris glabra*		9		*Avena sativa*		9		*Setaria parviflora*		9		Crop Species Unknown		9		*Exotic Grass*		9			Bare ground	9		*Setaria parviflora*	
10			Bare ground	10		*Avena sativa*		10			Bare ground	10		Crop Species Unknown		10			Bare ground	10			Bare ground	10			Bare ground
11	*Chloris truncata*			11		*Avena sativa*		11	*Eragrostis brownii*			11	*Portulaca oleracea*	Crop Species Unknown		11	*Wahlenburgia sp.*	*Lepidium bonariense*		11	*Cynodon dactylon*			11		Exotic Grass	
12		*Lepidium bonariense*		12			Bare ground	12			Bare ground	12	*Dysphania pumilio*	*Echinochloa colona*		12	*Chloris truncata*			12	*Cynodon dactylon*			12			Bare ground
13			Bare ground	13		*Avena sativa*		13		*Setaria parviflora*		13	*Portulaca oleracea*			13	*Chloris truncata*			13			Bare ground	13		*Lolium perenne*	
14		*Eleusine indica*		14		*Lepidium bonariense*		14		*Setaria parviflora*		14		Crop Species Unknown		14	*Chloris truncata*	*Avena barbata*		14	*Cynodon dactylon*			14		*Lolium perenne*	
15	*Chloris truncata*	*Carthamus lanatus*		15		*Avena sativa*		15		*Paspalum dilatatum*		15			Bare Ground	15	*Chloris truncata*	*Lepidium bonariense*		15	*Cynodon dactylon*			15		*Hypochaeris glabra*	
16			Bare ground	16		*Avena sativa*		16		*Eleusine indica*		16		Crop Species Unknown		16	*Chloris truncata*			16	*Cynodon dactylon*			16		Exotic Grass	
17	*Chloris truncata*	*Carthamus lanatus*		17		*Carthamus lanatus*		17		*Setaria parviflora*		17		*Echinochloa colona*		17	*Eragrostis brownii*	*Lepidium bonariense*		17	*Cynodon dactylon*			17		*Setaria parviflora*	
18		*Lepidium bonariense*		18			Bare ground	18			Bare ground	18	*Dysphania pumilio*	Crop Species Unknown		18		*Lepidium bonariense*		18	*Cynodon dactylon*			18		*Lolium perenne*	
19		*Echinocloa colona*		19			Bare ground	19		*Setaria parviflora*		19			Bare Ground	19		*Lepidium bonariense*		19		Exotic Grass		19		Exotic Grass	
20		*Echinocloa colona*		20			Bare ground	20		*Setaria parviflora*		20		Crop Species Unknown		20		*Lepidium bonariense*		20	*Alternanthera denticulata*	*Sonchus aspera*		20		*Echium plantagineum*	
21		Exotic Grass		21		*Lepidium bonariense*		21		*Setaria parviflora*		21			Bare Ground	21		*Lepidium bonariense*		21			Bare ground	21		*Lolium perenne*	
22			Bare ground	22			Bare ground	22	*Sporobulus creber*	*Setaria parviflora*		22		Crop Species Unknown		22	*Eragrostis brownii*	*Hypochaeris glabra*		22		Exotic Grass		22			Bare ground
23		*Paronychia brasiliana*		23		*Lepidium bonariense*		23		*Setaria parviflora*		23			Bare Ground	23		*Hypochaeris glabra*		23			Bare ground	23		*Hypochaeris glabra*	
24		*Lepidium bonariense*		24		*Avena sativa*		24		*Setaria parviflora*		24	*Dysphania pumilio*	Crop Species Unknown		24		*Setaria parviflora*		24	Exotic Grass			24		Exotic Grass	
25	*Chloris truncata*			25		*Avena sativa*		25		*Setaria parviflora*		25		*Echinochloa colona*		25	*Chloris truncata*			25			Bare ground	25		*Setaria parviflora*	
26			Bare ground	26		*Avena sativa*		26		*Setaria parviflora*		26		*Echinochloa colona*		26	*Eragrostis brownii*			26			Bare ground	26		*Setaria parviflora*	
27		*Echinocloa colona*		27		*Avena sativa*		27	*Sporobulus creber*			27	*Dysphania pumilio*	*Echinochloa colona*		27		*Lepidium bonariense*		27			Bare ground	27		Exotic Grass	
28	*Euphorbia drummondii*			28			Bare ground	28	*Sporobulus creber*	*Bromus diandrus*		28	*Dysphania pumilio*	Crop Species Unknown		28	*Eragrostis brownii*			28	*Portulaca oleracea*			28		Exotic Grass	
29		*Lepidium bonariense*		29		*Avena sativa*		29			Bare ground	29		*Hypochaeris glabra*		29	*Chloris truncata*			29			Bare ground	29			Bare ground
30			Bare ground	30		*Lepidium bonariense*		30		*Setaria parviflora*		30		*Hypochaeris glabra*		30	*Chloris truncata*	*Setaria parviflora*		30		*Lolium perenne*		30		*Setaria parviflora*	
31		*Carthamus lanatus*		31		*Avena sativa*		31		*Setaria parviflora*		31			Bare Ground	31		*Setaria parviflora*		31		*Sonchus asper*		31		*Lepidium bonariense*	
32			Bare ground	32		*Avena sativa*		32		*Setaria parviflora*		32		*Echinochloa colona*		32		*Portulaca oleracea*		32			Bare ground	32		*Hypochaeris glabra*	
33			Bare ground	33			Bare ground	33			Bare ground	33		*Lolium perenne*		33		*Carthamus lanatus*		33			Bare ground	33		Exotic Grass	
34	*Chloris truncata*			34		*Avena sativa*		34		*Setaria parviflora*		34		*Echinochloa colona*		34		*Carthamus lanatus*		34			Bare ground	34		Exotic Grass	
35		*Eleusine indica*		35			Bare ground	35		*Setaria parviflora*		35		Crop Species Unknown		35		*Setaria parviflora*		35			Bare ground	35		Exotic Grass	
36		Exotic Grass		36		*Avena sativa*		36		*Setaria parviflora*		36	*Portulaca oleracea*			36	*Chloris truncata*	*Setaria parviflora*		36		*Hypochaeris glabra*		36		Exotic Grass	
37		Exotic Grass		37			Bare ground	37		*Paronychia brasiliana*		37			Bare Ground	37			Bare ground	37		*Medicago sativa*		37		Exotic Grass	
38			Bare ground	38		*Lepidium bonariense*		38		*Setaria parviflora*		38		Crop Species Unknown		38	*Eragrostis brownii*			38		Exotic Grass		38			Bare ground
39		Exotic Grass		39			Bare ground	39		*Rumex acetosella*		39			Bare Ground	39	*Eragrostis brownii*			39			Bare ground	39		Exotic Grass	
40			Bare ground	40		*Avena sativa*		40			Bare ground	40			Bare Ground	40	*Chloris truncata*			40		*Lolium perenne*		40		Exotic Grass	
41		*Portulaca oleracea*		41			Bare ground	41		*Setaria parviflora*		41			Bare Ground	41	*Eragrostis brownii*	*Setaria parviflora*		41		*Lolium perenne*		41		Exotic Grass	
42	*Chloris truncata*			42			Bare ground	42		*Echium plantagineum*		42	*Alternanthera denticulata*			42		*Setaria parviflora*		42			Bare ground	42			Bare ground
43			Bare ground	43			Bare ground	43		*Echium plantagineum*		43		Crop Species Unknown		43			Bare ground	43			Bare ground	43			Bare ground
44	*Chloris truncata*			44		*Avena sativa*		44		*Paronychia brasiliana*		44		Crop Species Unknown		44		*Setaria parviflora*		44			Bare ground	44		Exotic Grass	
45		*Paronychia brasiliana*		45		*Lolium perenne*		45			Bare ground	45		*Lolium perenne*		45	*Chloris truncata*			45	*Atriplex semibaccata*			45		Exotic Grass	
46		*Lepidium bonariense*		46		*Avena sativa*		46			Bare ground	46		*Echinochloa colona*		46			Bare ground	46	*Lepidium africanus*			46			Bare ground
47			Bare ground	47		*Avena sativa*		47		*Setaria parviflora*		47		Crop Species Unknown		47		*Setaria parviflora*		47	*Atriplex semibaccata*	*Hypochaeris glabra*		47			Bare ground
48		*Carthamus lanatus*		48		*Echinocloa colona*		48	*Sporobulus creber*			48			Bare Ground	48			Bare ground	48		Exotic Grass		48			Bare ground
49	*Chloris truncata*	*Echinocloa colona*		49		*Lolium perenne*		49	*Sporobulus creber*			49		*Echinochloa colona*		49			Bare ground	49		Exotic Grass		49		Exotic Grass	
50		Exotic Grass		50		*Lolium perenne*		50		*Setaria parviflora*		50	*Dysphania pumilio*			50	*Chloris truncata*	*Setaria parviflora*		50	*Cynodon dactylon*			50		Exotic Grass	
51			Bare ground	51		*Lepidium bonariense*		51		*Setaria parviflora*		51		*Lolium perenne*		51		*Setaria parviflora*		51		*Hypochaeris glabra*		51		Exotic Grass	
52		Exotic Grass		52		*Avena sativa*		52		*Setaria parviflora*		52		*Lolium perenne*		52		*Setaria parviflora*		52	*Cynodon dactylon*			52		*Trifolium repens*	
53			Bare ground	53		*Lepidium bonariense*		53		*Setaria parviflora*		53			Bare Ground	53		*Setaria parviflora*		53		Exotic Grass		53			Bare ground
54		Exotic Grass		54		*Lepidium bonariense*		54		*Setaria parviflora*		54			Bare Ground	54	*Chloris truncata*			54		Exotic Grass		54		*Hypochaeris glabra*	
55			Bare ground	55		*Lolium perenne*		55		*Setaria parviflora*		55			Bare Ground	55		*Setaria parviflora*		55		Exotic Grass		55		Exotic Grass	
56		*Circium vulgare*		56		*Lolium perenne*		56		*Setaria parviflora*		56		Crop Species Unknown		56			Bare ground	56			Bare ground	56		Exotic Grass	
57			Bare ground	57		*Lolium perenne*		57		*Setaria parviflora*		57			Bare Ground	57	*Chloris truncata*			57		Exotic Grass		57		*Hypochaeris glabra*	
58		*Lepidium bonariense*		58		*Lepidium bonariense*		58		*Hypochaeris glabra*		58			Bare Ground	58	*Chloris truncata*			58		Exotic Grass		58		*Lolium perenne*	
59		*Paronychia brasiliana*		59		*Lolium perenne*		59		*Setaria parviflora*		59			Bare Ground	59	*Chloris truncata*			59			Bare ground	59	*Cynodon dactylon*		
60		*Medicago sativa*		60		*Lolium perenne*		60		*Setaria parviflora*		60		Crop Species Unknown		60	*Chloris truncata*	*Setaria parviflora*		60		*Lolium perenne*		60	*Cynodon dactylon*		
61	*Chloris truncata*	*Medicago sativa*		61		*Lepidium bonariense*		61		*Setaria parviflora*		61		*Lolium perenne*		61	*Chloris truncata*	*Setaria parviflora*		61		*Setaria parviflora*		61	*Cynodon dactylon*		
62	*Chloris truncata*			62		*Avena sativa*		62		*Setaria parviflora*		62			Bare Ground	62		*Setaria parviflora*		62		*Lolium perenne*		62	*Sporobulus creber*		
63		Exotic Grass		63		*Avena sativa*		63	*Sporobulus creber*			63		Crop Species Unknown		63			Bare ground	63		Exotic Grass		63	*Cynodon dactylon*		
64		*Lepidium bonariense*		64		*Avena sativa*		64	*Sporobulus creber*			64		Crop Species Unknown		64		*Setaria parviflora*		64	*Alternanthera denticulata*			64			Bare ground
65			Bare ground	65		*Lepidium bonariense*		65	*Sporobulus creber*	*Setaria parviflora*		65		Crop Species Unknown		65		*Setaria parviflora*		65			Bare ground	65		*Hypochaeris glabra*	
66	*Chloris truncata*			66			Bare ground	66		*Rumex acetosella*		66			Bare Ground	66	*Chloris truncata*			66		Exotic Grass		66		*Hypochaeris glabra*	
67	*Chloris truncata*			67			Bare ground	67			Bare ground	67		*Lolium perenne*		67	*Chloris truncata*			67	*Atriplex semibaccata*			67		*Hypochaeris glabra*	
68		*Echinocloa colona*		68			Bare ground	68	*Sporobulus creber*	*Setaria parviflora*		68		Crop Species Unknown		68		*Setaria parviflora*		68		Exotic Grass		68		Exotic Grass	
69		*Echinocloa colona*		69		*Avena sativa*		69			Bare ground	69			Bare Ground	69		*Setaria parviflora*		69		*Hypochaeris glabra*		69		*Lolium perenne*	
70	*Chloris truncata*			70		*Lolium perenne*		70	*Sporobulus creber*	*Setaria parviflora*		70		Crop Species Unknown		70	*Wahlenburgia gracilis*	*Setaria parviflora*		70			Bare ground	70			Bare ground
71		*Echinocloa colona*		71		*Avena sativa*		71	*Sporobulus creber*	*Rumex acetosella*		71		*Echinochloa colona*		71	*Chloris truncata*			71		*Lolium perenne*		71		*Lolium perenne*	
72			Bare ground	72		*Avena sativa*		72	*Cynodon dactylon*			72		Crop Species Unknown		72	*Chloris truncata*			72		Exotic Grass		72		*Hypochaeris glabra*	
73		*Echinocloa colona*		73		*Echinocloa colona*		73		*Rumex acetosella*		73		*Echinochloa colona*		73		*Setaria parviflora*		73		*Lolium perenne*		73		*Hypochaeris glabra*	
74		*Hypochaeris glabra*		74		*Lolium perenne*		74			Bare ground	74			Bare Ground	74		*Hypochaeris glabra*		74		Exotic Grass		74		*Setaria parviflora*	
75			Bare ground	75	*Atriplex semibaccata*	*Lolium perenne*		75		*Setaria parviflora*		75		*Lolium perenne*		75	*Chloris truncata*	*Medicago sativa*		75		*Lolium perenne*		75			Bare ground
76			Bare ground	76		*Lepidium bonariense*		76		*Setaria parviflora*		76		Crop Species Unknown		76	*Chloris truncata*	*Setaria parviflora*		76			Bare ground	76		Exotic Grass	
77		Exotic Grass		77		*Avena sativa*		77		*Setaria parviflora*		77		*Lolium perenne*		77		*Setaria parviflora*		77		*Hypochaeris glabra*		77		*Setaria parviflora*	
78	*Chloris truncata*	*Paronychia brasiliana*		78		*Lepidium bonariense*		78		*Hypochaeris glabra*		78		Crop Species Unknown		78	*Wahlenburgia gracilis*	*Setaria parviflora*		78		*Hypochaeris glabra*		78			Bare ground
79		*Carthamus lanatus*		79		*Lepidium bonariense*		79		*Setaria parviflora*		79		*Lolium perenne*		79		*Setaria parviflora*		79		*Hypochaeris glabra*		79			Bare ground
80			Bare ground	80		*Lolium perenne*		80		*Setaria parviflora*		80		Crop Species Unknown		80	*Chloris truncata*			80		*Lolium perenne*		80			Bare ground
81	*Chloris truncata*			81		*Lolium perenne*		81		*Paspalum dilatatum*		81		*Trifolium repens*		81			Bare ground	81		Exotic Grass		81		*Hypochaeris glabra*	
82		*Paronychia brasiliana*		82		*Lepidium bonariense*		82			Bare ground	82		Crop Species Unknown		82		Exotic Grass		82		Exotic Grass		82		*Lolium perenne*	
83	*Chloris truncata*			83		*Avena sativa*		83		*Paspalum dilatatum*		83	*Dysphania pumilio*	Crop Species Unknown		83		*Setaria parviflora*		83			Bare ground	83		Exotic Grass	
84		*Paronychia brasiliana*		84		*Lepidium bonariense*		84			Bare ground	84		Crop Species Unknown		84		Exotic Grass		84		Exotic Grass		84		*Setaria parviflora*	
85			Bare ground	85		*Lepidium bonariense*		85		*Bare ground*		85		Crop Species Unknown		85		*Setaria parviflora*		85		*Lolium perenne*		85		Exotic Grass	
86		*Circium vulgare*		86		*Lolium perenne*		86		*Bare ground*		86		Crop Species Unknown		86	*Chloris truncata*	*Hypochaeris glabra*		86		*Lolium perenne*		86		*Hypochaeris glabra*	
87		*Lepidium bonariense*		87		*Carthamus lanatus*		87		*Rumex crispus*		87		Crop Species Unknown		87		*Carthamus lanatus*		87			Bare ground	87		Exotic Grass	
88	*Chloris truncata*			88		*Carthamus lanatus*		88		*Setaria parviflora*		88		Crop Species Unknown		88		*Circium vulgare*		88		Exotic Grass		88		Exotic Grass	
89		*Echinocloa colona*		89		*Carthamus lanatus*		89		*Echium plantagineum*		89	*Dysphania pumilio*	Crop Species Unknown		89	*Cynodon dactylon*			89		Exotic Grass		89			Bare ground
90			Bare ground	90		*Carthamus lanatus*		90		*Setaria parviflora*		90	*Cynodon dactylon*	Crop Species Unknown		90		*Setaria parviflora*		90		Exotic Grass		90		Exotic Grass	
91		*Lepidium bonariense*		91		*Carthamus lanatus*		91		*Setaria parviflora*		91		*Lolium perenne*		91	*Chloris truncata*			91		*Lolium perenne*		91		Exotic Grass	
92		*Echinocloa colona*		92			Bare ground	92		*Setaria parviflora*		92		*Echinochloa colona*		92	*Chloris truncata*			92			Bare ground	92		Exotic Grass	
93	*Atriplex semibaccata*	*Lepidium bonariense*		93		*Carthamus lanatus*		93		*Setaria parviflora*		93		*Echinochloa colona*		93		*Setaria parviflora*		93		*Hypochaeris glabra*		93		Exotic Grass	
94			Bare ground	94			Bare ground	94			Bare ground	94		Crop Species Unknown		94		*Setaria parviflora*		94			Bare ground	94		*Setaria parviflora*	
95			Bare ground	95		*Carthamus lanatus*		95			Bare ground	95		Crop Species Unknown		95		*Setaria parviflora*		95		*Rumex acetosella*		95		*Medicago sativa*	
96		*Lepidium bonariense*		96		*Carthamus lanatus*		96		*Setaria parviflora*		96			Bare Ground	96		*Setaria parviflora*		96		Exotic Grass		96		Exotic Grass	
97		*Lepidium bonariense*		97			Bare ground	97		*Paspalum dilatatum*		97		*Echinochloa colona*		97	*Chloris truncata*	*Setaria parviflora*		97			Bare ground	97		Exotic Grass	
98		*Hypochaeris glabra*		98		*Carthamus lanatus*		98		*Setaria parviflora*		98		Crop Species Unknown		98		*Setaria parviflora*		98		*Lolium perenne*		98		Exotic Grass	
99			Bare ground	99		*Carthamus lanatus*		99		*Paspalum dilatatum*		99	*Dysphania pumilio*	Crop Species Unknown		99	*Chloris truncata*			99			Bare ground	99		Exotic Grass	
100			Bare ground	100		*Carthamus lanatus*		100		*Setaria parviflora*		100	*Dysphania pumilio*	Crop Species Unknown		100	*Chloris truncata*	*Modiola caroliniana*		100		*Lolium perenne*		100		*Hypochaeris glabra*	

Appendix C: Plot Data

Key: Green = listed in the assemblage of species in the final determination. Blue = Native.

Scientific Name	Common Name	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10	Plot 11	Plot 12
Acetosella vulgaris	Sheep Sorrel			0.5		6	0.2	
Arctotheca calendula	Capeweed		1		0.1		0.5	
Avena barbata	Bearded Oats			0.2				
Avena sativa	Oats		15					
Brassica tournefortii	Mediterranean Turnip		3					
Bromus diandrus	Great Brome			0.2				
Bromus hordeaceus	Soft Brome	1		0.5		6	0.3	
Carthamus lanatus	Saffron Thistle	5	5	0.3	0.1	0.1		0.5
Chloris truncata	Windmill Grass	2			0.3	0.1		0.1
Cirsium vulgare	Spear Thistle				0.2	0.3	0.5	
Conyza bonariensis	Flaxleaf Fleabane					0.1	0.5	
Cotula turbinata							2	
Crassula sieberiana	Australian Stonecrop						0.1	
Cynodon dactylon	Common Couch	1	0.2		15	5	1	
Echium plantagineum	Patterson's Curse		0.1	6			2	3
Eleusine indica	Crowsfoot Grass				0.1			
Hordeum leporinum	Barley Grass	2				0.5	0.2	
Hypochaeris glabra	Smooth Catsear		0.1		3	1	6	5

Hypochaeris radicata	Catsear	0.5		0.8			15	
Juncus bufonius	Toad Rush				0.1			0.1
Lepidium africanum	Common Peppercress			0.1				
Lepidium bonariense	Argentine Peppercress		3			0.1	2	
Lolium perenne	Perennial Ryegrass	70	0.5	15	6	10	5	15
Anagallis arvensis subsp. arvensis	Scarlet Pimpernel			0.1				
Mentha diemenica	Slender Mint						0.1	
Microlaena stipoides	Weeping Grass			0.1				
Modiola caroliniana	Red-flowered Mallow	0.1			0.1			
Oxalis corniculata	Creeping Oxalis	0.1	0.1					
Paronychia brasiliana	Chilean Whitlow Wort, Brazilian Whitlow	1			0.5	0.1		
Paspalum dilatatum	Paspalum			0.5			2	
Polygonum bellardii	Tree Hogweed						0.1	
Gnaphalium luteo-album	Jersey Cudweed		0.1		0.1		1	0.1
Rumex spp.	Dock			0.1				
Sonchus oleraceus	Common Sowthistle						0.1	
Sporobolus creber	Slender Rat's Tail Grass	0.1		5	10	0.1		4
Trifolium arvense	Haresfoot Clover				0.2			
Trifolium fragiferum var. fragiferum	Strawberry Clover	0.1		0.1	0.1	0.1	0.5	2
Verbena bonariensis var. bonariensis	Purpletop				0.2	0.1	1	
Vicia spp.	Vetch							0.1
Vicia villosa	Russian Vetch		0.2					

Vulpia bromoides	Squirrel Tail Fesque							0.1
Wahlenbergia communis	Tufted Bluebell						0.1	
Wahlenbergia gracilis	Sprawling Bluebell					0.1		
Wahlenbergia spp.	Bluebell				0.1			

Appendix E: Matters of national environmental significance

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: 19-May-2025

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	45
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	9
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	800 - 900km upstream from Ramsar site	In feature area
Riverland	800 - 900km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	900 - 1000km upstream from Ramsar site	In feature area
The macquarie marshes	200 - 300km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	In buffer area only
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community may occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Anthochaera phrygia](#) Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Aphelocephala leucopsis](#) Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Callocephalon fimbriatum](#) Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat may occur within area	In buffer area only
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In 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 buffer area only
MAMMAL			
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Androcalva procumbens [87153]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Homoranthus darwinioides [12974]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Ozothamnus tesselatus [56203]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
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]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [13274]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [13275]	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]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]	Vulnerable	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 may occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Lathamus discolor			
Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Pterodroma cervicalis			
White-necked Petrel [59642]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Barneys Reef Wind Farm	2022/09358		Completed	In buffer area only
Central-West Orana Renewable Energy Zone Transmission Project	2022/09353		Post-Approval	In buffer area only
Controlled action				
Open cut coal mine & associated infrastructure	2011/6158	Controlled Action	Post-Approval	In buffer area only
Valley of the Winds wind farm	2020/8668	Controlled Action	Assessment Approach	In buffer area only
Wollar to Wellington 330kV Transmission Line Project	2005/2202	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Proposed large-scale solar farm project	2022/9171	Referral Decision	Referral Publication	In buffer area only
Stubbo Solar Farm	2022/9180	Referral Decision	Referral Publication	In buffer area only

Bioregional Assessments

[Resource Information]

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

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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

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

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

Acknowledgements

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

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

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

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

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Appendix F: Vegetation survey data

Plot no: 1 **Job:** Stubbo **Job no:** 3345 **Date:** 10/10/23 **Observers:** JS TM KB

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Angophora floribunda		10						Lolium perenne		20	
Eucalyptus blakelyi		5	1					Acetosella vulgaris		0.1	2
Eucalyptus conica		5	1					Lepidium africanum		0.1	5
								Rytidosperma spp.		0.2	10
								Juncus vaginatus		1	10
								Lachnagrostis spp.		0.1	5
								Hypochaeris glabra		0.1	2
								Juncus bufonius		0.5	20
								Paspalum dilatatum		0.2	10
								Arundinella nepalensis		10	
								Sporobolus creber		1	10
								Eragrostis curvula		0.2	10
								Hordeum leporinum		0.1	5
Total Cover		20				0				33.6	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	900		**Departure time:**	1045	**Weather:**	Sunny	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,994	6421935		**End**	736,948	6421950	**Zone:**	55	**Bearing:**	260
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	TRUE	[redacted]	[redacted]	**1**	35	25	40	0	0	**100**
10 – 19 cm	TRUE	[redacted]		**2**	20	45	30	0	5	**100**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	30	15	55	0	0	**100**
30 – 49cm	FALSE	0	59	**4**	25	40	35	0	0	**100**
50 -79cm	TRUE	1	[redacted]	**5**	40	10	45	0	5	**100**
>80cm	FALSE	0		**Average**	30	27	41	0	2	**100**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Livestock grazing										
Habitat features, comments and incidental fauna observations:										
Damn next to plot.										

