AEP

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NEWCASTLE SYDNEY

Ecological Assessment Report

Proposed NBN Lattice Tower
117 Kangaloolah Road, Binda NSW 2583

Prepared for: Downer Group

October 2024

AEP Ref: 5164

Revision: 00

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Document Control

Document Name	Ecological Assessment Report for Proposed NBN Lattice Tower at 117 Kangaloolah Road, Binda NSW 2583
Project Number	5164
Client Name	Downer Group
AEP Project Team	Jeremy Burrill Joelan Sawyer Geoff Turner

Revision

Revision	Date	Author	Reviewed	Approved
00	11 October 2024	Geoff Turner	Jeremy Burrill	Jeremy Burrill

Distribution

Revision	Date	Name	Organisation
00	11 October 2024	Nikta Pilbala	Downer Group

EXECUTIVE SUMMARY

Anderson Environment & Planning was commissioned by Downer Group to undertake an Ecological Assessment Report (EAR) for a proposed development at Lot 286 DP 753012, 117 Kangaloolah Road, Binda NSW 2583 (the Subject Site). The site is currently zone RU2 – Rural Landscape. This proposal involves construction of one (1) NBN Lattice tower, a compound area including two (2) outdoor cabinets and transmission board and a gravel access way from Kangaloolah Road.

The report is specifically intended to indicate the likelihood of the proposed development having a significant impact on potentially occurring threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the *Environmental Planning & Assessment Act 1979*, the *Biodiversity Conservation Act 2016* (NSW) (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Ground-truthing of the vegetation present within the Subject Site revealed that the vegetation consists of grazed exotic grass vegetation, typical of a rural setting.

Assessment under the Five-part Test of Significance of Impacts as prescribed under Section 7.3 of the BC Act determined that no significant impacts upon threatened entities listed under the *BC Act* are likely to occur if mitigation measures are implemented, and consideration of the *EPBC Act* revealed that impacts on Matters of National Environmental Significance are unlikely to occur, as is a referral to the Commonwealth.

Review of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* reveals that this SEPP is applicable to the site in relation to *Chapter 3 Koala Habitat Protection 2020*. An assessment against the provisions of this chapter concluded that no significant impacts on Koala are expected as a result of the proposal.

General recommendations and mitigation measures have been included in the report to minimise environmental impacts of the proposal. These measures should provide adequate protection during the construction phase for native flora and fauna in the locality.

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1.0 Introduction

Anderson Environment & Planning was commissioned by Downer Group (the client) to undertake an Ecological Assessment Report (EAR) for the proposed at 117 Kangaloolah Road, Binda NSW 2583 (Subject Site). The site is currently zoned RU2 – Rural Landscape. The proposed development involves the construction of an NBN tower and an associated compound area.

Anderson Environment & Planning (AEP) have undertaken necessary investigations for the production of an EAR. This assessment has been undertaken with reference to the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the *NSW Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is specifically intended to indicate the likelihood of the proposal having a significant impact on threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the *EP&A Act*, the *BC Act* and the *EPBC Act* and consideration of other relevant policies is given including *State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021*. The purpose of this report is to:

- Describe the ecological values of the Subject Site;
- Explore the potential for threatened species to utilise the area; and
- Assess ecological impacts associated with the proposal against relevant legislation.

Potential ecological impacts on native species in general are also considered, as are recommendations for minimising any impacts within the scope of the development.