Plot no: 2 **Job:** Stubbo **Job no:** 3345 **Date:** 10/10/23 **Observers:** JS TM KB

Upper stratum	Unknown (Comment)	C	Ab	Mid stratum	Unknown (Comment)	C	Ab	Lower stratum	Unknown (Comment)	C	Ab
Eucalyptus conica		12						Hordeum leporinum		1	10
Eucalyptus blakelyi		8						Chloris truncata		1	10
Eucalyptus melliodora		20						Lolium perenne		5	300
								Paspalum dilatatum		1	5
								Plantago lanceolata		0.1	1
								Hypochaeris radicata		0.1	1
								Bromus catharticus		0.5	10
								Einadia trigonos subsp. Leiocarpa		0.1	5
								Paronychia brasiliana		0.1	1
								Lepidium africanum		0.1	1
								Arundinella nepalensis		0.2	15
								Avena barbata		0.2	10
Total Cover		40				0				9.4	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	1100		**Departure time:**	12:30	**Weather:**	Hot sun, gentle beeeze	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Not Done
Start	737,289	6423143		**End**	737,316	6423103	**Zone:**	55	**Bearing:**	130
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	80	15	5	0	0	**100**
10 – 19 cm	TRUE	[redacted]		**2**	90	10	0	0	0	**100**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	80	15	5	0	0	**100**
30 – 49cm	TRUE	1	82.5	**4**	75	20	5	0	0	**100**
50 -79cm	TRUE	1	[redacted]	**5**	65	30	5	0	0	**100**
>80cm	FALSE	0		**Average**	78	18	4	0	0	**100**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Grazing										
Habitat features, comments and incidental fauna observations:										
Old agriculture										

Plot no: 3 **Job:** Stubbo **Job no:** 3345 **Date:** 10/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Angophora floribunda		30						Echium plantagineum		1	20
Eucalyptus blakelyi		10						Plantago lanceolata		0.5	50
Salix alba		3	1					Themeda triandra		1	20
								Juncus vaginatus		0.5	10
								Wahlenbergia luteola		0.1	20
								Phragmites australis		10	
								Carex appressa		0.5	5
								Bromus catharticus		1	20
								Sonchus oleraceus		0.1	5
								Sonchus asper		0.1	5
								Lolium perenne		5	1000
								Avena barbata		10	
								Galium aparine		0.1	5
								Bromus diandrus		15	
								Holcus lanatus		2	50
								Paspalum dilatatum		0.2	10
								Hypochaeris radicata		0.1	5
								Lactuca serriola		0.1	100
								Eragrostis curvula		0.2	5
								Juncus continuus		0.2	5
								Acetosella vulgaris		0.1	10
								Xanthium spinosum		0.2	20
								Lysimachia arvensis		0.1	20
								Echinopogon caespitosus		0.2	15
								Cynodon dactylon		0.1	100
								Imperata cylindrica		10	
								Rumex crispus		1	5
								Lachnagrostis spp.		0.2	30
								Oxalis corniculata		0.1	5
								Ehrharta erecta		0.2	50
								Arundinella nepalensis		15	80
								Microlaena stipoides		10	200
								Cassinia sifton		0.5	10
Total Cover		43				0				85.4	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	01:00		**Departure time:**	215	**Weather:**	Sunny overcast	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,818	6423321		**End**	737,793	6423279	**Zone:**	55	**Bearing:**	195
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	TRUE	[redacted]	1		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	45	55	0	0	0	**100**
10 – 19 cm	FALSE	[redacted]		**2**	60	40	0	0	0	**100**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	25	70	5	0	0	**100**
30 – 49cm	TRUE	1	40	**4**	55	35	10	0	0	**100**
50 -79cm	TRUE	2	[redacted]	**5**	25	65	10	0	0	**100**
>80cm	TRUE	2		**Average**	42	53	5	0	0	**100**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Disturbed creek										
Habitat features, comments and incidental fauna observations:										
Lots of fallen										

Plot no: 4 **Job:** Stubbo **Job no:** 3345 **Date:** 10/10/23 **Observers:** JS TM KB

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Eucalyptus melliodora		25						Conyza bonariensis		0.2	10
Eucalyptus blakelyi		8						Hypochaeris radicata		1	100
Brachychiton populneus		0.1	1					Plantago lanceolata		1	100
								Lolium perenne		10	500
								Lachnagrostis spp.		0.1	5
								Cynodon dactylon		1	80
								Sonchus oleraceus		0.2	10
								Haloragis heterophylla		0.1	5
								Cirsium vulgare		0.3	20
								Wahlenbergia luteola		0.1	10
								Acetosella vulgaris		0.1	20
								Calotis lappulacea		0.1	5
								Paspalum dilatatum		5	30
								Arundinella nepalensis		2	30
								Lomandra multiflora subsp. Multiflora		0.2	3
								Einadia trigonos subsp. Leiocarpa		0.1	10
								Carex inversa		0.1	1
								Acaena echinata		0.1	10
								Juncus continuus		8	60
								Sporobolus creber		2	50
								Paronychia brasiliana		0.1	10
								Nassella trichotoma		0.1	1
								Eleocharis spp.		1	100
								Eragrostis spp.		0.1	1
								Galium aparine		0.1	1
								Gamochaeta spp.		0.1	1
								Geranium solanderi		0.1	1
								Dichondra repens		0.1	1
Total Cover		33.1				0			30-40	33.4	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	230		**Departure time:**	330	**Weather:**	Overcast, windy	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,516	6423183		**End**	737,562	6423166	**Zone:**	55	**Bearing:**	130
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	TRUE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	25	10	65	0	0	**100**
10 – 19 cm	FALSE	[redacted]		**2**	65	5	30	0	0	**100**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	75	10	15	0	0	**100**
30 – 49cm	TRUE	1	62.5	**4**	40	15	35	10	0	**100**
50 -79cm	FALSE	0	[redacted]	**5**	65	25	10	0	0	**100**
>80cm	TRUE	1		**Average**	54	13	31	2	0	**100**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Habitat features, comments and incidental fauna observations:										

Plot no: 5 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Eucalyptus melliodora		35						Cynodon dactylon		2	100
Eucalyptus blakelyi		2	1					Lolium perenne		10	
								Bromus catharticus		1	20
								Hordeum leporinum		0.2	20
								Juncus vaginatus		0.1	5
								Paspalum dilatatum		0.1	5
Total Cover		37				0				13.4	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	9.45		**Departure time:**	10.45	**Weather:**	Sunny, warm	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,836	6422709		**End**	736,802	6422745	**Zone:**	55	**Bearing:**	305
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	1		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	30	0	0	0	0	**30**
10 – 19 cm	FALSE	[redacted]		**2**	60	0	0	0	0	**60**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	50	0	0	0	0	**50**
30 – 49cm	TRUE	5	78	**4**	25	0	0	0	0	**25**
50 -79cm	TRUE	1	[redacted]	**5**	65	0	0	0	0	**65**
>80cm	FALSE	0		**Average**	46	0	0	0	0	**46**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Heavily grazed										
Habitat features, comments and incidental fauna observations:										

Plot no: 6 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Carthamus lanatus		5	100
								Lolium perenne		70	
								Hordeum leporinum		2	10
								Chloris truncata		2	20
								Paronychia brasiliana		1	100
								Cynodon dactylon		1	50
								Hypochaeris radicata		0.5	30
								Bromus hordeaceus		1	50
								Modiola caroliniana		0.1	2
								Oxalis corniculata		0.1	10
								Sporobolus creber		0.1	3
								Trifolium fragiferum		0.1	2
Total Cover		0				0				82.9	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	11		**Departure time:**	11.3	**Weather:**	Sunny warm	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,691	6422629		**End**	736,640	6722635	**Zone:**	55	**Bearing:**	265
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	5	0	0	0	0	**5**
10 – 19 cm	FALSE	[redacted]		**2**	5	0	0	0	0	**5**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	5	0	0	0	0	**5**
30 – 49cm	FALSE	0	0	**4**	5	0	0	0	0	**5**
50 -79cm	FALSE	0	[redacted]	**5**	5	0	0	0	0	**5**
>80cm	FALSE	0		**Average**	5	0	0	0	0	**5**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Cultivated pasture										
Habitat features, comments and incidental fauna observations:										

Plot no: 7 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM

Upper stratum	Unknown (Comment)	C	Ab	Mid stratum	Unknown (Comment)	C	Ab	Lower stratum	Unknown (Comment)	C	Ab
								Avena sativa		15	
								Brassica tournefortii		3	20
								Carthamus lanatus		5	30
								Lepidium bonariense		3	200
								Vicia villosa		0.2	10
								Oxalis corniculata		0.1	10
								Arctotheca calendula		1	50
								Lolium perenne		0.5	20
								Hypochaeris glabra		0.1	15
								Echium plantagineum		0.1	10
								Cynodon dactylon		0.2	50
								Pseudognaphalium luteoalbum		0.1	10
Total Cover		0				0				28.3	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	12.45		**Departure time:**	1.05	**Weather:**	Sunny warm	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,257	6422939		**End**	736,259	6422887	**Zone:**	55	**Bearing:**	160
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	1	0	0	0	0	**1**
10 – 19 cm	FALSE	[redacted]		**2**	1	0	0	0	0	**1**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	1	0	0	0	0	**1**
30 – 49cm	FALSE	0	0	**4**	1	0	0	0	0	**1**
50 -79cm	FALSE	0	[redacted]	**5**	1	0	0	0	0	**1**
>80cm	FALSE	0		**Average**	1	0	0	0	0	**1**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Cultivated paddock										
Habitat features, comments and incidental fauna observations:										

Plot no: 8 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Lolium perenne		15	
								Echium plantagineum		6	
								Bromus hordeaceus		0.5	50
								Hypochaeris radicata		0.8	40
								Trifolium fragiferum		0.1	5
								Lepidium africanum		0.1	5
								Lysimachia arvensis		0.1	1
								Bromus diandrus		0.2	20
								Acetosella vulgaris		0.5	80
								Carthamus lanatus		0.3	30
								Avena barbata		0.2	15
								Paspalum dilatatum		0.5	10
								Microlaena stipoides		0.1	1
								Rumex spp.		0.1	1
								Sporobolus creber		5	50
Total Cover		0				0			25-30	29.5	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	13:10		**Departure time:**	13:30	**Weather:**	sunny, hot , no wind	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,285	6422314		**End**	736,316	6422273	**Zone:**	55	**Bearing:**	323
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	15	0	0	0	0	**15**
10 – 19 cm	FALSE	[redacted]		**2**	15	0	0	0	0	**15**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	20	0	0	0	0	**20**
30 – 49cm	FALSE	0	0	**4**	20	0	0	0	0	**20**
50 -79cm	FALSE	0	[redacted]	**5**	10	0	0	0	0	**10**
>80cm	FALSE	0		**Average**	16	0	0	0	0	**16**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
cleared grazing land										
Habitat features, comments and incidental fauna observations:										

Plot no: 9 **Job:** Stubbo **Job no:** 3355 **Date:** 11/10/23 **Observers:** TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Sporobolus creber		10	
								Lolium perenne		6	500
								Wahlenbergia spp.		0.1	50
								Cynodon dactylon		15	
								Hypochaeris glabra		3	100
								Chloris truncata		0.3	15
								Paronychia brasiliana		0.5	50
								Modiola caroliniana		0.1	1
								Cirsium vulgare		0.2	10
								Verbena bonariensis		0.2	10
								Arctotheca calendula		0.1	5
								Carthamus lanatus		0.1	10
								Juncus bufonius		0.1	5
								Trifolium fragiferum		0.1	10
								Pseudognaphalium		0.1	5
								Eleusine indica		0.1	1
								Trifolium arvense		0.2	30
Total Cover		0				0			40	36.2	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	2.1		**Departure time:**	2.4	**Weather:**	sunny, hot, some wind	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,146	6422127		**End**	737,142	6422178	**Zone:**	55	**Bearing:**	355
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	10	0	0	0	0	**10**
10 – 19 cm	FALSE	[redacted]		**2**	5	0	0	0	0	**5**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	15	0	0	0	0	**15**
30 – 49cm	FALSE	0	0	**4**	15	0	0	0	0	**15**
50 -79cm	FALSE	0	[redacted]	**5**	15	0	0	0	0	**15**
>80cm	FALSE	0		**Average**	12	0	0	0	0	**12**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Habitat features, comments and incidental fauna observations:										

Plot no: 10 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Lolium perenne		10	
								Paronychia brasiliana		0.1	15
								Bromus hordeaceus		6	
								Acetosella vulgaris		6	
								Conyza bonariensis		0.1	10
								Hordeum leporinum		0.5	25
								Cynodon dactylon		5	100
								Carthamus lanatus		0.1	15
								Hypochaeris glabra		1	50
								Cirsium vulgare		0.3	20
								Wahlenbergia gracilis		0.1	10
								Lepidium bonariense		0.1	15
								Trifolium fragiferum		0.1	20
								Chloris truncata		0.1	5
								Verbena bonariensis		0.1	5
								Sporobolus creber		0.1	1
Total Cover		0				0				29.7	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	315		**Departure time:**	330	**Weather:**	Hot sunny, light breeze	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,514	6422819		**End**	737,493	6422864	**Zone:**	55	**Bearing:**	270
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTS**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	15	0	0	0	0	**15**
10 – 19 cm	FALSE	[redacted]		**2**	10	0	0	0	0	**10**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	15	0	0	0	0	**15**
30 – 49cm	FALSE	0	0	**4**	10	0	0	0	0	**10**
50 -79cm	FALSE	0	[redacted]	**5**	15	0	0	0	0	**15**
>80cm	FALSE	0		**Average**	13	0	0	0	0	**13**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Grazing										
Habitat features, comments and incidental fauna observations:										

Plot no: 11 **Job:** Stubbo **Job no:** 3345 **Date:** 11/10/23 **Observers:** JS TM KB

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Echium plantagineum		2	100
								Lepidium bonariense		2	100
								Hypochaeris glabra		6	
								Cotula turbinata		2	100
								Verbena bonariensis		1	30
								Lolium perenne		5	200
								Cirsium vulgare		0.5	30
								Conyza bonariensis		0.5	50
								Acetosella vulgaris		0.2	20
								Mentha diemenica		0.1	5
								Wahlenbergia communis		0.1	5
								Cynodon dactylon		1	100
								Pseudognaphalium luteoalbum		1	50
								Hordeum leporinum		0.2	20
								Hypochaeris radicata		15	
								Paspalum dilatatum		2	30
								Bromus hordeaceus		0.3	30
								Crassula sieberiana		0.1	1
								Arctotheca calendula		0.5	20
								Sonchus oleraceus		0.1	5
								Trifolium fragiferum		0.5	100
								Polygonum bellardii		0.1	5
Total Cover		0				0			40-50	40.2	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	3:45		**Departure time:**	05:00	**Weather:**	Hot sunny, strong breeze	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,028	6423440		**End**	737,013	6423468	**Zone:**	55	**Bearing:**	310
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	15	0	0	0	0	**15**
10 – 19 cm	FALSE	[redacted]		**2**	10	0	0	0	0	**10**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	5	0	0	0	0	**5**
30 – 49cm	FALSE	0	0	**4**	25	0	0	0	0	**25**
50 -79cm	FALSE	0	[redacted]	**5**	10	0	0	0	0	**10**
>80cm	FALSE	0		**Average**	13	0	0	0	0	**13**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Grazing										
Habitat features, comments and incidental fauna observations:										

Plot no: 12 **Job:** Stubbo **Job no:** 3345 **Date:** 12/10/23 **Observers:** JS TM

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
								Hypochaeris glabra		5	100
								Pseudognaphalium luteoalbum		0.1	5
								Carthamus lanatus		0.5	30
								Sporobolus creber		4	40
								Chloris truncata		0.1	2
								Lolium perenne		15	
								Echium plantagineum		3	100
								Trifolium fragiferum		2	40
								Vulpia bromoides		0.1	5
								Juncus bufonius		0.1	2
								Vicia spp.		0.1	5
Total Cover		0				0			30	30	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	930		**Departure time:**	11:00	**Weather:**	Hot sunny	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	736,720	6422184		**End**	736,682	6422150	**Zone:**	55	**Bearing:**	210
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	15	0	0	0	0	**15**
10 – 19 cm	FALSE	[redacted]		**2**	10	0	0	0	0	**10**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	10	0	0	0	0	**10**
30 – 49cm	FALSE	0	0	**4**	5	0	0	0	0	**5**
50 -79cm	FALSE	0	[redacted]	**5**	15	0	0	0	0	**15**
>80cm	FALSE	0		**Average**	11	0	0	0	0	**11**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Grazed paddock										
Habitat features, comments and incidental fauna observations:										

Plot no: 13 **Job:** Stubbo **Job no:** 3345 **Date:** 20/03/24 **Observers:** JS

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Eucalyptus conica		30						Setaria sphacelata		3	5
								Bidens subalternans		5	50
								Paspalum dilatatum		5	25
								Eragrostis curvula		60	
								Calotis lappulacea		1	15
								Plantago lanceolata		2	25
								Einadia nutans subsp. Nutans		0.2	10
								Einadia nutans subsp. Linifolia		0.2	15
								Glycine clandestina		0.2	25
								Ligustrum sinense		0.1	5
								Conyza sumatrensis		0.1	5
								Wahlenbergia spp.		0.1	15
								Verbena quadrangularis		0.2	15
								Cassinia sifton		0.2	5
								Hydrocotyle laxiflora		0.1	40
								Pavonia hastata		0.1	10
								Microlaena stipoides		5	200
								Cheilanthes sieberi		0.1	2
								Austrostipa verticillata		1	15
								Aristida ramosa		1	20
								Convolvulus graminetinus		0.1	20
								Marrubium vulgare		0.1	5
								Digitaria divaricatissima		0.1	5
								Chondrilla juncea		0.2	10
								Poa sieberiana var. cyanophylla		0.2	8
								Eremophila debilis		0.1	2
								Sporobolus creber		0.2	15
								Rubus anglocandicans		0.1	1
								Eriochloa pseudoacrotricha		0.1	2
								Prunus persica		1	1
								Avena barbata		0.1	1
Total Cover		30				0				86.9	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	2		**Departure time:**	3.3	**Weather:**	cloudy, cool	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,817	6421776		**End**	737,725	6421793	**Zone:**	55	**Bearing:**	280
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	TRUE	[redacted]	1		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	TRUE	[redacted]	[redacted]	**1**	25	0	0	0	0	**25**
10 – 19 cm	TRUE	[redacted]		**2**	20	0	0	0	0	**20**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	25	0	0	0	0	**25**
30 – 49cm	TRUE	3	10	**4**	35	0	0	0	0	**35**
50 -79cm	TRUE	3	[redacted]	**5**	20	0	0	0	0	**20**
>80cm	FALSE	0		**Average**	25	0	0	0	0	**25**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Habitat features, comments and incidental fauna observations:										

Plot no: 14 **Job:** Stubbo **Job no:** 3345 **Date:** 10/03/24 **Observers:** JS

Upper stratum	Unknown (Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
Eucalyptus conica		15		Casuarina cunninghamiana subsp. cunninghamiana		1	1	Wahlenbergia luteola		0.1	5
Eucalyptus blakelyi		7		Schinus areira		3	1	Verbena quadrangularis		1	15
								Plantago lanceolata		5	50
								Heliotropium amplexicaule		1	10
								Eragrostis curvula		15	
								Setaria parviflora		15	
								Chondrilla juncea		0.2	4
								Carex inversa		2	50
								Paspalum dilatatum		10	
								Eleusine indica		1	15
								Ligustrum sinense		1	5
								Microlaena stipoides		10	
								Conyza sumatrensis		0.1	5
								Sporobolus creber		10	
								Themeda triandra		5	40
								Bidens subalternans		5	80
								Phragmites australis		0.1	2
								Cynodon dactylon		0.5	5
								Calotis lappulacea		0.1	10
								Heliotropium amplexicaule		0.2	5
								Paronychia brasiliana		0.1	20
								Lactuca serriola		0.1	2
								Solanum mauritianum		0.2	5
								Cassinia sifton		0.2	5
								Glycine tabacina		0.1	5
								Eriochloa pseudoacrotricha		0.5	5
								Echium plantagineum		0.1	1
								Acaena novae-zelandiae		0.2	5
								Opuntia monacantha		1	1
								Einadia nutans subsp. Nutans		3	15
								Lycium ferocissimum		0.5	1
								Atriplex spinibractea		1	5
								Echinopogon ovatus		3	20
								Acetosella vulgaris		5	100
								Alternanthera denticulata		0.2	25
								lotus spp.		0.1	1
								Modiola caroliniana		1	15
								Galium aparine		0.2	15
								Eragrostis brownii		1	5
								Brassica tournefortii		0.1	5
								Juncus usitatus		1	25
								Alternanthera pungens		0.1	2
Total Cover		22				4				92.3	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	04:00		**Departure time:**	5.5	**Weather:**	cloudy, cool	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,927	6421766		**End**	737,880	6421853	**Zone:**	55	**Bearing:**	330
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	TRUE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	50	0	0	0	0	**50**
10 – 19 cm	TRUE	[redacted]		**2**	20	0	0	0	0	**20**
20 – 29 cm	TRUE	[redacted]	**Length of logs**	**3**	50	0	0	0	0	**50**
30 – 49cm	TRUE	6	17	**4**	15	0	0	0	0	**15**
50 -79cm	TRUE	1	[redacted]	**5**	35	0	0	0	0	**35**
>80cm	TRUE	1		**Average**	34	0	0	0	0	**34**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
Habitat features, comments and incidental fauna observations:										

Plot no: 15 **Job:** Stubbo **Job no:** 3345 **Date:** 08/08/24 **Observers:** JS GT

3345

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	(Comment)	C	Ab
				Salix alba		2	5	Rubus anglocandicans		5	80
				Eucalyptus conica		1	1	Phragmites australis		90	1000
				Ligustrum lucidum		1	5	Lepidium africanum		0.1	5
				Prunus persica		1	5	Microlaena stipoides		3	100
								Plantago lanceolata		0.2	15
								conyza sumatrensis		0.2	15
								Juncus usitatus		1	100
								Vicia spp.		0.5	40
								Bromus catharticus		0.2	20
								Galium aparine		0.2	50
								Sonchus asper		0.1	5
								Carex appressa		0.5	10
								Rumex crispus		0.1	10
								Nothoscordum borbonicum		0.1	1
								Juncus continuus		0.2	20
								Cyperus eragrostis		1	40
								Melinis repens		0.2	10
								Modiola caroliniana		0.1	5
								Aster subulatus		0.1	5
								Cenchrus clandestinus		3	50
								Verbena quadrangularis		0.2	5
Total Cover		0				5				106	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	800		**Departure time:**	09:00	**Weather:**	Sunny. Frosty. 1c	**photos (one landscape, one portrait) taken**	Not Done	**Transect GPS points taken**	Not Done
Start	737,976	6421713		**End**	737,939	6421745	**Zone:**	55	**Bearing:**	292
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	0	0	0	0	0	**0**
10 – 19 cm	FALSE	[redacted]		**2**	0	0	0	0	0	**0**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	0	0	0	0	0	**0**
30 – 49cm	FALSE	0	2	**4**	0	0	0	0	0	**0**
50 -79cm	FALSE	0	[redacted]	**5**	0	0	0	0	0	**0**
>80cm	FALSE	0		**Average**	0	0	0	0	0	**0**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
This plot was positioned to capture a stand of phragmities with other natives species amongst										
Habitat features, comments and incidental fauna observations:										

Plot no: 16 **Job:** Stubbo **Job no:** 3345 **Date:** 08/08/24 **Observers:** JS

Upper stratum	(Comment)	C	Ab	Mid stratum	(Comment)	C	Ab	Lower stratum	Unknown (Comment)	C	Ab
								Cenchrus clandestinus		5	100
								Trifolium repens		1	40
								Eragrostis curvula		5	100
								Cynodon dactylon		7	100
								Verbena quadrangularis		0.5	15
								Rumex crispus		0.2	10
								Vicia spp.		0.5	50
								Sonchus asper		0.1	5
								Lolium perenne		40	1000
								Echium plantagineum		0.1	5
								Carex appressa		3	15
								Cirsium vulgare		0.1	10
								Paspalum dilatatum		30	200
								Juncus usitatus		1	15
								Fumaria spp.		0.2	20
								galium aparine		2	40
								Lysimachia arvensis		0.1	1
Total Cover		0				0				95.8	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	915		**Departure time:**	10:30	**Weather:**	Sunny Frost 4c	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start	737,384	6421840		**End**	737,467	6421823	**Zone:**	55	**Bearing:**	90
Tree Stem Size Class	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	5	0	0	0	0	**5**
10 – 19 cm	FALSE	[redacted]		**2**	2	0	0	0	0	**2**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	0	0	0	0	0	**0**
30 – 49cm	FALSE	0	0	**4**	2	0	0	0	0	**2**
50 -79cm	FALSE	0	[redacted]	**5**	5	0	0	0	0	**5**
>80cm	FALSE	0		**Average**	2.8	0	0	0	0	**2.8**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
This plot was positioned to capture exotic vegetation toward the west of the stubbo lane road upgrade										
Habitat features, comments and incidental fauna observations:										

Plot no:	17		Job:	Stubbo		Job no:	3345	Date:	08/08/24	Observers:	JS GT
Upper stratum	**(Comment)**	**C**	**Ab**	**Mid stratum**	**(Comment)**	**C**	**Ab**	**Lower stratum**	**(Comment)**	**C**	**Ab**
								Sporobolus creber		0.2	20
								Eragrostis curvula		30	1000
								Plantago lanceolata		0.5	30
								Lolium perenne		10	200
								Setaria parviflora		1	40
								Cynodon dactylon		2	60
								Carthamus lanatus		0.2	10
								Austrostipa verticillata		1	20
								Urochloa panicoides		5	100
								Verbena quadrangularis		0.1	15
								Lepidium africanum		0.1	5
								Acetosella vulgaris		0.5	50
								Digitaria divaricatissima		0.1	10
								Paspalum dilatatum		30	1000
								Avena sativa		10	200
								Lamium amplexicaule		0.2	20
								Juncus continuus		0.2	20
								Bidens pilosa		0.1	20
Total Cover		0				0				91.2	

20mx20m plot = 400m2 Note: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2m, 5% = 4x5m, 25% = 10x10m

Arrival time:	1015		**Departure time:**	11:30M	**Weather:**	Sunny 10c. Light wind	**photos (one landscape, one portrait) taken**	Done	**Transect GPS points taken**	Done
Start easting/northing:	738,131	6421698		**End**	738,234	6421680	**Zone:**	55	**Bearing:**	86
Tree Stem Size Class at DBH	**Presence(TRUE)/Absence(F**	**Number**	**Count of HBTs**	**Leaf Litter Cover within 5 x 1m2 sub-plots**						
< 5 cm	FALSE	[redacted]	0		**Leaf litter**	**Live**	**Bare ground**	**Rocks**	**Other**	**Total**
5 - 9 cm	FALSE	[redacted]	[redacted]	**1**	0	0	0	0	0	**0**
10 – 19 cm	FALSE	[redacted]		**2**	0	0	0	0	0	**0**
20 – 29 cm	FALSE	[redacted]	**Length of logs**	**3**	0	0	0	0	0	**0**
30 – 49cm	FALSE	0	0	**4**	2	0	0	0	0	**2**
50 -79cm	FALSE	0	[redacted]	**5**	0	0	0	0	0	**0**
>80cm	FALSE	0	[redacted]	**Average**	0.4	0	0	0	0	**0.4**
Plot Disturbance: (weediness, clearing, erosion, edge effects, grazing, fire, other)										
This plot was positioned to capture exotic vegetation toward the east of stubbo rd. the road reserve was thin and was under under 20x20m										
Habitat features, comments and incidental fauna observations:										

Family	Scientific Name	Common Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
Tree (TG)																			
Myrtaceae	*Angophora floribunda*	Rough-barked Apple	10		30														
Malvaceae	*Brachychiton populneus*	Kurrajong				0.1													
Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*	River Oak														1			
Myrtaceae	*Eucalyptus blakelyi*	Blakely's Red Gum	5	8	10	8	2									7			
Myrtaceae	*Eucalyptus conica*	Fuzzy Box	5	12											30	15	1		
Myrtaceae	*Eucalyptus melliodora*	Yellow Box		20		25	35												
Shrub (SG)																			
Asteraceae	*Cassinia sifton*	-			0.5										0.2	0.2			
Scrophulariaceae	*Eremophila debilis*	Amulla													0.1				
Grass & grasslike (GG)																			
Poaceae	*Aristida ramosa*	Purple Wiregrass													1				
Poaceae	*Arundinella nepalensis*	Reedgrass	10	0.2	15	2													
Poaceae	*Austrostipa verticillata*	Slender Bamboo Grass													1				1
Cyperaceae	*Carex appressa*	Tall Sedge			0.5												0.5	3	
Cyperaceae	*Carex inversa*	Knob Sedge				0.1										2			
Poaceae	*Chloris truncata*	Windmill Grass		1				2			0.3	0.1		0.1					
Poaceae	*Cynodon dactylon*	Common Couch			0.1	1	2	1	0.2		15	5	1			0.5		7	2
Poaceae	*Digitaria divaricatissima*	Umbrella Grass													0.1				0.1
Poaceae	*Echinopogon caespitosus*	Bushy Hedgehog-grass			0.2														
Poaceae	*Echinopogon ovatus*	Forest Hedgehog Grass														3			
Cyperaceae	*Eleocharis spp.*	Spike-rush, Spike-sedge				1													
Poaceae	*Eragrostis brownii*	Brown's Lovegrass														1			
Poaceae	*Eragrostis spp.*	-				0.1													
Poaceae	*Eriochloa pseudoacrotricha*	Early Spring Grass													0.1	0.5			
Poaceae	*Imperata cylindrica*	Blady Grass			10														
Juncaceae	*Juncus continuus*	-			0.2	8											0.2		0.2
Juncaceae	*Juncus usitatus*	-														1	1	1	
Juncaceae	*Juncus vaginatus*	-	1		0.5		0.1												
Poaceae	*Lachnagrostis spp.*	-	0.1		0.2	0.1													
Lomandraceae	*Lomandra multiflora subsp. multiflora*	Many-flowered Mat-rush				0.2													
Poaceae	*Microlaena stipoides*	Weeping Grass			10					0.1					5	10	3		
Poaceae	*Phragmites australis*	Common Reed			10											0.1	90		
Poaceae	*Poa sieberiana var. cyanophylla*	-													0.2				

Family	Scientific Name	Common Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
Poaceae	*Rytidosperma spp.*	-	0.2																
Poaceae	*Sporobolus creber*	Slender Rat's Tail Grass	1			2		0.1		5	10	0.1		4	0.2	10			0.2
Poaceae	*Themeda triandra*	-			1											5			
Forb (FG)																			
Rosaceae	*Acaena echinata*	Sheep's Burr				0.1													
Rosaceae	*Acaena novae-zelandiae*	Bidgee-widgee														0.2			
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed														0.2			
Chenopodiaceae	*Atriplex spinibractea*	Spiny-fruit Saltbush														1			
Asteraceae	*Calotis lappulacea*	Yellow Burr-daisy				0.1									1	0.1			
Crassulaceae	*Crassula sieberiana*	Australian Stonecrop											0.1						
Convolvulaceae	*Dichondra repens*	Kidney Weed				0.1													
Chenopodiaceae	*Einadia nutans subsp. linifolia*	Climbing Saltbush													0.2				
Chenopodiaceae	*Einadia nutans subsp. nutans*	Climbing Saltbush													0.2	3			
Chenopodiaceae	*Einadia trigonos subsp. leiocarpa*	-		0.1		0.1													
Geraniaceae	*Geranium solanderi*	Native Geranium				0.1													
Haloragaceae	*Haloragis heterophylla*	Variable Raspwort				0.1													
Apiaceae	*Hydrocotyle laxiflora*	Stinking Pennywort													0.1				
Fabaceae (Faboideae)	*Lotus spp.*	-														0.1			
Lamiaceae	*Mentha diemenica*	Slender Mint											0.1						
Asteraceae	*Pseudognaphalium luteoalbum*	Jersey Cudweed							0.1		0.1		1	0.1					
Polygonaceae	*Rumex spp.*	Dock								0.1									
Campanulaceae	*Wahlenbergia communis*	Tufted Bluebell											0.1						
Campanulaceae	*Wahlenbergia gracilis*	Sprawling Bluebell										0.1							
Campanulaceae	*Wahlenbergia luteola*	Bluebell			0.1	0.1										0.1			
Campanulaceae	*Wahlenbergia spp.*	Bluebell									0.1				0.1				
Fern (EG)																			
Pteridaceae	Cheilanthes sieberi	Rock Fern													0.1				
Other (OG)																			
Convolvulaceae	Convolvulus graminetinus	-													0.1				
Fabaceae (Faboideae)	Glycine clandestina	Twining glycine													0.2				
Fabaceae (Faboideae)	Glycine tabacina	Variable Glycine														0.1			

Family	Scientific Name	Common Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
Exotic																			
Asteraceae	Arctotheca calendula	Capeweed							1		0.1		0.5						
Asteraceae	Aster subulatus	Wild Aster															0.1		
Poaceae	Avena barbata	Bearded Oats		0.2	0					0.2					0.1				
Poaceae	Avena sativa	Oats							15										10
Poaceae	Bromus catharticus	Praire Grass		0.5	1		1										0.2		
Poaceae	Bromus hordeaceus	Soft Brome						1		0.5		6	0.3						
Asteraceae	Chondrilla juncea	Skeleton Weed													0.2	0.2			
Asteraceae	Cirsium vulgare	Spear Thistle				0.3					0.2	0.3	0.5					0.1	
Asteraceae	Conyza bonariensis	Flaxleaf Fleabane				0.2						0.1	0.5						
Asteraceae	Conyza sumatrensis	Tall fleabane													0.1	0.1	0.2		
Asteraceae	Cotula turbinata	-											2						
Boraginaceae	Echium plantagineum	Patterson's Curse			1				0.1	6			2	3		0.1		0.1	
Poaceae	Eleusine indica	Crowsfoot Grass									0.1					1			
Fumariaceae	Fumaria spp.	Fumitory																0.2	
Rubiaceae	Galium aparine	Goosegrass			0.1	0.1										0.2	0.2	2	
Asteraceae	Gamochaeta spp.	-				0.1													
Poaceae	Holcus lanatus	Yorkshire Fog			2														
Poaceae	Hordeum leporinum	Barley Grass	0.1	1			0.2	2				0.5	0.2						
Asteraceae	Hypochaeris glabra	Smooth Catsear	0.1						0.1		3	1	6	5					
Asteraceae	Hypochaeris radicata	Catsear		0.1	0.1	1		0.5		0.8			15						
Juncaceae	Juncus bufonius	Toad Rush	0.5								0.1			0.1					
Asteraceae	Lactuca serriola	Prickly Lettuce			0.1											0.1			
Lamiaceae	Lamium amplexicaule	Dead Nettle																	0.2
Brassicaceae	Lepidium africanum	Common Peppercress	0.1	0.1						0.1							0.1		0.1
Brassicaceae	Lepidium bonariense	Argentine Peppercress							3			0.1	2						
Poaceae	Lolium perenne	Perennial Ryegrass	20	5	5	10	10	70	0.5	15	6	10	5	15				40	10
Primulaceae	Lysimachia arvensis	Scarlet Pimpernel			0.1					0.1								0.1	
Lamiaceae	Marrubium vulgare	White Horehound													0.1				
Poaceae	Melinis repens	Red Natal Grass															0.2		
Malvaceae	Modiola caroliniana	Red-flowered Mallow						0.1			0.1					1	0.1		
Alliaceae	Nothoscordum borbonicum	Onion Weed															0.1		
Oxalidaceae	Oxalis corniculata	Creeping Oxalis			0.1			0.1	0.1										
Caryophyllaceae	Paronychia brasiliana	Chilean Whitlow Wort, Brazilian Whitlow		0.1		0.1		1			0.5	0.1				0.1			
Malvaceae	Pavonia hastata	-													0.1				
Plantaginaceae	Plantago lanceolata	Lamb's Tongues		0.1	0.5	1									2	5	0.2		0.5

Family	Scientific Name	Common Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
Polygonaceae	Polygonum bellardii	Tree Hogweed											0.1						
Rosaceae	Prunus persica	-													1		1		
Polygonaceae	Rumex crispus	Curled Dock			1												0.1	0.2	
Salicaceae	Salix alba	White Willow			3												2		
Anacardiaceae	Schinus areira	Pepper Tree														3			
Poaceae	Setaria parviflora	-														15			1
Poaceae	Setaria sphacelata	South African Pigeon Grass													3				
Solanaceae	Solanum mauritianum	Wild Tobacco Bush														0.2			
Asteraceae	Sonchus asper	Prickly Sowthistle			0.1												0.1	0.1	
Asteraceae	Sonchus oleraceus	Common Sowthistle			0.1	0.2							0.1						
Fabaceae (Faboideae)	Trifolium arvense	Haresfoot Clover									0.2								
Fabaceae (Faboideae)	Trifolium fragiferum	Strawberry Clover						0.1		0.1	0.1	0.1	0.5	2					
Fabaceae (Faboideae)	Trifolium repens	White Clover																1	
Poaceae	Urochloa panicoides	Urochloa Grass																	5
Verbenaceae	Verbena bonariensis	Purpletop									0.2	0.1	1						
Verbenaceae	Verbena quadrangularis	-													0.2	1	0.2	0.5	0.1
Fabaceae (Faboideae)	Vicia spp.	Vetch												0.1			0.5	0.5	
Fabaceae (Faboideae)	Vicia villosa	Russian Vetch							0.2										
Poaceae	Vulpia bromoides	Squirrel Tail Fesque												0.1					
High Threat Weed - manageable																			
Solanaceae	Lycium ferocissimum	African Boxthorn														0.5			
High Threat Weed - not manageable																			
Polygonaceae	Acetosella vulgaris	Sheep Sorrel	0.1		0.1	0.1				0.5		6	0.2			5			0.5
Amaranthaceae	Alternanthera pungens	Khaki Weed														0.1			
Asteraceae	Bidens pilosa	Cobbler's Pegs																	0.1
Asteraceae	Bidens subalternans	Greater Beggar's Ticks													5	5			
Brassicaceae	Brassica tournefortii	Mediterranean Turnip							3							0.1			
Poaceae	Bromus diandrus	Great Brome			15					0.2									
Asteraceae	Carthamus lanatus	Saffron Thistle						5	5	0.3	0.1	0.1		0.5					0.2
Poaceae	Cenchrus clandestinus	Kikuyu Grass															3	5	
Cyperaceae	Cyperus eragrostis	Umbrella Sedge															1		
Poaceae	Ehrharta erecta	Panic Veldtgrass			0.2														

Family	Scientific Name	Common Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
Poaceae	Eragrostis curvula	African Lovegrass	0.2		0.2										60	15		5	30
Boraginaceae	Heliotropium amplexicaule	Blue Heliotrope														1			
Oleaceae	Ligustrum lucidum	Large-leaved Privet															1		
Oleaceae	Ligustrum sinense	Small-leaved Privet													0.1	1			
Poaceae	Nassella trichotoma	Serrated Tussock				0.1													
Cactaceae	Opuntia monacantha	Drooping Pear														1			
Poaceae	Paspalum dilatatum	Paspalum	0.2	1	0.2	5	0.1			0.5			2		5	10		30	30
Rosaceae	Rubus anglocandicans	Blackberry													0.1		5		
Asteraceae	Xanthium spinosum	Bathurst Burr			0.2														

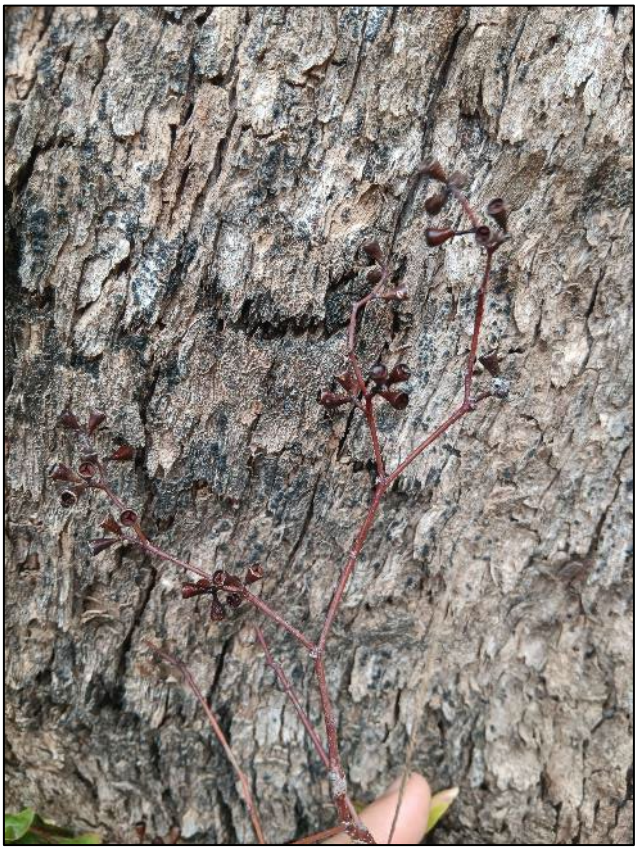
Appendix G: Site photographs

Above: View of the property from Jacksons Lane
Below: Typical vegetation condition within the Subject Land

Above: Agricultural land use, *Lolium perenne* cover crop.
Below: Slapdash Creek

Above: Large hollow found in *Angophora floribunda*
Below: Ephemeral tributary of Slapdash Creek with riparian vegetation (*Eucalyptus blakelyi* and *Eucalyptus melliodora*)

Above: Significant erosion of unnamed tributary
Below left: *Eucalyptus conica,* below right: *Eucalyptus blakelyi*



Above: Culvert located within Slapdash Creek crossing.
Below left: *Wahlenbergia luteola,* below right: *Cassinia sifton*

Appendix H: Credit reports

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00042587/BAAS18147/24/00047705

Proposal Name
Mayfair Solar Farm

BAM data last updated *
28/10/2024

Assessor Name
Ian Douglas Benson

Assessor Number
BAAS18147

BAM Data version *
Current classification (live - default) (80)

Proponent Names

Report Created
21/05/2025

BAM Case Status
Finalised

Assessment Revision
4

BOS entry trigger
BOS Threshold: Biodiversity Values Map and area clearing threshold

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
21/05/2025

* 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.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered Ecological Community	201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
Species		

Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	1.6	0	32	32

BAM Biodiversity Credit Report (Like for like)

201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384, 3404	-	201_Moderate	No	32	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384, 3404	-	201_Sdegraded	No	0	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id

00042587/BAAS18147/24/00047705

Proposal Name

Mayfair Solar Farm

BAM data last updated *

28/10/2024

Assessor Name

Ian Douglas Benson

Assessor Number

BAAS18147

BAM Data version *

Current classification (live - default) (80)

Proponent Name(s)

Report Created

21/05/2025

BAM Case Status

Finalised

Assessment Revision

4

BOS entry trigger

BOS Threshold: Biodiversity Values Map and area clearing threshold

Assessment Type

Part 4 Developments (Small Area)

Date Finalised

21/05/2025

* 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.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered Ecological Community	201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	1.6	0	32	32.00

201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384, 3404	-	201_Moderate	No	32	Inland Slopes,Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions This includes PCT's: 201, 202, 1384, 3404	-	201_Sdegraded	No	0	Inland Slopes,Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Grassy Woodlands	Tier 1	201_Moderate	No	32	IBRA Region: NSW South Western Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Grassy Woodlands	Tier 1	201_Sdegraded	No	0	IBRA Region: NSW South Western Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like options

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00042587/BAAS18147/23/00044673

Assessor Name
Ian Douglas Benson

Proponent Names

Assessment Revision
2

BAM Case Status
Finalised

Proposal Name
3345 Stubbo Solar Farm

Assessor Number
BAAS18147

Report Created
21/05/2025

BOS entry trigger
Major Project

BAM data last updated *
28/10/2024

BAM Data version *
Current classification (live - default) (80)

Date Finalised
21/05/2025

Assessment Type
Scattered Trees

* 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.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
281-Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	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 Highla	4	0	4

Credit classes for 281

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region
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 Highla	-	Yes	4	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id
00042587/BAAS18147/23/00044673

Proposal Name
3345 Stubbo Solar Farm

BAM data last updated *
28/10/2024

Assessor Name
Ian Douglas Benson

Assessor Number
BAAS18147

BAM Data version *
Current classification (live - default) (80)

Proponent Name(s)

Report Created
21/05/2025

Assessment Type
Scattered Trees

Date Finalised
21/05/2025

Assessment Revision
2

BOS entry trigger
Major Project

BAM Case Status
Finalised

* 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.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks
No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Variations)

PCT	TEC	HBT Cr	No HBT Cr	Credits
281-Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	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 Highla	4	0	4

Credit classes for 281

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region
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 Highla	-	Yes	4	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Appendix I: Biodiversity Management Plan

AEP

BIODIVERSITY | BUSHFIRE | ARBORICULTURE

NEWCASTLE SYDNEY

Biodiversity Management Plan

Proposed Mayfair Solar Farm, 204 Jacksons Lane Stubbo NSW 2852

Prepared For: Elgin Energy Pty Ltd C/- Urbis

Prepared By: Anderson Environment and Planning

Date: 21 May 2025

AEP Reference: 3345

Revision: 03

Newcastle | Sydney
10 Darvall St Carrington 2294 | 275 Stanmore Rd Petersham 2049
P 0420 624 707 E info@andersonep.com.au ABN 57 659 651 537

Document Control

Document Name	Biodiversity Management Plan for Proposed Mayfair Solar Farm, 204 Jacksons Lane Stubbo NSW 2852 Lot 2 DP734669 and Lot 2 DP528667
Project Number	3345
Client Name	Elgin Energy Pty Ltd C/- Urbis
AEP Project Team	Darcy Kilvert Geoff Turner Yann Buissiere Joelan Sawyer Eve Dubourdieu

Revision

Revision	Date	Authors	Reviewed	Approved
01	25/08/2024	Geoff Turner	Yann Buissiere	Darcy Kilvert
02	04/11/2024	Geoff Turner	Yann Buissiere	Darcy Kilvert
03	21/05/2025	Eve Dubourdieu	Darcy Kilvert	Darcy Kilvert

Distribution

Revision	Date	Name	Organisation
01	25/08/2024	Pablo Yague	Urbis
02	04/11/2024	Richard Barry	Urbis
03	21/05/2024	Richard Barry	Urbis

Table of Contents

Tables

Figures

Appendices

1.0 Introduction

At the request of Urbis, on behalf of Elgin Energy Pty Ltd, Anderson Environment & Planning (AEP) have undertaken the necessary investigations to inform the production of a Biodiversity Management Plan (BMP) for retained lands as part of a proposed solar farm located at 204 Jacksons Lane, Stubbo NSW (the Subject Site).

This BMP schedules regeneration and management of vegetation within the retained lands, with particular focus on maintaining and improving riparian areas along Slapdash Creek as an area of Key Fish Habitat, and the revegetation of areas with native species, where feasible, to create a net gain of the Threatened Ecological Communities (TECs) *Fuzzy Box Woodland* and *Box Gum Woodland* present onsite in a degraded state.

This BMP has been prepared to support the SSDA application and is based on the current project layout. However, aspects of the project, such as detailed bridge design, remain subject to finalisation. As such, some degree of micro-siting or minor adjustment may be required during implementation of the BMP.

The areas identified for revegetation have been selected based on their ecological significance and regeneration potential, including riparian zones and areas supporting TECs. Due to the highly disturbed nature of the site and limited intact remnant vegetation, the delineation of vegetation communities and management zones (MZs) has been informed by best-practice methods, incorporating field survey data, desktop assessment, and analysis of adjacent vegetation.

Accordingly, the MZs and BMP boundaries should be considered indicative. On-ground revegetation and restoration efforts should be guided by site-specific conditions and are subject to verification and adjustment by the project ecologist in consultation with the bush regeneration contractor (BRC).

1.1 Biodiversity Management Plan Objectives

The purpose of this plan is to define and outline actions required to regenerate and reconstruct the degraded vegetation present onsite to achieve a state of natural regeneration within five (5) years.

This BMP incorporates best practices in bushland restoration, management of invasive species and revegetation in order to achieve the following objectives within the five (5) years imparted:

- Regenerate physical and biological functions of the remnant bushland present within the BMP Lands to improve habitat values and connectivity for locally occurring biota;
- Enable reconstruction, facilitated and natural regeneration where appropriate, ensuring the structural and trophic complexity of the vegetation community is adequately represented;
- Reconstruct highly disturbed areas that cannot naturally regenerate to stabilise and reinstate landforms, and vegetation communities that are generally representative of those present prior to disturbance;
- Improve the state of the riparian corridor to strengthen the resilience of Key Fish Habitat as identified within Slapdash Creek;
- Develop management actions detailed using the 'SMART' goals approach (Specific, Measurable, Achievable, Reasonable and Time bound); and
- Ensure the site is maintained until vegetation in rehabilitated areas achieves a self-sustaining state requiring nominal maintenance.

The overarching goal of this plan is to manage the retained vegetation for biodiversity conservation as part of the avoid and minimise strategy for the proposed development as well as increase the extent of the BC Act Endangered Ecological Community *Fuzzy Box Woodland* as well as the BC Act listed

Critically Endangered Ecological Community *Box Gum Woodland*, both of which have approximately less than 5% of their extent remaining.

1.2 Document Referencing

In preparing this plan, reference has been made to the following document:

- Anderson Environment & Planning (2025). Biodiversity Development Assessment Report for *Proposed Mayfair Solar Farm, 204 Jacksons Lane, Stubbo*. Anderson Environment & Planning. Unpublished report for Elgin Energy.

For the purposes of referencing, this document should be cited as:

- Anderson Environment & Planning (2025). *Biodiversity Management Plan for Proposed Mayfair Solar Farm, 204 Jacksons Lane, Stubbo*. Anderson Environment & Planning. Unpublished report for Elgin Energy.

1.3 About this Plan

This BMP is a comprehensive report developed to provide management for flora and riparian areas over the BMP Lands for five (5) years. To allow for a concise and easily referable plan, the BMP has been divided into sections, which function cohesively together and as separate plans:

- **Section 1: Introduction** – provides information on objectives and referencing material;
- **Section 2: Site Context and Existing Condition** – provides detailed information on the BMP Lands and ground-truthed condition;
- **Section 3: Regeneration Approach and Targets** – outlines the approach to revegetate the BMP Lands, including methodology and targets over the five (5) years to achieve a naturally regenerating site;
- **Section 4: Site Preparation** – outlines the procedure to prepare the BMP Lands for management and the surrounding process to protect this land from surrounding development;
- **Section 5: Implementation of Regeneration** – this section of the report outlines the specific Management Zone strategies for regeneration and schedule of works; and
- **Section 6: Project Management** – this section of the plan addresses qualifications, monitoring and reporting procedures.

2.0 Site Context and Existing Condition

2.1 Local context

The Subject Site is located at 204 Jacksons Lane, Stubbo, NSW and consists of the entirety of Lot 2 DP734669 and the section of Lot 2 DP528667 east of the rail corridor. The Subject Site is located in the Mid-Western Local Government Area (LGA) in the Central Tablelands of NSW.

The land is currently zoned RU1 – Primary Production and is situated within an area of historic and ongoing agricultural practices. The proposed roadwork upgrade along Jacksons Lane crosses Slapdash Creek which is mapped as 'Key Fish Habitat'. Along the north-east of the site runs Slapdash Creek, where the majority of the remnant vegetation present onsite is found. **Figure 1** shows the site location.

2.2 Vegetation Descriptions

The BMP Lands covers approximately 32.21 ha. Remnant vegetation present within the BMP Lands is composed of three (3) distinct Plant Community Types (PCTs) found in various conditions:

- PCT 201 – Fuzzy Box Woodland (1.93ha);
- PCT 78 – River Red Gum Riparian Tall Woodland (1.09ha); and
- PCT 281 – Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats (Box Gum Woodland) (2.28ha).

The remainder of the BMP Lands is composed of exotic dominant and degraded grassland.

A description of each vegetation zone present within the BMP Lands is provided in the following sections. Their location within the BMP Lands is presented in **Figure 3**.

2.2.1 PCT 201 – Fuzzy Box Woodland

This PCT is found throughout the site in varying condition, with sections of native canopy cover and sparse understorey due to grazing pressure. Vegetation predominantly consists of mature canopy trees, a sparse to absent midstratum and a ground stratum dominated by exotic grass species with a minor component of native species. The vegetation can be summarised as:

- Upper stratum: composed of *Eucalyptus melliodora, E. blakelyi,* and *E. conica.*
- Mid stratum: fragmented with occasional *Cassinia sifton*.
- Ground stratum: is fairly modified due to grazing, however, the zone is dominated by *Microlaena stipoides, Cynodon dactylon* with less frequent graminoids *Carex inversa, Aristida ramosa, Arundinella nepalensis, Austrostipa verticillate* and *Poa sieberiana* var. *cyanophylla*. A few native forbs; *Calotis lappulacea, Einadia nutans* subsp. *linifolia* and *Einadia trigonos* subsp. *Leiocarpa* spp. were recorded in low abundance.

As identified in the BDAR (AEP 2025), this vegetation community is associated with the following Threatened Ecological Community (TEC):

- BC Act listed Endangered Ecological Community (EEC) *Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregion.*

This community commonly occurs in areas that are optimal for agriculture and as such it has been disturbed by historical and ongoing agricultural practices and now exists in a highly modified state with a high incursion of exotic species. Consequently, sites like the Study Area offer a crucial opportunity to support the recovery of this community. A key aim of this BMP is to ensure a net increase of the extent of this TEC within the Study Area, via reconstruction.

2.2.2 PCT 78 – River Red Gum Riparian Tall Woodland

This vegetation zone is located within the riparian corridor of Slapdash Creek and along 1st order tributaries in the north of the site, the zone is found in varying conditions. Vegetation alongside Slapdash Creek was generally found to be in better condition, compared to the tributaries to the west which had been subject to higher levels of disturbance and as such were assessed as being in moderate condition. The vegetation is characterised by:

- Upper stratum: composed primarily of *Angophora floribunda* along Slapdash Creek and *Eucalyptus melliodora* along the tributary, with some *Eucalyptus blakelyi* amongst. A few scattered *Salix alba* were also present.
- Mid stratum: *Cassinia sifton* and *Brachychiton populneus* subsp. *populneus* (observed but not recorded)
- Ground stratum: *Arundinella nepalensi*s was dominant in these areas, with lesser cover of other grasses; *Microlaena stipoides, Cynodon dactylon,* and *Imperata cylindrica.* Wetland species present include*; Phragmites australis, Carex appressa, Carex inversa, Eleocharis* spp., *Juncus continuus* and *Juncus vaginatus.*

The amelioration of this vegetation is crucial in providing habitat and landscape connectivity across the site for locally occurring fauna including threatened species as well as enhancing the Key Fish Habitat via the reestablishment of riparian vegetation, stabilization of geomorphological processes and improvement of water quality.

2.2.3 PCT 281 – Rough-barked Apple – Red Gum – Yellow Box Woodland

This vegetation zone is primarily located adjacent to the ephemeral tributaries or drainage channels of Slapdash Creek and is scattered across the BMP Lands in fragmented tracts of vegetation. PCT 281 is in poor condition due to historical clearing and grazing. PCT 281 is present as canopy with an absent midstratum and a ground stratum dominated by exotic grass species, specifically *Lolium perenne*. The vegetation is characterised by:

- Upper stratum: canopy is dominated by *Eucalyptus melliodora* with *Eucalyptus blakelyi,* and *Angophora floribunda* occurring less frequently.
- Mid stratum: absent.
- Ground stratum: dominated by *Juncus continuus*, with lesser cover of *Aristida ramosa, Arundinella nepalensis, Austrostipa verticillata, Calotis lappulacea, Carex appressa, Eragrostis brownii, Geranium solanderi, Glycine clandestina, Haloragis heterophylla, Juncus usitatus, Microlaena stipoides, Wahlenbergia luteola.*

As identified in the BDAR (AEP 2025), this vegetation community is associated with the following Threatened Ecological Community (TEC):

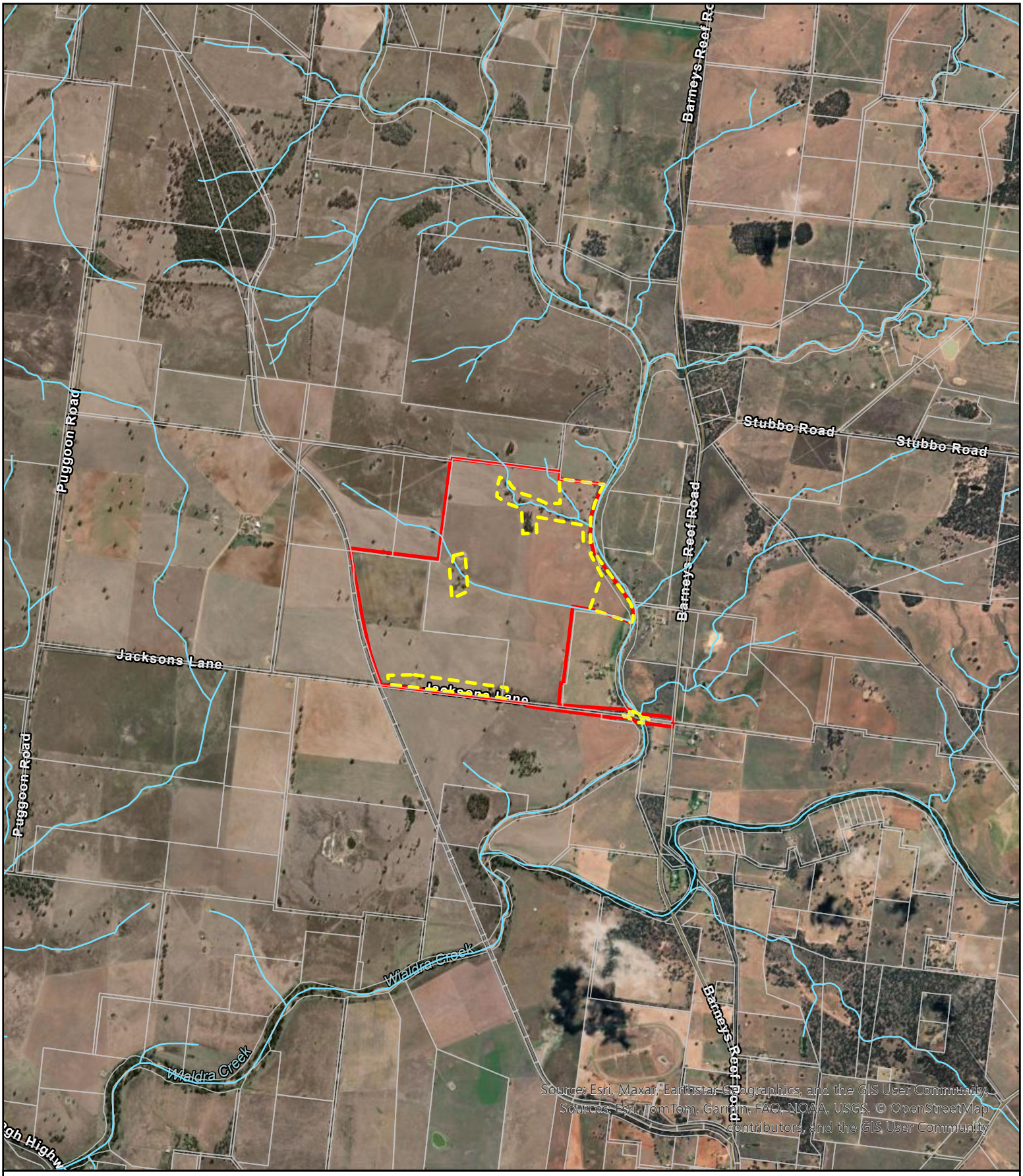
- BC Act listed Critically Endangered Ecological Community (CEEC) *White Box - Yellow Box - Blakelyi Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.*

This community commonly occurs in areas that are optimal for agriculture and as such it has been disturbed by historical and ongoing agricultural practices, particularly grazing, as well as clearing for infrastructure and now exists in a highly modified state with a high incursion of exotic species. Consequently, sites like the Study Area offer a crucial opportunity to support the recovery of this community. A key aim of this BMP is to ensure a net increase of the extent of this TEC within the Study area, via reconstruction.

2.2.4 Exotic Vegetation

The vast majority of the BMP Lands is composed of exotic vegetation, especially non-native grasses likely introduced as part of historical pasture improvement practices.

Note that roadside vegetation in the southern section of the BMP Lands has been colonized by exotic grasses, predominantly *Eragrostis curvula* with *paspalum dilatatum*.



Legend

Study Area | Cadastre | Hydroline | BMP Lands

Address: 204 Jacksons Lane, Stubbo NSW
Client: Elgin Energy| AEP Ref: 3345| Date: August 2024

Imagery: World Imagery
Spatial Reference: GDA2020 MGA Zone 55

0 360 720 m
Scale: 1:35,000

N W E S

Figure 1 - Site Location

AEP

Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan

GENERAL LEGEND

- SITE BOUNDARY
- CADASTRE BOUNDARY
- PROPOSED SITE FENCE
- PROPOSED GATE ENTRY
- 6m INTERNAL ROADS (CRUSHED ROCK) - TO MAKE UP OVERALL WIDTH OF FIRE BREAK
- HYDROBUFFER
- HYDROLINE
- SITE ACCESS
- CONTOURS (SHOWN AT 0.5m)
- ECOLOGY EXCLUSION ZONE
- ELECTRICAL EASEMENT
- TEMPORARY WORKERS ACCOMMODATION CAMP & CONSTRUCTION LAY DOWN AREAS
- GWABEGAR RAILWAY TRACK
- EXISTING DAMS. TO BE RETAINED
- EXISTING DAMS. TO BE REMOVED
- EXISTING TREES. TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- TREE CLUSTER
- LANDSCAPE BUFFER
- PV CASE INVERTER
- WATER TANKS
- PROPOSED 84PV MODULE
- PROPOSED 56 PV MODULE

GENERAL NOTES

- TOTAL SITE AREA: APPROX. 216 Ha.
- TOTAL DEVELOPMENT AREA: APPROX. 123 Ha.
- TOTAL PROPOSED SETBACK BREAKDOWN
  - 5m LANDSCAPE BUFFER
  - 10m FIRE BREAK (TO BE COMPRISED OF 5m UNVEGETATED BUFFER + 5m INTERNAL ROAD
- INTERNAL ROAD SUBJECT TO TRANSPORT ADVICE. WILL BE A MINIMUM OF 02 ENTRY POINTS.
- DEVELOPMENT SITE TO INCLUDE x2 45,000 LITRE WATER TANKS PER DEVELOPMENT SITE.
- LANDSCAPE BUFFER EXTENTS & DENSITIES ARE SUBJECT TO LVIA AND GLINT & GLARE ASSESSMENT OUTCOMES.

103 DP750762
219 DP750762
34 DP750765
73 DP750762
215 DP750762
35 DP750765
133 DP750765
1 DP1097749
2 DP734669
1 DP1218313
2 DP528667
1 DP734669
36 DP661248
26 DP1117518
2 DP108712
BARNEYS REEF ROAD
JACKSON LN
POWER LINE EXISTING
POINT OF CONNECTION
SUBSTATION (APPROX 0.30 Ha)
BATTERY ENERGY STORAGE SYSTEM (APPROX 1.60 Ha)
10M APZ BOUNDARY FOR BESS
EMERGENCY SITE ACCESS
INDICATIVE LOCATION OF THE TEMPORARY WORKERS ACCOMMODATION CAMP AND CARPARK (APPROX 8.0 Ha)
INDICATIVE LOCATION OF LAY DOWN AREA FOR CONSTRUCTION (APPROX 8.0 Ha)
MAIN SITE ACCESS
SEE CS-002 FOR ROAD UPGRADE INSET PLAN
500m RADIUS EXCLUSION ZONE
R1
R2
SILO
SHED

URBIS

MAYFAIR SOLAR FARM
SITE LAYOUT PLAN

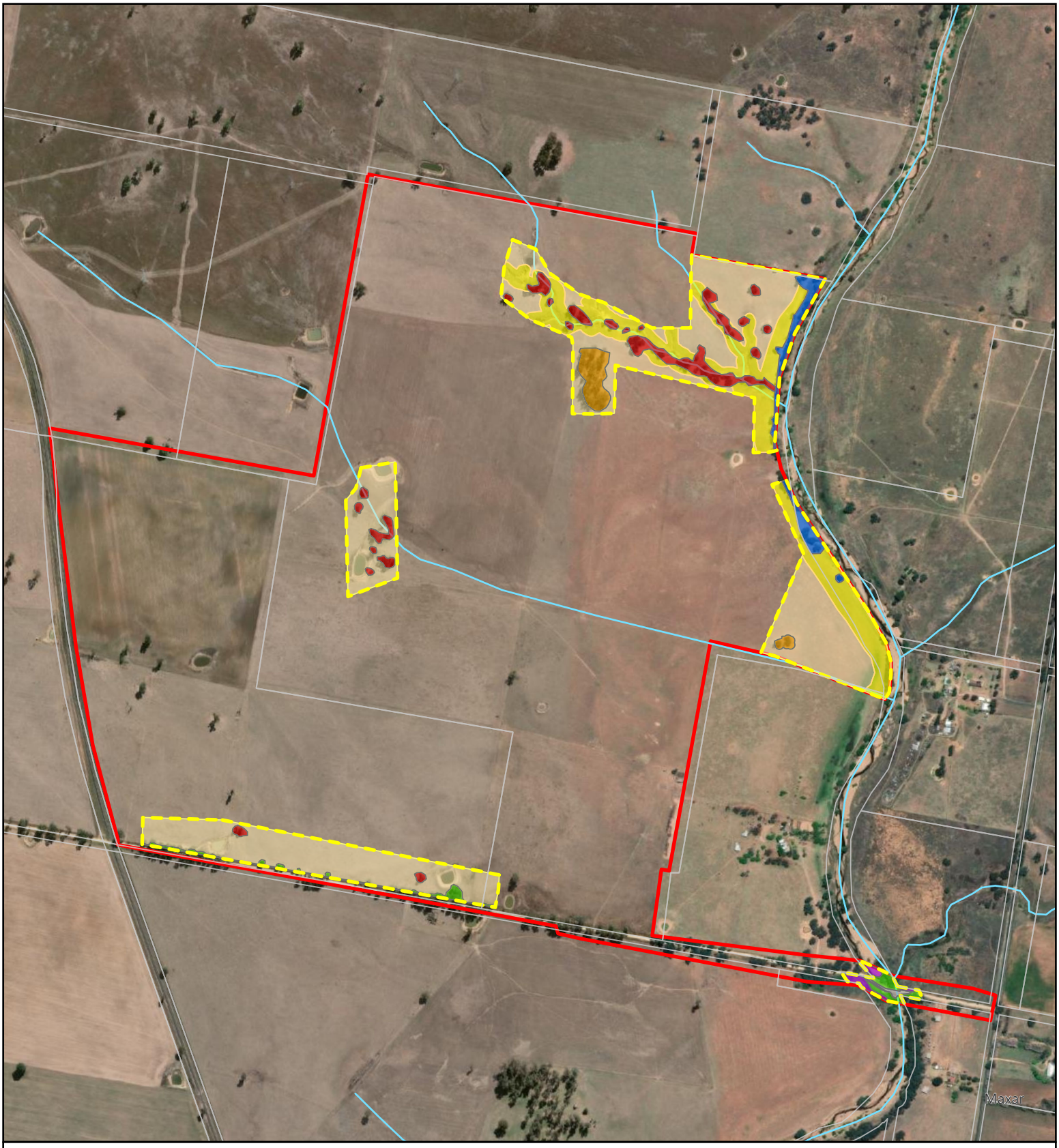
Angel Place, Level 8, 123 Pitt Street | Sydney NSW 2000 Australia | +61 2 8233 9900 | URBIS Pty Ltd | ABN 50 105 256 228

REV	DESCRIPTION	DWN	CHK	DATE
B	ISSUE FOR SSDA	HS	YV	31.10.2024
A	ISSUE FOR SSDA	HS	YV	02.09.2024

CLIENT
ELGIN ENERGY

1:5,000 @ A1
1:10,000 @ A3
0 50 100 250m

PROJECT NO. P0046824
DATE 31.10.2024
DRAWING NO. CS-001
REVISION B



Legend

- Study Area
- BMP Lands
- Cadastre
- Hydroline
- Exotic Dominant Grassland
- Degraded Grassland
- Infrastructure
- PCT 201 - Degraded
- PCT 201 - Moderate
- PCT 201 - Severely Degraded
- PCT 281 - Poor
- PCT 78 - Good

Address: 204 Jacksons Lane, Stubbo NSW
Client: Elgin Energy| AEP Ref: 3345| Date: August 2024

Imagery: World Imagery
Spatial Reference: GDA2020 MGA Zone 55

0 130 250 m
Scale: 1:12,000

N W E S

Figure 3 - Ground-truthed Vegetation

AEP

Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan

3.0 Regeneration Approach and Targets

Regeneration of the BMP Lands will be undertaken over a period of five (5) years. Management of the site will be undertaken to ensure compliance with the *Biosecurity Act 2015*. The location of the BMP Lands within the Study Area is shown in **Figure 1.**

Regeneration of the BMP Lands will aim to reach a state of "natural regeneration" requiring minimal to no intervention. To achieve this, an integrated regeneration approach has been designed, with key elements and targets identified for each vegetation community within each Management Zone.

It is anticipated that after the 5-years duration of the BMP, the vegetation present will be in a state of natural regeneration and will be self-sustaining only requiring a low level of maintenance to address sporadic weed incursions.

3.1 Integrated Regeneration Approach for BMP Lands

Regeneration of the BMP Lands will be undertaken by utilising where possible the principles of the *Society for Ecological Restoration Australasia* (2021) *National standards for the practice of ecological restoration in Australia Edition 2.2*, with an ecological regeneration approach deemed suitable for the BMP Lands. This approach utilises three (3) integrated restoration techniques to achieve the goal of a natural regenerating ecosystem and include:

- Reconstruction approach;
- Facilitated Regeneration approach; and
- Natural Regeneration.

The national guidelines assigned to the BMP Lands are based on their history of disturbance and current state. These include the Reconstruction and Facilitated Regeneration approaches that will be utilised within the BMP Lands with the aim of achieving the natural regeneration state by the end of the BMP management period.

Adaptive management requires the consideration for active restoration via supplementary planting due to the potential for unforeseen factors to arise such as new weed incursion, vandalism or introduction of pathogens that may impact one or more strata of vegetation.

3.1.1 Reconstruction Approach

This approach is used across sites where the vegetation condition is poor, generally due to a range of causes of degradation that have led to partial or total damage to biotic and abiotic factors. The Reconstruction approach includes:

- Primary weeding;
- Installation of jute matting and coir logs in areas of high water-flow;
- Planting of tree, shrub and ground species in appropriate areas;
- Installation of guards around tree and shrub species;
- Watering;
- Secondary weeding;
- Mulching in areas without jute matting;
- Maintenance watering;
- Maintenance of tree guards; and,
- Replacement of dead plants.

This approach is proposed to be used within the majority of the BMP Lands in order to reestablish PCT 78 within the riparian corridor as well as *Fuzzy Box Woodland* EEC and *Box Gum Woodland* CEEC within the rest of the site.

3.1.2 Facilitated Regeneration Approach

This approach is generally used on sites where regeneration progress is at an intermediate level and active intervention is minimised. As stated, the Facilitated Regeneration approach requires active interventions, the tasks of which will be determined by the Bush Regeneration Contractor (BRC) and may involve the following tasks:

- Weeding;
- Replacement of dead plants;
- Maintenance of tree guards;
- Maintenance of jute matting; and
- Watering.

This approach is proposed to be used within remnant native vegetation on site that is deemed to be in degraded to moderate condition. In addition, reconstructed areas should move into this management phase during Year 2 of the BMP.

3.1.3 Natural Regeneration Approach

This approach is where damage is relatively low, and pre-existing biota should be able to recover after cessation of degrading practices. The natural regeneration approach requires limited to no interventions with weed control being the only task undertaken to encourage continual natural regeneration.

Due to the high level of disturbance of the vegetation present onsite; it is unlikely for reconstructed areas to achieve the natural regeneration state within the 5 years imparted. After Year 5, the success of regeneration efforts should be assessed and an extension of this BMP should be considered in order to achieve the natural regeneration state.

3.2 Management Zones

Due to the highly disturbed nature of the site and limited intact remnant vegetation, the delineation of vegetation communities and Management Zones (MZs) has been informed by best-practice methods, incorporating field survey data, desktop assessment, and analysis of adjacent vegetation.

Accordingly, the MZs should be considered indicative. On-ground revegetation and restoration efforts should be guided by site-specific conditions and are subject to verification and adjustment by the project ecologist in consultation with the Bush Regeneration Contractor (BRC), particularly during detailed design and construction phases, and should be confirmed during baseline data collection.

The BMP Lands have been segregated into five (5) MZs according to PCT, vegetation conditions and specific actions necessary to achieve the objectives of this BMP. The location of each indicative MZ is presented in **Figure 4**.

- Management Zone 1 (MZ1): PCT 201 Reconstruction;
- Management Zone 2 (MZ2): PCT 201 Facilitated Regeneration;
- Management Zone 3 (MZ3): PCT 78 Reconstruction;
- Management Zone 4 (MZ4): PCT 78 Riparian Reconstruction; and
- Management Zone 5 (MZ5): PCT 281 Reconstruction.

Weed densities are based on weed mapping conducted in 2024. Weed densities are subject to change over time. Baseline data collection will establish updated weed densities for each MZ. This data will be used to adjust the relevant restoration techniques for each MZ. Management actions specific to each MZ is detailed in the following sections; however, as stated above, are subject to change at the discretion of the BRC and Project Ecologist following baseline data collection.

3.2.1 MZ1: PCT 201 – Reconstruction Approach

This zone is located in the eastern corner of the BMP Lands, totalling approximately 3.94ha. This area has only four (4) trees pertaining to *Eucalyptus blakelyi, E. melliodora* and *E. conica*, with an absent midstory and exotic dominant groundcover. This area is in poor condition due to the sparse canopy, low level of native species in the ground stratum and high weed load. The Reconstruction approach will be utilised in order to re-establish the Fuzzy Box Woodland threatened Ecological Community via large scale revegetation work.

Work to be undertaken in MZ1 will include:

- Regular weed control;
- Planting of tubestocks (trees and shrubs) and direct seeding of ground stratum species;
- Planting maintenance including watering;
- Mulching and installation of tree guards (where required); and
- Replacement of dead plants, and maintenance of tree guards.

Weed Control

MZ1 should be traversed regularly to target all weeds present in order to enable and encourage colonisation by existing native species, and protect planted species from competition. Due to the weed load within MZ1, the use of herbicide is likely to be the most efficient method of weed control and manual removal may not be practical. Timing and specific weed control methodology used will be at the discretion of the BRC.

Revegetation

Reestablishment of the upper and mid stratum will be undertaken in Year 1 via mass planting of trees and shrubs. This may require ground preparation such as ripping to remediate to potential soil compaction issues including aerate the soil, improve infiltration and facilitate root development where seedlings will be planted.

While exotic species are currently dominant within MZ1, these areas are expected to be fairly resilient and weed removal is anticipated to stimulate the growth of native ground layer species such as grasses and forbs.

In subsequent years, regeneration will be monitored to assess the need for replacement, infill planting and direct seeding of ground stratum species. Annual monitoring of this zone will inform any necessary adjustments to management practices, taking into account weed regrowth and native colonisation.

If recruitment of native grasses and forbs species is low in Year 1, re-establishment of the ground stratum of vegetation may be necessary. As such, the planting schedule will be updated with further recommendations in the annual monitoring report.

The BMP aims to move MZ1 into Facilitated Regeneration by the end of Year 2. A plant list for revegetation is provided in **Appendix A.**

3.2.2 MZ2: PCT 201 – Facilitated Regeneration

This zone consists of two (2) patches of PCT 201 (3.7ha) located in the southern and northern areas of the site. The northern area is in a degraded condition; however, has a denser canopy than other areas of this PCT onsite, therefore, is deemed receptive to the Facilitated Regeneration Approach. The more intact remnant vegetation in MZ2 in the south is in moderate condition, and intertwines with cleared strands of severely degraded vegetation along the road verge. The Facilitated Regeneration approach has been allocated to this MZ due to the density of the upper canopy, which provides a more stable microclimate to help enable recolonisation for native species. If groundcovers do not naturally regenerate by the end of Year 2 of management, direct seeding or tubestock planting may be required to reestablish this vegetation stratum.

Work to be undertaken in this zone include:

- Regular weed control;
- Planting of tubestocks (shrubs only where vegetation is in moderate condition) and direct seeding of ground stratum species;
- Planting maintenance including watering;
- Mulching and installation of tree guards (where required); and
- Replacement of dead plants, and maintenance of tree guards.

Weed Control

MZ2 should be traversed regularly in conjunction with maintenance weeding of MZ1, targeting all scattered occurrences of weeds in order to encourage the natural regeneration of native ground stratum species and prevent the incursion and establishment of weed species. Note that due to the presence of *Eragrostis curvula* along the road in the southern section of MZ2, this area may require additional weed control to ensure that this highly invasive species is adequately managed.

Revegetation

While exotic species occur in this zone in moderate density, this area is expected to be fairly resilient and weed removal is anticipated to result in recolonisation by native species.

This will be confirmed via yearly monitoring and management adjusted to take into account weed regrowth and native regeneration. If monitoring identifies low level of recruitment by the end of Year 1, reestablishment of one or more strata of vegetation may be necessary at which stage, a planting schedule will be prepared and added to the annual monitoring report.

The BMP aims to move MZ2 into natural regeneration by the end of Year 3. A plant list for revegetation is provided in **Appendix A**.` `

3.2.3 MZ3: PCT 78 – Reconstruction

MZ3 (approx. 4.86ha) consists of the large riparian area in the north of the site, and vegetation adjacent to that which runs long Slapdash Creek. This zone is split into two parts, the northern part which consists of a canopy, and the southern area which lacks tree cover. The reconstruction approach is being utilised here due to the lack of native species in most strata.

Work to be undertaken in MZ3 include:

- Regular weed control;
- Planting of tubestocks (trees and shrubs) and direct seeding of ground stratum species;
- Planting maintenance including watering;
- Mulching and installation of tree guards (where required); and

- Replacement of dead plants, and maintenance of tree guards

Weed Control

MZ3 should be traversed regularly to target all weeds present in order to enable and encourage colonisation by existing native species, and protect planted species from competition. Due to the proximity to aquatic ecosystem, the use of herbicide is not recommended for weed control within the riparian corridor and manual or mechanical weed control should instead be utilized. Timing and specific weed control methodology used will be at the discretion of the BRC.

Revegetation

Reestablishment of the upper and mid stratum will be undertaken in Year 1 via mass planting of trees and shrubs. This may require ground preparation such as ripping to remediate to potential soil compaction issues including aerate the soil, improve infiltration and facilitate root development where seedlings will be planted.

While exotic species are currently dominant within MZ3, these areas are expected to be fairly resilient and weed removal is anticipated to stimulate the growth of native ground layer species such as grasses and forbs.

In subsequent years, regeneration will be monitored to assess the need for replacement, infill planting and direct seeding of ground stratum species. Annual monitoring of this zone will inform any necessary adjustments to management practices, taking into account weed regrowth and native colonisation.

If recruitment of native grasses and forbs species is low by the end of Year 1, re-establishment of the ground stratum of vegetation may be necessary. As such, the planting schedule will be updated with further recommendations in the annual monitoring report.

The BMP aims to move MZ3 into Facilitated Regeneration by the end of Year. A plant list for revegetation is provided in **Appendix A.**

3.2.4 MZ4: PCT 78 - Riparian Reconstruction

MZ4 (approximately 0.69ha) consists of the riparian corridor where crossing of Slapdash Creek is proposed to be upgraded as part of the development proposal via the installation of a culvert. It is characterised by a dense stand of *Typha* with significant incursion of *Rubus anglocandicans,* and exotic grass and forb species*,* over a sandy and rocky substrate. The reconstruction approach will be utilised in this area as it is anticipated that much of the existing vegetation will need to be cleared for construction work. This area was identified as PCT 201 during surveys due to the presence of *Eucalyptus conica* along the outer edges and lack of native groundcover species, however in line with riparian areas further north along Slapdash Creek, this zone will be reconstructed as PCT 78.

This management zone consists of three (3) distinct areas, the aquatic zone within the river bed, the banks and the wider Vegetated Riparian Zone (VRZ) which will be a 40m wide buffer from the top of bank. MZ4 will be revegetated with a species assemblage from PCT 78. The zones within the riparian area as shown in **Plate 1** below.

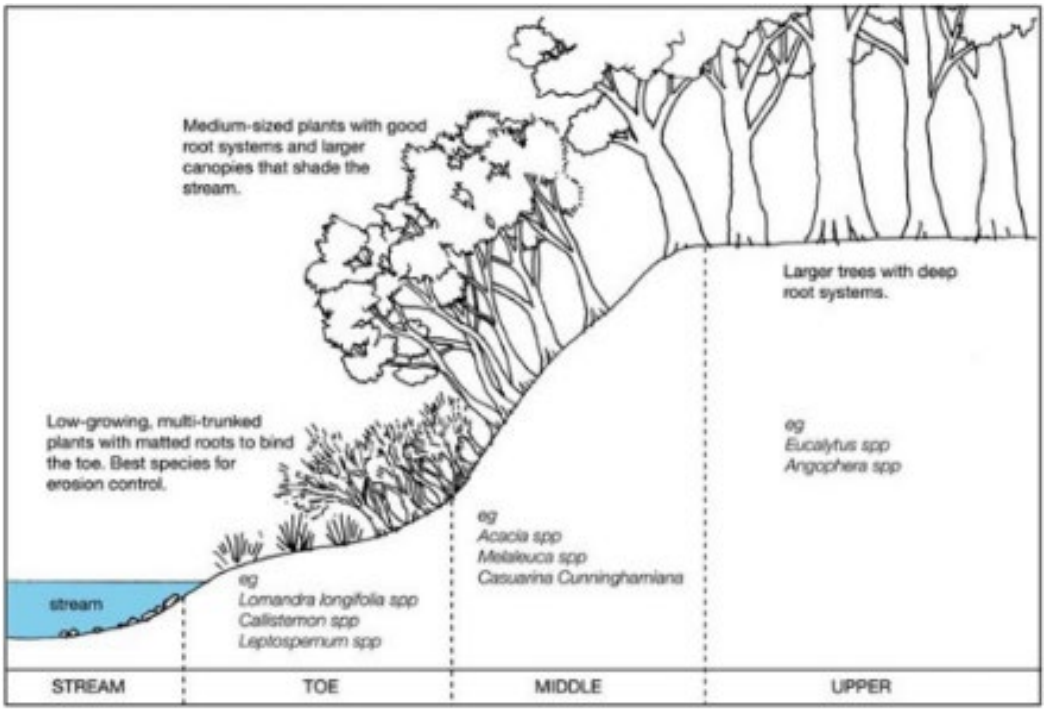


Plate 1 - Cross Section of Riparian Corridor (NSW Water, 2022).

Revegetation of this area will also improve the integrity of vegetation corridors within the wider landscape, connecting to areas of remnant vegetation to the south of the site

Work to be undertaken during and post construction within MZ4 include:

- Installation of erosion and sedimentation controls;
- Placement of jute matting, rocks or logs and coir logs within areas identified as prone to erosion such as the creek banks;
- Installation of snags and ground habitat;
- Planting of macrophytes within the aquatic zone, and trees and shrubs with the rest of the VRZ;
- Regular weed control;
- Planting maintenance including watering;
- Mulching and installation of tree guards (where required); and
- Replacement of dead plants.

All works should be undertaken to ensure bed and bank stability and provision of terrestrial habitat for both flora and fauna. **Plate 2** shows an example of a natural channel design.

Plate 2 - Bundamba Creek Regeneration works (Australian Wetland Consulting, 2018)

This BMP provides the concept plan for the channel design, detailed engineering plans should be prepared prior to guide construction.

Weed Control

Due to its sensitive nature of MZ4 as a riparian zone and Key Fish Habitat; weed management should avoid the utilization of herbicide and assess the removal of weeds against the potential to generate erosion and sedimentation within the waterway.

Primary weed control should be undertaken prior to construction works commencing to minimize the seedbank present in the topsoil and the potential for weeds to be spread by machinery during earthworks. During and post construction, weed control should be conducted on a regular basis to prevent weeds from colonizing and establishing within the VRZ, and outcompeting planted tubestock and regenerating native vegetation.

Revegetation

On completion of the installation of the culvert the reconstruction of the natural channel will commence, including the establishment of river features such as pool, riffles and meanders. Revegetation will be undertaken using species diagnostic of PCT 78 and suited to specific conditions and landscape positions

- The aquatic zone, the low flow channel of Slapdash Creek, will be planted with macrophytes and snags will be installed for habitat.
- The banks of Slapdash Creek, from the toe to upper riparian zones will be planted with sedges, shrubs in the lower section and trees, shrubs and grasses in the upper section. The zones within the riparian area as shown in **Plate 1**.
- The wider VRZ, 40 metres from top of the bank will be revegetated to reestablish all strata of vegetation.

In subsequent years, regeneration will be monitored to assess the need for replacement, infill planting and direct seeding of ground stratum species. Annual monitoring of this zone will inform any necessary adjustments to management practices, taking into account weed regrowth and native colonisation.

The BMP aims to move this management zone into Facilitated Regeneration by the end of Year 3.

3.2.5 MZ5: PCT 281 – Reconstruction

This zone is located in three (3) separate areas of the BMP Lands, totalling approximately 19.03ha. These areas are in poor condition due to the scattered canopy and fragmented tracts of PCT 281 with an exotic dominated ground stratum. The Reconstruction approach will be utilised in order to re-establish the Box Gum Woodland threatened Ecological Community via large scale revegetation work.

Work to be undertaken in MZ5 will include:

- Regular weed control;
- Planting of tubestocks (trees and shrubs) and direct seeding of ground stratum species;
- Planting maintenance including watering;
- Mulching and installation of tree guards (where required); and
- Replacement of dead plants, and maintenance of tree guards.

Weed Control

MZ5 should be traversed regularly to target all weeds present in order to enable and encourage colonisation by existing native species, and protect planted species from competition. Due to the weed load within MZ5, the use of herbicide is likely to be the most efficient method of weed control and manual removal may not be practical. However, herbicide application in the northern and central portion of MZ5 in proximity to the watercourse should be avoided. Timing and specific weed control methodology used will be at the discretion of the BRC.

Revegetation

Reestablishment of the upper and mid stratum will be undertaken in Year 1 via mass planting of trees and shrubs. This may require ground preparation such as ripping to remediate to potential soil compaction issues including aerate the soil, improve infiltration and facilitate root development where seedlings will be planted.

While exotic species are currently dominant within MZ5, weed removal is anticipated to stimulate the growth of native ground layer species such as grasses and forbs.

In subsequent years, regeneration will be monitored to assess the need for replacement, infill planting and direct seeding of ground stratum species. Annual monitoring of this zone will inform any necessary adjustments to management practices, taking into account weed regrowth and native colonisation.

If recruitment of native grasses and forbs species is low in Year 1, re-establishment of the ground stratum of vegetation may be necessary. As such, the planting schedule will be updated with further recommendations in the annual monitoring report.

The BMP aims to move MZ5 into Facilitated Regeneration by the end of Year 2. A plant list for revegetation is provided in **Appendix A.**

3.3 Ecosystem Targets

"Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. (SER 2021)*"*

The overall target for the BMP Lands is to establish a naturally regenerating community that provides habitat for foraging, roosting and nesting for species associated with the PCTs and local region.

There are many ways to generate targets and establish measure tools to determine the health of an ecosystem such as:

- Benchmark conditions set under the Biodiversity Assessment Method 2020;
- Percentage of species presence from community list per as a whole or per stratum;
- Species composition;
- Physical condition;
- Absence or presence of threats;
- Structural diversity;
- Coverage of the flora species;
- Diversity of fauna gilds present; and,
- Abundance of fauna recorded within the Subject Site.

AEP acknowledges that all of the above are valid assessment tools to utilise and measure success, however there are several factors that limit all communities from reaching benchmark conditions:

- Availability to purchase seed or tube stock of many native species;
- Topographic features of each site vary;
- Aspect of BMP Lands variation between sites;
- Accessibility / connectivity for mobile fauna to access and use the site;
- Soil types;
- Surrounding vegetation communities influence the seed stock and hence natural regeneration;
- Presence of absence of canopy, impacting the microclimates;
- Rainfall variation; and,
- Growth timeframes.

When developing targets for BMP Lands the above must be taken into consideration without losing the main objective to *assist the recovery of an ecosystem.* Therefore, AEP has developed targets (refer to **Tables 1** to **3**) for each regeneration approach that aim to achieve a naturally regeneration functioning ecosystem, within the timeframes outlined in the BMP.

Utilising ecological references to identify the particular terrestrial or aquatic ecosystem and inform the targets of a regeneration project involves describing the specific compositional, structural and functional ecosystem attributes requiring reinstatement, before the desired outcome, "*assist the recovery of an ecosystem",* can be said to have been achieved. These attributes in combination can then be used to derive the targets for a BMP. A restored state is considered to have been achieved when an ecosystem is naturally regenerating.

3.3.1 BMP Land Targets

The reconstruction, facilitated and natural regeneration approaches will be used across the entire BMP Lands and the following targets have been designed to be specific, measurable, achievable, reasonable and time bound (SMART), providing qualitative data within the BMP Lands.

Tables 1 to 3 outline the targets the BMP is aiming for each attribute within the BMP Lands.

When surveys were undertaken by AEP the vegetation communities were identified to be in several varying conditions requiring all three (3) approaches to regeneration:

- **Management Zones 1, 3, 4 & 5** will require regeneration based on the Reconstruction Approach. Targets are outlined in **Table 1**.
- **Management Zone 2** will require regeneration based on the Facilitated Regeneration Approach. Targets are outlined in **Table 2.**
- **Management Zone 2** is expected to move into the Natural Regeneration Approach by the end of Year 3. Targets are outlined in **Table 3.**

As stated above the condition of vegetation communities can vary significantly and as such baseline data will be collected to determine the targets for each of the Management Zones within the BMP Lands. The baseline report will be prepared at commencement of the BMP and submitted to the relevant authority outlining the specific targets for each zone, based on **Tables 1-3**.

Table 1 – Regeneration Targets for Reconstruction Approach

Attribute	Baseline Data	Level 1	Level 2	Level 3	Level 4	Level 5
Approximate Timeframe	**Commencement**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Species composition	At each monitoring point collect: • Native Species cover/abundance • Exotic Species cover/abundance	• 70% survival of each planted stratum. • 50% reduction in weeds from baseline data.	• 80% survival of each planted stratum. • 60% reduction in weeds from baseline data.	• 80% survival of each planted stratum. • 70% reduction in weeds from baseline data.	• 80% survival of each planted stratum. • 80% reduction in weeds from baseline data.	Maintain or improve on Year 4 targets
Structural diversity	Record the native growth forms • Tree; Shrub; Grass / grass like; Forb; Fern; and Other.	One or few strata present and no spatial patterning or trophic complexity relative to from baseline data.	More strata present but low spatial patterning and trophic complexity, relative to benchmark from baseline data.	Most strata present and some spatial pattering and trophic complexity relative to benchmark from baseline data.	All strata present. Spatial pattering evident and substantial trophic complexity developing, relative benchmark from baseline	
Ecosystem Function	Leaf litter	A 2% - 5% increase from baseline data.	A 5% - 15% increase from baseline data.	A 15% - 25% increase from baseline data.	A 25% - 35% increase from baseline data.	
	Ground habitat installed	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	
	Stem classes present	No increase required as tube stock planted.	No increase required as tube stock planted.	No increase required as tube stock planted.	No increase required as tube stock planted.	
	Observed fauna: • Native species • Pest species	Maintain fauna diversity				

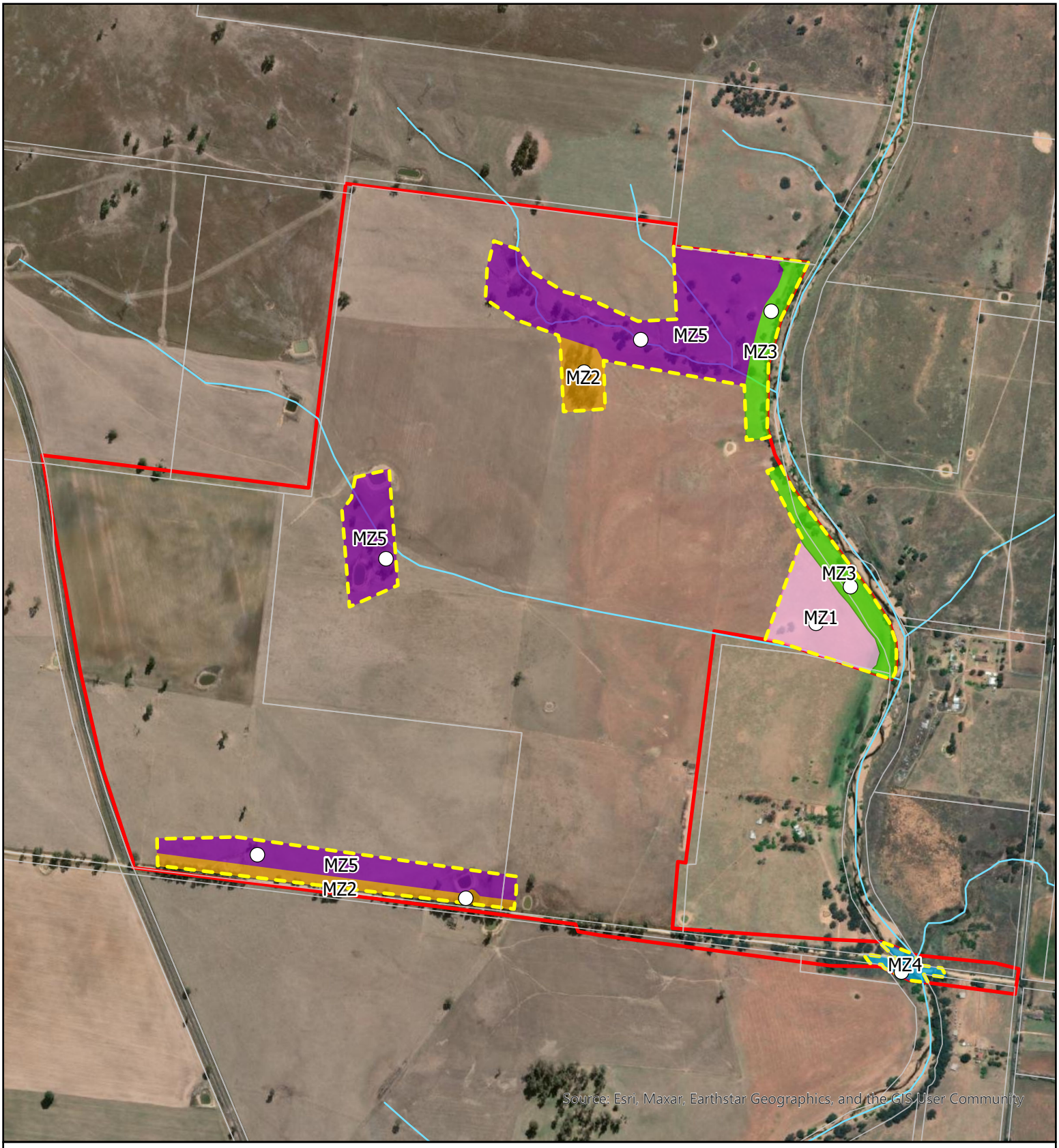
Table 2 – Regeneration Targets for Facilitated Approach

Attribute	Baseline Data	Tiered Targets (base on Baseline Data)	Level 2	Level 3	Level 4	Level 5	Level 5
Approximate Timeframe from Commencement	**Commencement**		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Species composition	At each monitoring point collect: • Native Species cover/abundance • Exotic Species cover/abundance	**Tier 1 – Diversity good at baseline.** No supplementary planting or other works required.	• Diversity / cover Maintained or improved from baseline data. • 60% reduction in weeds from baseline data.	• Diversity / cover Maintained or improved from baseline data. • 70% reduction in weeds from baseline data.	• Diversity / cover Maintained or improved from baseline data. • 80% reduction in weeds from baseline data.	• Diversity / cover Maintained or improved from baseline data. • 85% reduction in weeds from baseline data.	Maintain or improve on Year 4 targets
		Tier 2 – Diversity moderate to low at baseline. Works required such as supplementary planting, possible thinning, etc required.	• 80% survival of each planted stratum. Noting this will increase diversity in where required. • Maintain diversity recorded at baseline data. • 60% reduction in weeds from baseline data.	• 80% survival of each planted stratum. Noting this will increase diversity in where required. • Maintain diversity recorded at baseline data. • 80% reduction in weeds from baseline data.	• 80% survival of each planted stratum. Noting this will increase diversity in where required. • Maintain diversity recorded at baseline data. • 90% reduction in weeds from baseline data.	• 80% survival of each planted stratum. Noting this will increase diversity in where required. • Maintain diversity recorded at baseline data. • 95% reduction in weeds from baseline data.	
Structural diversity	Record the native growth forms present:	N/A	More strata present but low spatial patterning and trophic	Most strata present and some spatial pattering and trophic complexity	All strata present. Spatial pattering evident and substantial trophic	All strata present and spatial pattering and trophic complexity high. Further	

Attribute	Baseline Data	Tiered Targets (base on Baseline Data)	Level 2	Level 3	Level 4	Level 5	Level 5
Approximate Timeframe from Commencement	**Commencement**		**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
	Tree; Shrub; Grass / grass like; Forb; Fern; and Other.		complexity, relative to benchmark from baseline data.	relative to benchmark from baseline data.	complexity developing, relative benchmark from baseline data.	complexity and spatial pattering able to naturally regenerate.	
Ecosystem Function	Leaf litter	N/A	A 5% - 15% increase from baseline data.	A 15% - 25% increase from baseline data.	A 25% - 35% increase from baseline data.	A 35% - 50% increase from baseline data.	
	Ground habitat installed		No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	
	Stem classes present		No increase required as tube stock planted.	No increase required as tube stock planted.	No increase required as tube stock planted.	2 -10% increase in stem class presence from baseline data	
	Observed fauna: • Native species • Pest species		Maintain fauna diversity				

Table 3 – Regeneration Targets for Natural Approach

Attribute	Baseline Data	Level 3	Level 4	Level 5	Level 5
Approximate Timeframe from Commencement	**Commencement**	**Year 1**	**Year 2**	**Year 3**	**Year 4 - 5**
Species composition	At each monitoring point collect: • Native Species cover/abundance • Exotic Species cover / abundance	• Diversity / cover Maintained or improved from baseline data. • 50% reduction in weeds from baseline data.	• Diversity / cover Maintained or improved from baseline data. • 60% reduction in weeds from baseline data.	• Diversity / cover Maintained or improved from baseline data. • 75% reduction in weeds from baseline data.	Maintain or improve on Year 3
Structural diversity	Record the native growth forms present: Tree; Shrub; Grass / grass like; Forb; Fern; and Other.	Most strata present and some spatial pattering and trophic complexity relative to benchmark from baseline data.	All strata present. Spatial pattering evident and substantial trophic complexity developing, relative benchmark from baseline data.	All strata present and spatial pattering and trophic complexity high. Further complexity and spatial pattering able to naturally regenerate.	
Ecosystem Function	Leaf litter	A 15% - 25% increase from baseline data.	A 25% - 35% increase from baseline data.	A 35% - 50% increase from baseline data.	
	Ground habitat installed	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	No decline in ground habitat (replace if removed or damaged)	
	Stem classes present	No increase required as tube stock planted.	No increase required as tube stock planted.	2 -10% increase in stem class presence from baseline data	
	Observed fauna: • Native species • Pest species	Maintain fauna diversity			



Legend

- Study Area
- Cadastre
- Hydroline
- BMP Lands
- Indicative Monitoring Point
- MZ1: PCT 201 - Reconstruction
- MZ2: PCT 201 - Facilitated
- MZ3: PCT 78 - Reconstruction
- MZ4: PCT 78 - Riparian Reconstruction
- MZ5: PCT 281 - Reconstruction

Address: 204 Jacksons Lane, Stubbo NSW
Client: Elgin Energy| AEP Ref: 3345| Date: August 2024

Imagery: World Imagery
Spatial Reference: GDA2020 MGA Zone 55

0 130 250 m
Scale: 1:12,000

N W E S

Figure 4 - Management Zones

AEP

Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan

4.0 Site Preparation

Prior to the commencement of regeneration, the BMP Lands must be prepared. The following works have been recommended to assist in site preparation.

4.1 Fencing

The boundary of the development site should be identified by a surveyor in conjunction with the Project Ecologist and subsequently marked using flag reel fencing (or similar method) to facilitate identification of the development/conservation land interface during clearing.

4.2 Site Induction

Induction for all personnel entering/working onsite should highlight the sensitive nature of the conservation land and discuss the importance of avoiding all impact to this land including all the following activities:

- Clearing of vegetation;
- Storage of vehicles or machinery;
- Stockpiling, materials storage;
- Unauthorised access; and,
- Dumping of rubbish or building waste.

In addition, the protocol for avoiding the introduction and spread of weeds, diseases and pathogens highlighted in **Section 4.3** below must be discussed during site induction.

4.3 Weed / Pathogens / Disease Control

Diseases which could affect the BMP Lands include the root-rot fungus (*Phytophthora cinnamomi*) and Myrtle rust (*Puccinia psidii*), affecting Myrtaceous plants including the Eucalyptus species present onsite as well as Amphibian Chytrid fungus disease, Chytridiomycosis, caused by Chytrid fungus (*Batrachochytrium dendrobatidis*).

To minimise the potential for any such introductions, it is recommended that appropriate hygiene controls be employed and hygiene stations supplied:

Plant, Machinery, Tools and Boots Hygiene

- All plant/machinery is to be washed down upon entry to site and prior to exiting site;
- The location of wash down bays is to be clearly identified within the site;
- All tools being utilised on site should be sterilised and washed free of soil before use and at the end of each day;
- Boots should be clean and free of soil and seeds before entry to site and before exiting site;
- Boots should be sterilised in a similar manner to tools after soil and seed removal; and,
- Sterilisation of tools and boots shall be undertaken using 60% alcohol, methylated spirits or Phytoclean™ applied via spray bottle or brush dipped in the mixture.

Phytophthora cinnamomi

- Minimisation of work during excessively wet or muddy conditions;
- All personnel to be inducted on Phytophthora identification and management; and,
- All plants and soils used/brought into site must be disease-free.

Amphibian Chytrid Fungus

- Minimisation of work during excessively wet or muddy conditions;
- All personnel to be inducted on Chytrid management measures for the site; and,
- Handling of frogs only when necessary, using fresh disposable gloves to handle individual frogs.

Myrtle Rust

- All personnel to be inducted into the identification and management of Myrtle rust; and,
- Should any areas on site be identified as areas contaminated by the above, additional exclusion measures including, work program directions, soil storage and waste disposal programs must be implemented.

4.4 Erosion and Sedimentation Control

An Erosion and Sedimentation Control Plan (ESCP) should be prepared for the proposed development and may form part of the CEMP. Erosion and Sediment control measures should be implemented in accordance with specifications set out in the latest edition of the Landcom publication “Soils and Constructions – Volume 1 (The Blue Book)”.

Large scale removal of weeds may leave bare areas exposed to the elements and prone to erosion. As such, weed control activities and methods employed should weigh the potential to generate erosion. The requirement to implement temporary erosion and sedimentation control as part of weed control activities will be at the discretion of the Bush Regeneration Contractor.

4.5 Rubbish Removal

Rubbish and waste are to be removed from BMP Lands. The need to remove such material should be assessed on a case-by-case basis as in some instances the material is inert, such as concrete, rocks and timber posts, etc. Such material may inadvertently provide geomorphic stability and suitable shelter and habitat for native fauna.

4.6 Compliance Report

Upon completion of site preparation, a report outlining compliance with the above will be provided to Council. Monitoring is to occur in accordance with the CEMP.

4.7 Clearing methodology

The following protocols should apply:

- Habitat features, including HBTs, trees and ground habitat should be marked, and cleared after non-habitat trees.
- Unexpected fauna encounters will be dealt with on a case-by-case basis by the Project Ecologist.
- Fauna encountered will be captured and relocated to retained vegetation area after clearance has ceased for the day, after dark if suitable for the species. Any fauna harmed by the clearance will be transported to a nearby vet or wildlife rescue.
- All trees should be lowered in the most gradual manner possible;
- Vegetation clearing is to be timed to avoid fauna breeding periods and cold weather periods where overnight temperatures are forecast to be less than 12°C. Cold weather is likely to make it difficult for resident hollow dependent fauna to successfully relocate. This is particularly relevant for low body-weight species;
- Fallen timber and hollow logs should be retained where practical; and
- Fauna harmed by the clearance will be transported to a nearby vet or wildlife rescue.

4.7.1 Fauna Encounters

To reduce risks of harm to any animals or to the safety of personnel, the Project Ecologist will manage responses to fauna encountered at any stage of Works.

4.7.1.1 Particular Fauna Handling

Some animals require particular handling and should only be handled by appropriately qualified personnel i.e. Project Ecologist or Fauna Rescue. The Project Ecologist will manage particular fauna requirements, including:

- If handling bats, the handler should be vaccinated against the Australian Bat Lyssavirus (a form of rabies).
- Frog handling will be undertaken in accordance with the *Hygiene Protocol for the Control of Disease in Frogs* (DECC 2008). This protocol recommends on site hygiene precautions be undertaken to minimise the transfer of disease between and within wild frog populations. Measures recommended include:
    - Cleaning/disinfecting hands between collecting samples/frogs (preference would be given to using bags, rather than bare hands to handle frogs);
    - Limiting one frog or tadpole to a bag; and,
    - Bags should not be reused.
- Venomous reptiles, raptors and large birds require particular handling if the animal cannot be handled (i.e. venomous reptiles), the following methods will apply;
    - Exclude all personnel from the vicinity with flagging and/or signage; and,
    - Record the exact location of the animal/s and provide to the Project Ecologist or Fauna Rescue representative.

- If Project Ecologist or wildlife carer is not available on site and the animal is able to be handled safely, to minimise stress to native fauna and/or remove the risk of further injury before a licensed fauna handler arrives on site, the Project Manager or delegate will:
    - If time permits, call Project Ecologist or Fauna Rescue for advice;
    - Cover larger animals with a towel or blanket and place in a cardboard box and/or canvas bag;
    - Place smaller animals in a cotton bag, tied at the top; and,
    - Keep the animal in a quiet, cool, ventilated and dark location away from noisy construction activities.
- Call the appropriate rescue agency immediately and follow any advice provided by the agency. Once the rescue agency arrives on Site, they are responsible for the animal. Any decisions regarding the care of the animal will be made by the rescue agency.
- In the event the rescue service and/or local veterinary service cannot be contacted, the injured animal will be managed by the Ecologist and delivered to the relevant agency as soon as practically possible.
- All fauna encounters and outcomes will be reported in a final Clearance Compliance Report to the relevant authority.

4.8 Dam Dewatering Procedures

This Plan recommends a three (3) phase procedure to ensure appropriate measures are in place to ethically handle all fauna encountered during the dewatering process:

- Phase 1 – Assessment of the dam and surrounding area on the day of dewatering by Ecologist to inform dewatering;
- Phase 2 – Dewatering of the Dam, which is to be supervised by Ecologist; and,
- Phase 3 – Fauna Management during and post dewatering.

4.8.1 Phase 1 – Assessment

An assessment is to be undertaken to determine if conditions have changed from this report such as, water levels have increased or decreased, aquatic vegetation has changed, fallen vegetation within the dam, etc. This assessment is to be undertaken to determine if additional species (flora or fauna) maybe located within the dam and if methodology proposed within the report are appropriate.

4.8.2 Phase 2 – Dewatering

The following measures will be undertaken prior to, and during dewatering to limit unnecessary handling of any fauna, ensure timely processing and maintain biosecurity:

- External visual inspection of the ponds by the Project Ecologist to identify any potential fauna species present;
- Two containers are to be filled with freshwater near the dewatering pumps, or other suitable location. Containers are to be allocated for either native or exotic aquatic species;
- The dam water will be distributed across the Subject Site by slow release using a spreader. A 1mm-2.5mm sieve will be utilised to capture any fish during the process;
- Larger individuals will be captured opportunistically with a dipnet as the water level is reduced;
- When the water levels have been reduced to approx. 20% of starting capacity a third tank must be provided for the water from the wastewater ponds to be pumped into. The sieve is to be

removed from the pipe and all remaining water is to be pumped into the third tank where the Project Ecologist will inspect the water for fauna prior to it being pumped into the PSP onsite;

- Bunding should be installed around the tanks to retain any spills and to direct water back into the pond. This will ensure no water will enter surrounding ecosystems; and,
- Project Ecologist must be wearing correct Personal Protection Equipment (PPE) in accordance with site specific Safe Work Method Statement.

4.8.3 Phase 3 – Aquatic Fauna Management

Fauna encountered during dewatering will be handled according to the following:

- The Project Ecologist is to supervise the dewatering procedure, as stated above. The Project Ecologist may postpone dewatering to ensure the welfare of fauna species;
- If possible, a net is to be used any time a fauna species is required to be transferred from the dam to a sorting container;
- Identification of the species must be undertaken to determine if the fish are native or exotic;
- If the species are native, they are to be placed in a container with freshwater collected from the dam;
- A release point for native fauna species will be established prior to dewatering;
- Prior to translocation all native fish are to be netted and held in plastic bags. The bags are to be placed in shallow sections of the identified creek to allow for acclimatisation for fifteen minutes prior to release;
- Fish species identified as exotic are to be ethically euthanised. Clove oil will be added to a container of freshwater in a sufficient concentration to achieve euthanasia. Fish will remain in this solution for at least 10 minutes after all gill movement has stopped. Protocols within the *Prevention of Cruelty to Animals Act 1979* are to be adhered to; and,
- If carp or other pest species eggs are detected these must be removed and disposed of at a facility licenced to manage the fauna.

4.9 Monitoring, Maintenance and Reporting

4.9.1 Clearing Compliance Reporting

Each fauna rescue event is to be recorded and is to be included in the final clearing report to be provided to the consent authority within ten (10) days of the clearing completion to confirm compliance of the clearing works with the Wildlife Management Strategy (WMS) and Consent Conditions. Information to be included includes:

- Date and time fauna was located;
- Location on Site (habitat and GPS coordinates);
- Fauna type (e.g. possum, bird, snake etc.); and,
- Species (if known).

If the fauna was injured the following details should be recorded:

- Time that the fauna specialist was called;
- Time that the fauna specialist arrived;
- Fauna specialist name and contact; and,
- What the outcome was of calling the fauna specialist.

If the fauna was not injured the following detailed should be recorded:

- Where was the fauna relocated? NB only a qualified wildlife handler is to relocate fauna;
- Name and qualification of fauna handler; and,
- Any other comments.

The Report will also provide details of habitat relocated and numbers and types of hollows salvaged for remanufacture.

5.0 Implementation of Regeneration Approaches

Project Ecologist and BRC to meet on site to establish location of monitoring points and establish PCT boundaries.

The baseline data collection at commencement of regeneration is vital to establishing the condition of the communities and setting the methodology to achieve the above targets. Given the region can have variable climatic conditions the vegetation conditions may vary from season to season and year to year, determining the condition of the vegetation on commencement of a project is essential in determining the most appropriate methods to achieve the target above.

At commencement of the BMP the Project Ecologist and BRC will:

- Confirm locations of management zone areas;
- Establish monitoring and photo points within each Management Zone; and
- Collect Baseline Data (Project Ecologist).

On completion of the baseline data collection The BRC will commence with works to meet the targets for Year 1:

- Primary weed removal;
- Installation of ground habitat (logs from timber felled as part of the proposal if applicable);
- Planting of vegetation (see **Appendix A** for detailed species list). All plant stock must be provenance specific seed / material collected from locally endemic species, grown by suitably experienced and qualified nurseries, and hardened-off before planting. This will ensure the structure and composition of these communities will meet the targets set;
- Preference should be given to native species known to be pioneering species able to compete with exotic regrowth; and
- Mulching and watering.

5.1 Weed Management

5.1.1 Priority Weeds for Onsite Management

- *Heliotropium amplexicaule* (Blue Heliotrope).
- *Lycium ferocissimum* (African Boxthorn);
- *Nassella trichotoma* (Serrated Tussock);
- *Opuntia monacantha* (Drooping Pear);
- *Ligustrum lucidum* (Privet - broad-leaf); and
- *Ligustrum sinsense* (Privet - narrow-leaf).
- *Salix alba* (White Willow)

- *Rubus anglocandicans* (Blackberry)

The aforementioned exotic species will be the focus of weed management activities, based on legal requirement to control the species listed as Priority Weeds for the Central Tablelands under the *Biosecurity Act 2015*, as well as other species occurring in high density onsite that have the potential to further colonise the BMP Lands and undermine regeneration efforts. A list of all weed species identified onsite is provided in **Appendix B.**

The *Biosecurity Act 2015* outlines several 'duties'; the general biosecurity duty, and additional duties under mandatory measures, regional measures, prohibited matter or biosecurity zone. Specific action for these measures may be required. Weed control is required to occur in the following sequence:

5.1.2 Sequential Weed Control

Weed Control works within each Management Zone are to be undertaken by a qualified bushland regeneration team using industry standards.

Any reproductive material of weeds, including weeds which can spread vegetatively, or seeds, must be taken off site to be disposed of at an appropriate local waste management centre. No weed material with the potential of spreading must be stockpiled within the development site or BMP Lands. the following principles are proposed:

1. **Primary Weeding** – First six-months. This is where most problematic weeds are removed from Management Zones.
2. **Consolidation (Secondary and tertiary weeding)** – Six-months following the completion of primary weeding. Management Zones will require monthly visits to remove weeds that are regenerating and / or have grown in response to the disturbance. These visits are essential, otherwise the weeds will recolonise and inhibit native regeneration.
3. **Maintenance Weeding** – Starts six-months to a year post-secondary or tertiary weeding and will continue on a monthly basis for the following year. Maintenance will decrease overtime based on weed cover of Management Zones. Changes to frequency will be outlined in annual reports.

Depending on the management zone, weed control works across the site are to be undertaken over the maintenance period of up to five years. However, given the adaptive management approach, this time-frame is flexible, and may need to be extended based on changing site conditions and monitoring results indicating Management Zones have reached targets set out in this BMP.

Timing

- The weed control intervals will be evaluated based onsite conditions during each monitoring period;
- Monthly weed control events are recommended in Year 1 during the warmer months (active growing season) and decreased to quarterly in winter. The frequency of weed control event will decrease over the duration of the BMP as native plants establish and weed load decreases; and
- Weed control should take into account the life cycle of the target species and be timed to occur prior to weeds setting seeds in order to exhaust the seed bank present in the top soil while minimizing further seed dispersal. Priority should be given to areas showing most resilience such as the vicinity of existing native canopy and in proximity to planted tubestock to minimize competition with establishing natives.

Control of exotic grasses

- Slashing should be used to supress exotic grasses and herbaceous weeds. Slashing should occur between flowering and seeding to minimize the amount of propagule present and stimulate fresh growth;
- Slashing should be followed by spraying to ensure that herbicide is absorbed during active growth but before seeds start developing;
- Scattered occurrence may be spot-sprayed using herbicide and larger infestation may be controlled via broadacre spraying. Spraying should occur within a couple of weeks of slashing or before new flowers start developing; and
- Within better condition vegetation and the vicinity of plantings, scattered clumps of exotic grasses should be deseeded and the clump crowned using a gyprock saw. All material should be bagged and taken offsite. This will minimize the risk of off target spray to damage native vegetation.

Control of woody weeds

- Woody weeds such as African Boxthorn should be controlled via stem injection or the cut and paint method;
- Propagules should be bagged, taken off site and disposed at a licensed facility; and
- Non-seed-bearing woody material may be left in situ.

5.1.3 Herbicides

Where herbicide usage is proposed, the following factors are to be taken into consideration when selecting the herbicide:

- The safety of the particular herbicide to users and use near waterways, desirable plants, soil micro-organisms, amphibians, birds and mammals; and,
- The economics and time constraints of using herbicides over other methods of weed control.
- Herbicide should not be used adjacent or within the riparian corridor especially within area identified as Key Fish Habitat;
- The use of herbicide should always be assessed against the risk of spray drift and over spraying off target native plants;

Directions must be strictly followed and all precautions followed over time. For example, Glyphosate herbicides are systemic and non-selective. All staff spraying herbicide must possess an AQF3 Chemical Accreditation.

5.1.4 Reuse of Biomass

Trees and habitat features removed from the development site must be reused to provide supplementary ground habitat for native fauna within the BMP Lands

- Trees removed as part of the clearing of the development site must be cut in manageable sections and transported into the BMP Lands;
- Care must be taken when placing the salvaged logs to not damage any vegetation within the BMP Lands. Due to the sensitive nature of the retained vegetation no machinery should enter the BMP Lands. Instead, logs should be carried by the clearing supervision ecologist into suitable locations, preferably using existing tracks;
- The salvaged logs must be placed in location where they will not impact access to the BMP Lands;

- Smaller branches must be chipped and mulch piles placed within the BMP Lands and cured for no less than two months to avoid nitrogen draw dawn when spread;
- Mulch piles must not be stored within the dripline of retained trees; and
- Exotic vegetation must not be chipped along with native trees due to the potential for propagules to be present. Instead, biomass from exotic trees must be stored separately and taken offsite to be disposed of at a license facility.

5.2 Planting of Native Vegetation

Reconstruction management zones with the BMP Lands will require planting to ensure BMP targets are met. As such, a site-specific planting list has been provided (see **Appendix A**) based on the three (3) PCTs present onsite.

The following measures are recommended to be implemented to enhance revegetation works:

Ground preparation

- Ground preparation including ripping, preferably undertaken when the soil is relatively dry to optimize the shattering effect. The preferred timing would be autumn to provide time before spring planting for the area to settle. Rip lines should be spaced approximately 5-10 metres apart to ensure ample space for vehicle passage between them for maintenance. Rip lines should be established to a depth of approximately 30-60cm;
- Soil preparation should include the use of Terraform™ Plant Establisher as well as the use of water crystals at the discretion of the bush regeneration contractor if deemed necessary; and
- Within MZ4 the placement of jute matting, rocks or logs and coir logs within areas identified as prone to erosion such as the creek banks will be required.

Species selection

- Preference should be given to native species known to be pioneering species able to compete with exotic regrowth;
- Species selection should be reflective of PCT 78 for MZ3 and MZ4, PCT 201 for MZ1 and MZ2 and PCT 281 for MZ5. MZ4 has further been segregated into aquatic zone, banks and wider VRZ with species to be selected to suit local conditions. As such, only macrophytes should be planted within the aquatic zone; and
- All plant stock must be provenance specific, seed / material collected from locally endemic species, grown by suitably experienced and qualified nurseries, and hardened-off before planting;

Timing

- Timing for revegetation work should avoid the summer months and should ideally be planned for spring and autumn;
- Trees and shrubs only should be planted in Year 1 within MZ1, MZ3 and M5; monitoring of native flora species and weed regrowth will determine whether reestablishment of the ground stratum is necessary within these Management Zones in subsequent years;
- MZ4 will have all strata reconstructed in Year 1; and
- Within MZ2, no planting is recommended during Year 1. Year 1 monitoring of regrowth will determine whether mid stratum and ground stratum need to be reconstructed. If no recruitment of native species occurs, planting of shrubs and ground layer species will occur in Year 2;

Planting specifications

- Long stem planting should be considered as an alternative to traditional methods of planting protects the roots from substantial changes in soil temperature, allows the plant access to deeper soil moisture and reduces competition from weeds. This technique may especially be considered within the riparian corridor of Splashdash Creek due to potential flooding that may wash away plantings;
- Planting specifications including species selection and planting densities per growth form are provided in **Appendix A**;
- Protection guards should be placed around plantings so that revegetation efforts within BMP Lands are not compromised by grazing from rabbits or kangaroos; Within the riparian corridors (MZ3 and MZ4) tree guards used should only be made from biodegradable material to prevent potential flooding from introducing plastic into the catchment
- If monitoring within management zones indicates pest species pose notable impediments to achieving the aims of the BMP (i.e., through excessive browsing, etc.), then management actions will be reviewed to address these issues;
- Mulching should be considered by the BRC. If mulching is considered appropriate, then cost effective measures such as hydromulching should be considered.
- Replacement of dead or dying plants.

Planting maintenance

- Watering may be necessary depending on the weather forecast during and in the weeks and month following planting events. As such the watering regime should be adapted to the conditions;
- If no substantial rain occurs post planting; a weekly watering may be necessary for no less than eight weeks; and
- Maintenance weeding and tree guard maintenance will be required during plant establishment to ensure they are adequately protected and not being outcompeted by exotic species.

These measures will enable the structure and composition of these communities to meet the targets set.

5.3 Pest Species

Whilst no pest fauna species were observed onsite during surveys, if monitoring within management zones indicates pest species pose notable impediments to achieving the aims of the BMP (i.e., through excessive browsing, burrowing, spreading seed etc.), then management actions will be reviewed to address these issues.

It is strongly recommended to engage with Local Land Services (LLS) and adjacent landholders to identify the most suitable approach to control pest species in the locality.

5.4 Project Management

The client will be responsible for the engagement of a suitably qualified Bush Regeneration Contractor (BRC) to undertake weed control and planting works outlined in this BMP.

Bush Regenerator(s) or company(s) shall have:

- Australian Association of Bush Regenerators (AABR) Accreditation. The Bush Regenerators shall hold a current AQF3 qualification;

- Site Supervisor must have demonstrated minimum of 4 years' experience in the bush regeneration or related field and must have experience at a supervisory level in providing training, supervision and technical advice to staff, clients, volunteers and members of the public; and,
- The Site Supervisor must hold a current AQF 3 qualification or higher and must have completed the Bush Regeneration Level IV Certificate or have a diploma or degree in a field related to natural resource management.

An official handover of the BMP to the BRC will be conducted by the Project Ecologist at the time of baseline data collection (See **Section 6**). This will be undertaken via a site walkover and provide the opportunity to discuss BMP actions, locations of MZs, targets, methodologies, requirements of sediment and erosion control, pest management and zone-specific management issues.

5.5 Monitoring and Reporting

The Project Ecologist will be responsible for the establishment of monitoring points within the BMP Lands along with collection of baseline data that will be monitored over the five-year period of this BMP with reporting on the achievement of overall targets and weed management, and success of the regeneration and reconstruction approaches. Monitoring will occur at commencement (baseline) and on a biannual basis for the duration of the BMP.

5.5.1 Baseline Data

Baseline data collection to commence prior to site preparation. Nine (9) indicative monitoring points have been identified within the BMP Lands (refer **Figure 4**). The final location of the monitoring points is to be determined when commencing works and will try to capture the diversity of conditions present. Note that several monitoring points have been allocated to each management zone. This is due to management zones being found in different conditions.

Each monitoring point will consist of a 10m x 10m quadrat marked with two 1.8m star pickets located at the northeast and southwest corner. The location of the northeast corner should also be marked with a GPS waypoint to facilitate identification in the field and will be used as photo monitoring point.

Baseline data will cover:

- Species diversity (cover and abundance of both native and exotic species) within 10m x 10m quadrat;
- Species Projected Foliage Cover (both native and exotic expressed in percentages) within 10x10 quadrat;
- Leaf litter cover and ground habitat within 10m x 10m quadrat;
- Stem classes present (<5cm; 5-9cm; 10-19cm; 20-29cm; 30-49cm and >50cm)
- Overall health of the BMP Lands;
- Photo records at monitoring points at each aspect; and
- Record incidental fauna (both native and pests).

5.5.2 Bush Regeneration Contractor Monthly Summary of Work

The BRC will provide a monthly summary of works undertaken which will be reviewed by the Project Ecologist and added to the annual report. If any issues arise these will be outlined in the monthly summaries and the BRC and Project Ecologist will determine action required to meet the set targets. If such determination requires significant change to the management outline in the BMP, the Project Ecologist will contact the relevant authority to inform them of the changes.

5.5.3 Monitoring by Project Ecologist

This is to occur once a year, for the duration of the BMP. Monitoring should include the same metrics as the baseline data but should also include information such as:

- Effectiveness of weed control methods; and
- State of fencing and erosion and sedimentation measures.

Annual monitoring will inform the evaluation of management effectiveness, until the regeneration benchmark targets are met.

5.5.4 Reporting

Progress reports are to be submitted to the relevant authority (i.e. CPHR or Council) annually for the duration of the BMP, following issue of the construction certificate. Reports are to detail the progress of the works and any recommended additional actions, with a final report certifying completion of the BMP at the end of the implementation period, or once the specific objectives of the plan have been met. Any recommended additional actions must be completed to the satisfaction of the consent Ecologist prior to lodgement of the final report.

Once in a state of Natural Regeneration following completion of the BMP period, management of the site will be undertaken in accordance with the *Biosecurity Act 2015* & *Biosecurity Regulations 2017.*

5.6 Interventions

With all regeneration plans, objectives and targets are set based on good conditions, however, this may not always be the case. The following table has been prepared an immediate and concise action plan is generated to ensure targets can be achieved.

Table 4 – Intervention Steps

Element Change	Step 1	Step 2	Step 3	Step 4	Step 5
Fire	BRC to notify Project Ecologist and arrange a joint site inspection.	Assess impact to BMP Lands.	Prepare regeneration plan	Submission of notification and modified Plan to Council.	Implement approved Plan
Flood					
Drought					
Other weather event					
Pest Species damage					
Introduction of pathogen					
Vandalism					
Theft					

5.6.1 Fire

Fire and other impacts above have the potential to drastically alter monitoring results compared to previous reporting. In the event of fire or other serious event impacting BMP Lands, the Project Ecologist would develop a report reviewing impacts of the event and suggesting changes required to the BMP to be approved by the consent ecologist.

Table 5 – Proposed Works Schedule

Activity	Specific Action	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
BMP Lands Preparation	Installation / removal of fencing and signage	Installed at the beginning of Year 1 and removed once construction is finished																			
	Implementation of pathogen and disease controls	To be implemented throughout the duration of the BMP																			
	Installation of sediment and erosion control	Installed at the beginning of Year 1 and monitored throughout the duration of the BMP																			
	Rubbish removal																				
	Relocation of salvaged logs and hollows to BMP Lands																				
Weed Control	Primary weeding all MZs (Monthly during active growth season)																				
	Consolidation (Secondary and Tertiary) weeding (Monthly)																				
	Maintenance Weeding - Frequency to be adjusting according to monitoring findings																				
Vegetation Planting	Planting within Reconstruction Zones																				
	Direct seeding of ground stratum species (if required)																				
	Replacement of dead or dying plants																				
Project Management	Set up Monitoring Points and collect baseline data																				
	Biannual monitoring																				
	Reporting (to be submitted to Mid-Western Regional Council after annual monitoring)																				
	Certification report (One-off on completion of the project)																				

6.0 References

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Appendix A – Revegetation Species List

Management Zone(s)	Tree	Density	Shrubs	Density	Groundcovers	Density
PCT 201 – Fuzzy Box Woodland						
1 & 2	*Eucalyptus conica, Eucalyptus melliodora, Eucalyptus microcarpa, Allocasuarina luehmannii, Eucalyptus blakelyi, Brachychiton populneus subsp. Populneus, Eucalyptus populnea subsp. Bimbil, Callitris glaucophylla.*	1/40m^2	*Acacia deanei subsp. deanei, Maireana microphylla, Dodonaea viscosa subsp. Cuneata, Geijera parviflora, Senna form taxon artemisioides, Myoporum montanum, Acacia implexa; Cassinia aculeata, Sclerolaena muricata var. muricata, Maireana enchylaenoides, Acacia penninervis var. penninervis, Amyema miquelii, Dendrophthoe glabrescens, Swainsona galegifolia.*	1/20m^2	*Austrostipa scabra subsp. Scabra, Chloris truncata, Calotis cuneifolia, Eremophila debilis, Sida corrugata, Einadia hastata, Austrodanthonia setacea, Austrodanthonia fulva, Vittadinia cuneata, Themeda australis, Carex appress,; Bulbine semibarbata, Aristida ramosa, Austrostipa verticillata, Glycine clandestina, Dianella revoluta var. revoluta, Xerochrysum viscosum, Oxalis chnoodes, Elymus scaber var. scaber, Cheilanthes sieberi subsp. Sieberi, Hydrocotyle laxiflora, Einadia nutans subsp. nutans, Hypericum gramineum, Dichondra sp. A, Wahlenbergia luteola, Atriplex spinibractea, Cyperus gracilis, Carex inversa, Desmodium varians, Rumex brownii, Glycine tabacina, Veronica calycina, Bothriochloa macra.*	4/m^2 or Direct Seeding
PCT 281 – Box Gum Woodland						
5	*Angophora floribunda; Eucalyptus blakelyi; Eucalyptus melliodora; Callitris endlicheri; Callitris glaucophylla; Eucalyptus camaldulensis; Casuarina cunninghamiana subsp. cunninghamiana; Eucalyptus albens; Brachychiton populneus subsp. Populneus.*	1/40m^2	*Acacia implexa; Dodonaea viscosa subsp. angustifolia; Bursaria spinosa subsp. spinosa; Hibbertia obtusifolia; Acacia penninervis var. penninervis; Acacia gladiiformis; Acacia uncinata; Acacia leiocalyx; Acacia decora; Olearia elliptica subsp. elliptica; Brachyloma daphnoides subsp. daphnoides; Acacia sertiformis; Persoonia cuspidifera; Beyeria viscosa; Cassinia quinquefaria; Notelaea microcarpa var. microcarpa; Melichrus urceolatus; Pimelea curviflora var. curviflora; Phyllanthus subcrenulatus; Acacia deanei subsp. deanei; Geijera parviflora; Brachyloma daphnoides subsp. daphnoides; Ozothamnus diosmifolius; Acacia ulicifolia; Acacia leiocalyx; Macrozamia diplomera; Macrozamia heteromera; Persoonia cuspidifera; Grevillea floribunda; Exocarpos cupressiformis; Cassytha pubescens; Indigofera linnaei; Cassinia quinquefaria;*	1/20m^2	*Austrostipa verticillata; Aristida ramosa; Calotis lappulacea; Arundinella nepalensis; Aristida calycina var. praealta; Lomandra longifolia; Lomandra confertifolia; Swainsona galegifolia; Haloragis heterophylla; Themeda australis; Einadia nutans; Juncus continuus; Juncus ochrocoleus; Juncus usitatus; Eragrostis brownii; Dianella revoluta var. revoluta; Ranunculus sessiliflorus var. sessiliflorus; Epaltes australis; Elymus scaber var. scaber; Scutellaria humilis; Hydrocotyle laxiflora; Desmodium brachypodum; Desmodium varians; Austrodanthonia racemosa var. obtusata; Bothriochloa macra; Bothriochloa decipiens; Carex appressa; Carex incomitata; Oncinocalyx betchei; Wahlenbergia luteola; Wahlenbergia stricta; Senecio queenslandicus; Microlaena stipoides var. stipoides; Dichelachne micrantha; Dichopogon fimbriatus; Daucus glochidiatus; Cheilanthes sieberi subsp. sieberi; Urtica incisa; Plantago hispida; Geranium solanderi var. solanderi; Podolepis neglecta; Rubus parvifolius; Glycine clandestina; Clematis glycinoides var. glycinoides; Commelina cyanea; Echinopogon intermedius; Echinopogon caespitosus var. caespitosus; Elymus scaber var. scaber; Echinopogon ovatus; Aristida vagans; Einadia hastata; Oxalis perennans; Cymbonotus lawsonianus; Cynoglossum australe; Lomandra bracteata; Sigesbeckia australiensis; Galium migrans; Vittadinia dissecta var. dissecta; Calotis cuneifolia; Ajuga australis; Galium gaudichaudii; Aristida jerichoensis var. jerichoensis; Wahlenbergia graniticola; Vittadinia cuneata var. hirsuta; Vittadinia tenuissima;*	4/m^2 or Direct Seeding

Management Zone(s)	Tree	Density	Shrubs	Density	Groundcovers	Density
PCT 78 – River Red Gum Riparian Tall Woodland						
3 & 4	*Eucalyptus camaldulensis, Angophora floribunda, Casuarina cunninghamiana, Eucalyptus melliodora, Eucalyptus blakelyi, Eucalyptus albens, Eucalyptus melanophloia, Callitris glaucophylla, Melaleuca bracteata, Brachychiton populneus subsp. populneus.*	1/40m^2	*Callistemon sieberi, Leptospermum polygalifolium, Acacia deanei, Leptospermum brachyandrum, Leptospermum brevipes, Notelaea microcarpa var. microcarpa, Nyssanthes diffusa, Maireana microphylla, Jasminum lineare, Clematis glycinoides var. glycinoides, Cymbidium canaliculatum, Geijera parviflora, Acacia spectabilis, Acacia leucoclada subsp. Leucoclada, Atriplex muelleri, Amyema cambagei.*	1/20m^2	*Arundinella nepalensis, Austrostipa verticillata, Elymus scaber var. scaber, Lomandra longifolia, Aristida vagans, Cynodon dactylon, Swainsona galegifolia, Ajuga australis, Einadia trigonos subsp. Stellulata, Urtica incisa, Sida rhombifolia, Commelina cyanea, Cheilanthes austrotenuifolia, Gahnia aspera, Eremophila debilis, Cymbopogon refractus, Carex incomitata, Cyperus gracilis, Cyperus gymnocaulos, Carex appressa, Rumex brownii, Cullen tenax, Dichanthium sericeum subsp. Sericeum, Boerhavia dominii, Paspalidium aversum, Lachnagrostis filiformis, Chenopodium pumilio, Paspalum distichum, Mentha satureioides, Sorghum leiocladum, Imperata cylindrica var. major, Lepidium pseudohyssopifolium, Juncus ochrocoleus, Daucus glochidiatus, Poa sieberiana, Ranunculus sessiliflorus var. sessiliflorus, Echinopogon ovatus, Bothriochloa decipiens, Austrostipa ramosissima, Dichelachne micrantha, Aristida vagans, Juncus continuus, Olearia elliptica subsp. Elliptica, Hypericum gramineum, Plantago debilis, Alternanthera denticulata*	4/m^2 or Direct Seeding
Aquatic Zone						
4 (*Aquatic zone*)		N/A		N/A	*Cyperus gracilis* *Juncus usitatus* *Carex longebrachiata* *Lomandra longifolia* *Gahnia clarkei*	4/m^2

Revegetation Species List - Approximate densities and species for revegetation of the BMP Lands

Appendix B – Weeds present within the BMP Lands

Priority Weeds for the Central Tablelands	
Weed	**Biosecurity Duty**
All plants	*General Biosecurity Duty* All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
African boxthorn *Lycium ferocissimum*	*Prohibition on certain dealings* Must not be imported into the state, sold, bartered, exchanged or offered for sale. *Regional Recommended Measure* Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.
Blue heliotrope *Heliotropium amplexicaule*	*Regional Recommended Measure* Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.
Paterson's curse *Echium plantagineum*	Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Land managers reduce impacts from the plant on priority assets.
Serrated tussock *Nassella trichotoma*	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale.
Serrated tussock *Nassella trichotoma*	Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.
Willows *Salix* species	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. All species in the Salix genus have this requirement, except Salix babylonica (weeping willows), Salix x calodendron (pussy willow) and Salix x reichardtii (sterile pussy willow)

Appendix C – BMP Lands Signage

NO UNAUTHORISED ENTRY

This is a Vegetation Rehabilitation Area

- **NO DUMPING or WASTE DISPOSAL**
- **NO ANIMALS, VEHICLES or MACHINERY**

For information – contact Site Manager

AEP VMP SIGNAGE permanent sign, minimum size 600mm x 400mm erected and maintained at key access points to VMP lands for the life of the project

Appendix D – CVs

The fieldwork, data analysis and reporting for the BMP was undertaken by:

Staff	Title/Qualification	Tasks
Joelan Sawyer	Botanist BSc (Biology)	Field Assessment
Darcy Kilvert	Senior Ecologist BSc (Biology)	Report Review
Yann Buissiere	Senior Ecologist BEnv Mgmt & Dip Cons Land Mgmt	Technical Review
Geoff Turner	Ecologist / GIS Officer BSc (Environmental Science)	Report Author and Mapping
Eve Dubourdieu	Ecologist BBioCons	Report Contributor and Mapping

Appendix J: CVs

Ian Benson

Director & Principal Ecologist

Profile Summary

Ian has been with AEP since 2016 and was appointed as a Director in 2022 and continues in the role of Principal Ecologist. Ian has detailed knowledge of environmental legalisation and biodiversity approval pathways. He is highly proficient in the implementation of the NSW Biodiversity Assessment Method including a detailed understanding of the Biodiversity Credit market to inform feasibility studies as well as minimising the costs of providing biodiversity offsets.

Ian's special interest areas and expertise include Song Meter surveys for Koala and Forest Owl, camera trapping for cryptic fauna, avifauna surveys in challenging wetland & shorebird environs and nocturnal survey of arboreal mammals and nocturnal birds

Ian is a conservation detection dog handler and is currently working with his purpose breed working Cocker Spaniel "Dash" who is currently trained to detect Koala scat, Forest Owl pellets and Cane Toads.

Ian also volunteers moderating and vetting bird surveys from *Birdata* which is the Birdlife Australia Atlas to ensure a robust database for both the Hunter Valley and Central Coast reporting areas totalling approximately 5000 surveys per year. This important data from Birdlife is periodically included in the NSW Bionet Atlas.

Academic Qualifications

- Graduate Diploma in Science (Ecology) University of New England (2014)
- Bachelor Engineering (Civil) University of Newcastle (2008)

Training, Licences and Professional Memberships

- Biodiversity Accredited Assessor System: 18147
- Ecological Consultants Association: Member
- Environment Institute of Australia and New Zealand: Member
- Zoological Society of NSW: Scientific Member
- Hunter Bird Observers Club: Member
- Birdlife Australia: Member
- NSW Class C Driver's Licence. Experienced 4WD operator
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID003)
- Advanced Plant Identification (University of New South Wales)
- Remoted Piloted Aircraft Excluded Category Training with Aviassist Pty Ltd

Professional Experience

Director & Principal Ecologist 2022 - Present

Anderson Environment & Planning

Principal Ecologist 2019 – 2022

Anderson Environment & Planning

Senior Ecologist 2018 – 2019

Anderson Environment & Planning

Ecologist Anderson Environment & Planning	2016 – 2018
Geotechnical Engineer/Project Manager Douglas Partners, Newcastle	2008 – 2016
General Council Member, Ecological Consultants Association of NSW	2024
Birdata Moderator, Birdlife Australia	2017 - Present

Relevant Project Experience

Ecological Survey examples

- Targeted surveys for *Dichanthium setosum* in Glen Innes Region;
- Target surveys for *Eucalyptus cannonii*, Western Rail Coal Unloader, Pipers Flat;
- White-bellied Sea-Eagle nest locating and monitoring Glenning Valley and Chisholm;
- Powerful Owl nest locating and monitoring: Salamander Bay, Soldiers Point, Anna Bay North, Wallsend, Cameron Park and Edgeworth;
- Spot Analysis Techniques surveys: Nelsons Plains, Wallsend, Anna Bay, Boat Harbour, Salamander Bay, North Arm Cove, Warnervale, Hamlyn Terrace, Kincumber, Palmdale, Wyee, Charlestown, Chisholm, Gillieston Heights, Mount Vincent, Radford Park and Cessnock;
- Surveys for Squirrel Glider (*Petaurus norfolcensis*) Warnervale Area June 2020;
- Cat Tracker Pilot Program Associated with The Hunter Estuary Wetlands for Hunter Local Land Services;

Ecological Assessment examples

- Accredited Assessor for approved Biodiversity Development Assessment Reports:
  - Cromarty Lane, Bobs Farm
  - Teraglin Village, Chain Valley Bay;
  - Berkeley Vale Road, Glenning Valley;
  - Railway Road, Warnervale;
  - Barden Ridge Townhouses;
  - McFarlane's Road, Chisholm;
  - Fairlands Road, Medowie;
  - Rosella Rise, Warnervale;
  - Carr's Road, Neath;
  - Jack Grant Avenue, Warnervale;
  - Minnesota Road, Hamlyn Terrace;
  - Bellbird North;
  - Waterford, Chisholm;
  - The Entrance Road, Erina Heights;
  - Port Macquarie Rezoning;
  - Blanch Street, Boat Harbour
  - Newell Highway, Gilgandra
  - Narromine Road, Dubbo

- Ecological Assessment Report for Proposed Modification To Approved Western Rail Coal Unloader At Pipers Flat;
- Infrastructure;
    - Gwandalan Recycled Water Main;
    - Lower Belford Water Main;
    - Raymond Terrace Rising Main;
    - Astra Street Landfill Rehabilitation Assessment;

Ecological Offsets and Monitoring

- Biodiversity Stewardship Agreements including:
    - Bobs Farm;
    - Cedar Brush Creek;
    - Girvan;
    - Mardi;
    - Wallsend;
    - Ellalong;
    - Blueys Beach;
    - South-West Rocks.

Publications

- Callaghan, C.T., Benson, I., Major, R.E., Martin, J.M., Longden T., Kingsford, R.T. (2020) *Birds are valuable: the case of vagrants*. Journal of Ecotourism 19:82-92 January 2020.
- Fawcett, A., Benson, I., Roderick, M. (2024) *First confirmed sighting of Great Frigatebird within the Hunter Region, NSW*. The Whistler 18 (2024): 10-13.

ALESSANDRO RONCOLATO
Ecologist

Profile Summary

Alessandro is an ecologist at Anderson Environmental & Planning, where he applies his knowledge and experience to a variety of environmental projects. Having recently completed his undergraduate degree in Environmental Science, he has developed a wide set of skills that are crucial to his role.

During his time at AEP, Alessandro has honed his abilities in fauna and flora identification and surveys, GIS, animal handling, environmental planning, ecological assessments, restoration, land management and report writing. His knowledge and practical experience make him a valuable asset in promoting sustainable environmental practices and effective ecological restoration.

Academic Qualifications

- Bachelor of Science (Environmental Biology) and Bachelor of Arts in International Studies – University of Technology Sydney, 2023

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- SSI Open Water Divers License

Professional Experience

Ecologist — 2023 – Present
Anderson Environment & Planning
Newcastle NSW

Sales Assistance — 2019 – 2024
Rebel Sport

Construction Labourers — 2017
Bedrock

Relevant Project Experience

Ecological Surveys

- Camera trapping surveys for ground and arboreal species including deployment, completion, and analysis at Bermagui, Scone and Pleasure Point.
- Completed threatened orchid and ground cover surveys via 5m transects at various sites.
- Completed threatened shrub surveys via 10m transects at various sites.
- Completed threatened tree surveys via 20m transects at various sites.
- Microbat surveys by Anabat deployment, and collection at Santa Sabina, Revesby, Pleasure Point, Mount Vicotria, Blackheath.
- Spot Analysis Techniques surveys: Colo heights, Mount Victoria, Scone and Singleton.

- Nocturnal surveys for forest owls such as Powerful Owls, Sooty Owls and Barking Owls which includes stag watching, call playback and spot lighting at various sites.
- Diurnal bird surveys which include the deployment and collection song meters at various sites.
- Conducting frog surveys for threatened species at various sites.
- Bushfire vegetation inspection and assessment in accordance with PBP 2019 at various sites.
- Habitat and Hollow Bearing Tree Assessments completed at Wyee, Illawarra, Wentworth and Mount Victoria.
- Arborist Assessment for Austin Butler Reserve, Yanco and Catherine fields
- Conducted target surveys for a variety of threatened flora and fauna at various sites in the Blue Mountains.

Ecological Assessment

- Biodiversity Assessment Method (BAM) plots completed at various sites under the supervision of BAM accredited assessor Joelan Sawyer.

Ecological Monitoring

- Assisted in the locating, trapping, handling and microchipping of native bush rats at North head.

DARCY KILVERT

Senior Ecologist & Sydney Office Manager

Profile Summary

Darcy works with AEP in the role of Senior Ecologist / Sydney Office Manager, overseeing the Sydney Office since its establishment in 2023. With a comprehensive grasp of environmental legislation and approval processes, he possesses extensive expertise in implementing the Biodiversity Assessment Method. Having worked in the Natural Resource Management sector since 2015, Darcy has developed skills in Botany, Report Writing, Project Management, and GIS. His areas of special interest include Botany and Ecological Community identification, with a particular focus on the Greater Sydney Region.

Academic Qualifications

- Bachelor of Science (Biology), The University of Newcastle, completed in September 2021

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- Working at Heights
- Chemcert and EPA ground applicator licence

Professional Experience

Senior Ecologist / Sydney Office Manager — 2023 - Present
Anderson Environment & Planning
Newcastle NSW

Ecologist / Project Lead — 2022 - 2023
Anderson Environment & Planning
Newcastle NSW

Ecologist — 2021 - 2022
Anderson Environment & Planning
Newcastle NSW

Senior Field Supervisor — 2018 - 2021
Traditional Aussie Gardens
Newcastle

Field Worker — 2015 - 2017
Newcastle City Council
Newcastle

Relevant Project Experience

Ecological Survey examples

- Botanical surveys including BAM plots: Bermagui, Greendale, Waringah, Gosford, Lake Macquarie, Singleton, Quirindi, Lake Cathie, Dilkoon and Tweed Heads.
- Threatened flora surveys: Carrai, Blueys Beach, Dilkoon, and South West Rocks.
- Targeted Koala Nocturnal searches: Upper Rouchel, Greendale, South West Rocks, and Bundanoon.
- Spot Analysis Techniques surveys: Newcastle, Maitland, Hawkesbury, Camden, and Penrith.

Ecological Assessment examples

- Biodiversity Development Assessment Report project management: Greendale, Empire Bay, Hawkesbury, Pleasure Point, South West Rocks
- Ecological Assessment Reports: Carramar, Lake Macquarie, Gosford, and Woolwich.
- Biocertification Assessments: West Wilton, Strathfield, Schofields, and Rouse Hill
- Part-5 Ecological Assessments: Liverpool, Wollongong, and Homebush.
- BDAR Waivers: Revesby, Strathfield and Schofields.

Ecological Monitoring

- Biodiversity Stewardship Agreements including Blueys Beach and South West Rocks;
- Vegetation Monitoring Plots: Pheasants Nest and Warriewood.

EDOUARD LOISANCE
General Manager

Profile Summary

Edouard works with AEP in the role of General Manager. He completed a Diploma of Conservation and Land Management and holds a Master in Management. He has extensive experience in business development, stakeholder engagement and corporate strategy consulting, and started specialising in ecology in 2018, after acquiring experience in bush regeneration and fauna observation. He is now working towards gaining BAM Accreditation.

Academic Qualifications

- Diploma of Conservation and Land Management, Tocal Agricultural College, Paterson, NSW (2021)
- Master of Management, ESCP Europe Business School, Paris, France (2007)

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- Work Safely at Heights Card
- First Aid (Provide First Aid HLTAID011)

Ecological Consulting Experience

General Manager — 2024 – Present
Anderson Environment & Planning
Newcastle, NSW

Ecologist — 2018 - 2024
Anderson Environment & Planning
Newcastle, NSW

Other Professional Experience

Lead Consultant — 2014 - 2018
Quantium
Sydney, NSW

Accounting Director — 2012 - 2014
Catalina Marketing
Leeds, UK

Business Development Director — 2011 - 2012
Catalina Marketing
Paris, France

Account Executive — 2009 - 2011
Procter and Gamble
Paris, France

Assistant Business Manager 2005 - 2006
Procter and Gamble
Weybridge, UK

Relevant Project Experience

Ecological Survey Examples

- Hollow-bearing tree census at various sites in Lake Macquarie, Maitland, Cessnock, Port Stephens and Central Coast areas;
- Targeted searches for *Tetratheca juncea*, *Thelymitra adorata, Genoplesium insigne, Corunastylis* sp. Charmhaven in Newcastle, Lake Macquarie and Central Coast areas
- Targeted searches for *Grevillea* subsp. *parviflora* and *Callistemon linearifolius* in Newcastle and Lake Macquarie areas;
- Targeted searches for *Diuris* spp. and *Pterostylis* spp. in Port Stephens areas;
- Targeted surveys for amphibians and mammals in Newcastle, Lake Macquarie, Central Coast, Maitland, Cessnock and Port Stephens areas;
- Vegetation mapping and BAM vegetation plots in Newcastle, Lake Macquarie, Cessnock and Newcastle areas;
- Motion-sensing camera trap and ultrasonic acoustic detector installation in Newcastle, Lake Macquarie, Port Stephens and Central Coast areas;
- Koala Spot Assessment Technique surveys in Newcastle, Cessnock, Maitland, Lake Macquarie and Port Stephens areas;

Ecological Assessment

- Contributing author and contributing reviewer on Biodiversity Development Assessment Reports, Biodiversity Certification Assessment Reports, Fauna and Flora Assessment Reports, Bushfire Threat Assessment Reports, Vegetation Management Plans, Biodiversity and Bushfire Due Diligence Reports, and Biodiversity Stewardship Feasibility Analyses.
- Analysis of motion-sensing camera trap and ultrasonic acoustic detector data (qualified microbat echolocation call analyst);
- Advanced user of Anabat Insight, QGIS, Mapinfo, Esri ArcGIS Pro (GIS Team Leader), Esri Survey 123, Esri Field Maps, Garmin BaseCamp;
- Programming in Mapinfo MapBasic and SQL languages;

Ecological Monitoring

- White-bellied Sea-eagle nest monitoring in Central Coast area;

GEOFF TURNER
Ecologist / GIS Officer

Profile Summary

Geoff is a junior Ecologist and GIS Officer with Anderson Environmental & Planning. Having recently completed an undergraduate degree in environmental science where he garnered experience in environmental science and undertaking ecological fieldwork such as targeted flora and fauna surveys, he has begun to broaden his skills by commencing a Master of Geographic Information Science at the University of Queensland. During his time working as an Ecologist / GIS Officer he has furthered his ecology skills in conducting ecological assessments and surveys, in addition to performing the accompanying geospatial work that both informs the fieldwork and concisely communicates the data. His work with Anderson Environment & Planning has helped consolidate report writing skills first honed as a requirement of his bachelor's degree.

Academic Qualifications

- Master of Geographic Information Science - University of Queensland, Current
- Bachelor of Science (Environmental Science) – University of Sydney, 2023

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)

Professional Experience

Ecologist / GIS Officer — 2024 – Present
Anderson Environment & Planning
Newcastle NSW

Technician (Espresso machines) — 2023 - 2024
Buccheri Group
Melbourne VIC

Farm Hand — 2020 - 2021
Pocket City Farms
Sydney NSW

Relevant Project Experience

Ecological Surveys

- Diurnal bird surveys (Various sites, 2024-onwards).
- Frog surveys for threatened species (Oxford Falls, April 2024).
- Habitat surveys, including tree hollow identification (Various sites, 2024-onwards).
- Nocturnal surveys for nocturnal avian fauna, including stagwatching, spotlighting, quiet listening and call playback (Wyee, 2024).

Ecological Assessment

- Biodiversity assessment methodology (BAM) plots, under supervision of BAM accredited assessor Joelan Sawyer (Narellan, May 2024).
- Bushfire vegetation inspection and assessment in accordance with PBP 2019 (Clarendon, April 2024).

Geospatial Analysis

- Perform Geospatial analysis according to guidelines and legislation for various reports such as Ecological Assessments and Biodiversity Management Plans.
- Design and present complex spatial data for government and industry.

JOELAN SAWYER
Senior Ecologist

Profile Summary

Joelan works with AEP in the Role of Senior Ecologist, Joelan Specialises in botany with experience focused in the Greater Sydney area and along the NSW coastline. He is proficient in performing flora and fauna surveys, plant identification and taxonomy, GIS, and reporting for biodiversity and impact assessments. He also has in-depth knowledge of the NSW legislative pathways, namely the Biodiversity Conservation Act 2016 and the associated Biodiversity Assessment Method (BAM). Joelan is an accredited assessor. Accreditation No. BAAS23016

Academic Qualifications

- Bachelor of Science (Biology), The University of Western Sydney, completed September 2018
- BAM Assessor; accreditation number: BAAS23016.

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)

Professional Experience

Senior Ecologist — 2023 – Present
Anderson Environment & Planning
Sydney NSW

Ecologist — 2017 - 2023
Anne Clements & Associates

Nursery Worker / Horticulturalist — 2015 - 2017
Wingham Nursery & Florist

Relevant Project Experience

Ecological Surveys

- Flora
  - Targeted surveys for *Dichanthium setosum* in the Hunter Region;
  - Targeted surveys for *Tetratheca glandulosa* and *Hibbertia procumbens* on the Somersby Plateau;
  - Targeted surveys for *Eucalyptus benthamii*, *Dillwynia tenuifolia* and *Grevilliea juniperina*, Western Sydney;
  - Targeted surveys for *Genoplesium baueri*, and *Grammitis stenophylla* Northern Sydney;
- Fauna
  - Spot Analysis Techniques surveys: Muswellbrook, Gunnedah, Scone, Bermagui, Blue Mountains, Western Sydney;
  - Targeted surveys for Cumberland Plain Land Snail, Western Sydney;

- Targeted surveys for Broad Headed Snake, Cattai;
- Targeted surveys for Striped Legless Lizard and Pink Tailed Legless Lizard, Muswellbrook;
- Targeted surveys for Green and Golden Bell Frog, Eastern Suburbs, Sydney;

- Bushfire
  - Bushfire vegetation inspection and assessment in accordance with PBP 2019, various sites;
- Arboriculture
  - Waste recycling facility, 120 trees assessed, West Gosford;
  - Industrial development, 140 trees assessed, Stanmore Park;
  - Commercial development, 80 trees assessed, Marsden Park;

Ecological Assessment

- BAM assessment for Biodiversity Development Assessment Reports;
  - Sandstone quarry extension, Cattai;
  - Aged care housing, Bermagui;
  - Residential development, Pleasure Point;
  - Solar Farm, Stubbo;
  - Eco cabins, Colo;
  - Farm building and agricultural infrastructure, Richmond;
  - Mountain bike track, Delrio, Webbs Creek;
  - Aged care housing, Mollymook;
  - Hunter Gas Pipeline project, Hunter region;
- Accredited assessor for Landscaping Material Supply Facility Biodiversity Development Assessment Report, Greendale;
- BAM assessment and PCT for Ecological Assessment Reports;
  - Horse stabling development, Clarendon;
  - Great southern walk accommodation, Illawarra Escarpment;
  - Rezoning for Carrathool Shire Council at Merriwagga and Rankin Springs;
  - Biodiversity assessment of various Sydney Water assets, Greater Sydney;
  - Biodiversity assessment of Newcastle Councils bushland assets, Newcastle;
  - Biodiversity assessment of Penrith Councils assets at St Marys industrial area;

Ecological Monitoring

- Vegetation monitoring on VMP lands;
  - St Narsai Assyrian Christian College, Horsley Park;
  - Residential development, Cooranbong;
  - Sandstone Quarry restoration, Red Hill Reserve, Beacon Hill;
- Publications
  - Sawyer, J. (2021). *Achieving resilient biodiversity offsets on reconstructed landforms* [Poster Presentation]. Ecological Society of Australia 2021 “Symposium: Practitioners collaborating to restore and rewild landscapes” Darwin, Australia

NATALIE BLACK

Senior Ecologist

Profile Summary

Natalie works with AEP in the role of Senior Environmental Manager. She has extensive knowledge in environmental management, environmental planning, fisheries, aquatic and riparian environments, and report writing and assessment. With a detail understanding of planning, catchment management, coastal management and rehabilitation. Natalie has had a successful career with both state and local government in conservation, planning and field investigation roles. Natalie has also gained extensive communication skills and project management through her previous career in lecturing in a range of course with a focus on environmental management and environmental legislation. Her background and experience in the ecological and planning fields is utilised in a diverse array of application in her current role.

Natalie Black is a conservation detection dog handler and is currently working with his purpose breed working English Springer Spaniel "Gus" who is currently trained to detect Koala scat, Forest Owl pellets and Cane Toads.

Academic Qualifications

- B.Sc (Hons) Sustainable Resource Management and Marine Science – University of Newcastle, 2001
- Master Planning – University of Technology Sydney, 2007
- Certificate IV Training and Assessment – TAFE, 2012
- BAM Assessor; accreditation number: BAAS19076

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- Provide First Aid HLTAID011
- Evidence Gathering and Legal Process, Australian Institute of Environmental Health
- Conflict Resolution Course (LGSA)
- Report Writing Course (LGSA).
- Powerful Presentation (LGSA)
- NSW Rural Fire Services Bush Fire Assessment
- Relocation of Threatened Species, Botanical Gardens Sydney
- Sustainable Home Assessment Reduction Revolution
- Flora and Fauna Survey Assessments Niche Environment and Heritage

Professional Experience

Senior Environmental Manager / Works Coordinator 2019 – Present

Anderson Environment & Planning

Newcastle NSW

Principal Environmental Planner 2010 - 2019

Black Earth

Newcastle NSW

Senior Lecture 2010 - 2019

Hunter TAFE

Range of Hunter Campuses

Natural Resource Manager and Development Assessment Officer 2003 - 2010

Lismore City Council

Lismore NSW

Fish Passage Expert 2002 - 2003

NSW Department of Primary Industries

Ballina NSW

Conservation Officer 2000 - 2002

NSW Department of Primary Industries

Crows Nest, NSW

Volunteer NSW Fisheries 1998 - 2000

Varied Roles

Port Stephens, NSW

Relevant Project Experience

Ecological Survey examples

- Target surveys for *Thelymitra adorata* Halloran; Wyee, Wadalba;
- Target surveys for *Melaleuca biconvexa* Mardi, , Halloran; Wyee, Wadalba
- Target surveys for *Tetratheca juncea* Hillsborough, Mardi, Thornton, Warners Bay;
- Target surveys for *Rhodamnia rubescens* Hillsborough, Mardi, Thornton, Stuarts Point, South West Rocks,
- Target Survesy for Cumberpalin Snail and Dural Snail, Rouse Hill
- Target Search for seagrass and threatened marine fauna, Stuarts Point, South West Rocks, Lake Macquarie, Peat Island,
- Powerful Owl nest locating and monitoring: Salamander Bay
- Spot Analysis Techniques surveys: Lismore, Wallsend, Salamander Bay, North Arm Cove, Warnervale, Hamlyn Terrace, Wyee, Charlestown, Chisholm, Gillieston Heights, Mount Vincent, Hillsborough;
- Surveys for Squirrel Glider (*Petaurus norfolcensis*) Wadalba, Rouse Hill, Claremount Meadows, Wyee, Hillsobourgh, South West Rocks, Stuart Point;
- Frog Surveys: Lismore, Wallsend, Salamander Bay, North Arm Cove, Warnervale, Hamlyn Terrace, Wyee, Charlestown, Chisholm, Hillsborough Rouse Hill, Kariong, Wadalba,

Ecological Assessment examples

- Accredited Assessor for approved Biodiversity Development Assessment Reports:
  - Teraglin Village, Chain Valley Bay;
  - Railway Road, Warnervale;
  - McFarlane's Road, Chisholm;

- Fairlands Road, Medowie;
- Raymond Terrace Road Chishlm,
- Annangrove Road, Rouse Hill
- Richmond Road, Marsden Park,
- Claremount Meadows,
- Newcastle Golf Course, Fern Bay,
- Newell Highway, Gilgandra
- Narromine Road, Dubbo

- Ecological Assessment Report for Proposed Modification to Approved Western Rail Coal Unloader At Pipers Flat;
- Infrastructure Ecology Reports;
  - Wyee Water Main;
  - Mardi Water Main;
  - Wyee Rising Main;
  - Mardi Rising Main;
- Summerhill Waste Facility Recycling Plant

Ecological Offsets and Monitoring

- Biodiversity Stewardship Agreements including:
  - Hillsborough
  - Blueys Beach,
  - Allandale,
  - South-West Rocks.
- Biodiversity Management Plans / Vegetation Management Plan / Wildlife Management Strategies
  - VMP for Proposed Modification to Approved Western Rail Coal Unloader At Pipers Flat;
  - VMP / WMS / Dewatering Plan for Wyee for 23ha Offset lands
  - VMP Rouse Hill Commercial Development.
  - BMP – Claremount Meadows Commercial Development.

Planning – Approved Review of Environmental Factors

- South West Rocks Installation of Seawall,
- Lake Macquarie upgrade of carpark, boat ramp and jetty,
- Demolition of two (2) jetties Peat Island,
- Stuart Point upgrades to caravan park including boat ramp.
- Wyee Rising Main
- Anambah Recycling Facility

Bushfire Threat Assessments

- Kempsey Correctional Facility for upgrade
- Stuarts Point Caravan Park for upgrades
- Claremount Meadows for a Commercial development included Daycare, and service station
- Batlow for a Service Station
- Lovedale for a change of use to Brewery

YANN BUISSIERE

Senior Ecologist

Profile Summary

Yann works with AEP in the role of Senior Ecologist - Lead Botanist. Yann has over 15 years of professional experience managing projects in the field of ecology, natural area restoration, biodiversity conservation, community education, flora and fauna pest management and the development of environmental management systems. Yann has experience in both private and public sector engaging with a diversity of stakeholders on various projects to achieve positive environmental outcomes.

Yann leads the Biodiversity Stewardship Agreement and Vegetation Management Plan division of the business to assist landholders in managing their land for biodiversity conservation. He also mentors and train junior staff in the application of the Biodiversity Assessment Method, vegetation mapping and plant identification.

Academic Qualifications

- Bachelor of Resources and Environmental Management, Macquarie University (2008)
- Diploma of Conservation and Land Management, TAFE (2013)

Training, Licences and Professional Memberships

- BAM Accredited Assessor Training (in completion)
- Commercial Drone Accreditation
- Advanced Plant Identification (University of New South Wales)
- NSW Class C Driver's Licence.
- Operate and Maintain a Four-Wheel Drive Vehicle and undertake Winch Recovery
- Work Health & Safety White Card
- First Aid Certificate
- Vertebrate Pest Control
- Chainsaw Operation and Maintenance
- Local Control Authority Officer – Biosecurity Act 2015
- Working Safely at Heights

Professional Experience

Senior Ecologist - Lead Botanist Anderson Environment & Planning Newcastle NSW	2023 – Present
Biodiversity and Resilience Officer Maitland City Council Hunter Valley NSW	2021 - 2023
Ecologist (Botanist) Anderson Environment & Planning Newcastle NSW	2019 - 2020
Ecologist (botanist) Kleinfelder Newcastle NSW	2018 - 2019
Bushland Team Coordinator Northern Beaches Council (formerly Manly Council) Sydney NSW	2015 - 2018
Project Manager/Team Leader Australian Bushland Restoration Sydney NSW	2010 - 2015
Bushcare Supervisor Mosman Council Sydney NSW	2010 - 2013
Bush regenerator Australian Bushland Restoration Sydney NSW	2008 - 2010

Relevant Project Experience

Ecological Survey examples

Vegetation Mapping / BAM

- Vegetation mapping, Plant Community Type determination and Threatened Ecological Community assessment for Blueys Beach BSA, Bulahdelah Solar Farm and Hunter Gas Pipeline (Hunter, Liverpool Plains), Belmont Desalination Plant, Vintage estate (Pokolbin), Mount Malumla
- Over 1000 BAM plots throughout Sydney Basin, Hunter region, Liverpool Plains and Mid-north Coast on a diversity of projects

Threatened species surveys

- Targeted surveys for a several threatened flora species incl *Grevillea parviflora, Callistemon linearifolius, Rhodamnia rubescens, Corybas dowlingii, Tetratheca juncea* (Eden Estate - West Wallsend)
- Targeted survey for Thelymitra adorata, Halloran
- Targeted surveys for a several threatened flora species including *Dicanthium setosum, Rutidosis heterogama, Eucalyptus glaucina* (Hunter Gas Pipeline - Liverpool Plains)
- Targeted surveys for Eucalyptus glaucina at Pokolbin
- Targeted surveys for *Hibbertia procumbens* at Somersby
- Koala Spot Assessment Technique (SAT) at Halloran, Vintage Eastate (Pokolbin), Eden Estate (West Wallsend)
- Targeted survey for Green and Golden Bell Frog, Green-thighed Frog and Wallum Froglet (various sites)
- Targeted surveys for Striped legless lizard (Hunter Region)

Ecological Monitoring

- Karuah Quarry ecological monitoring including threatened species health (*Tetratheca juncea* and *Asperula asthenes*)
- Mine rehabilitation/offset monitoring for Duralie and Stratford (Gloucester)
- West Wallsend Colliery ecological health monitoring
- Greening Plan revegetation Sites Monitoring (Maitland)
- Various VMP/BMP monitoring in Maitland, Port Stephens, Lake Macquarie, Central Coast