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

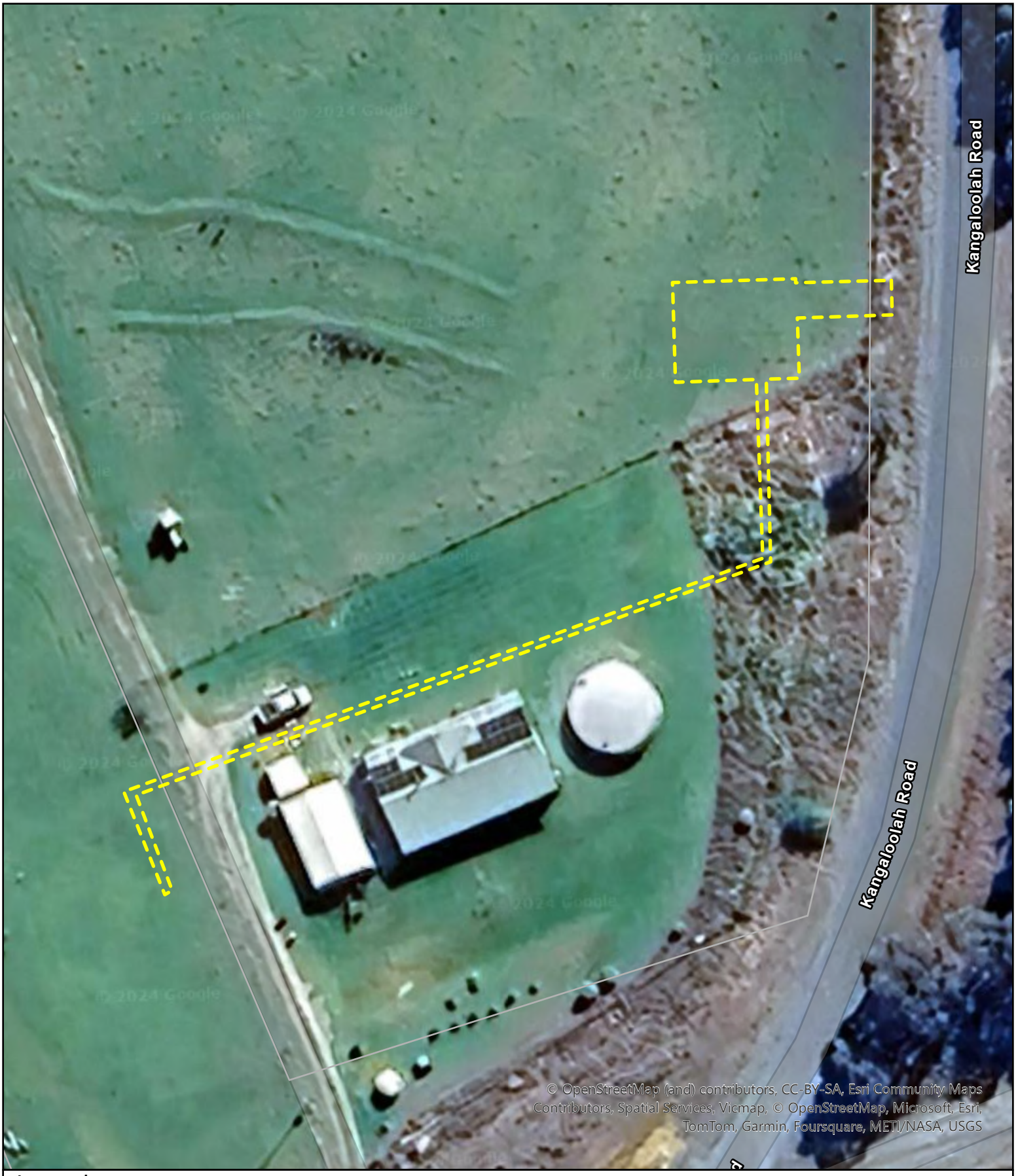
> Anderson Environment & Planning (2024). *Ecological Assessment Report for NBN Tower and compound area at 117 Kangaloolah Road, Binda NSW 2583*. Unpublished report for Downer Group. October 2024.

2.0 Site Particulars

Table 1 – Site Particulars

Detail	Comments
Client	Downer Group
Address	117 Kangaloolah Road, Binda, NSW 2583
Title(s)	Lot 286, DP753012
Subject Site	The Subject Site is composed of the proposed works area within the Parent Lot 286 DP 753012 (approx. 0.02 ha). (see **Figure 1**)
LGA	Upper Lachlan Shire Council
Zoning	Under the *Upper Lachlan Local Environmental Plan 2010* (the LEP), the Subject Site comprises of land zoned RU2 – Rural Landscape.
Current Land Use	The site is comprised of grazed and ungrazed grassland. Rural farming land practices occur within the property. In the Parent Lot in which the Subject Site sits, there exists a dwelling, water tank and garage/shed.
Surrounding Land Use	Land surrounding the Subject Site is composes primarily of RU2 – Rural Landscape properties, where grazing live stock are dominant. The centre of the town of Binda lies approximately 1.2km to the southwest of the Subject Site.

Figure 1 depicts the extent of the site overlain on an aerial photograph of the locality.



Legend

Subject Site Cadastre

Address: 117 Kangaloolah Road, Binda NSW Client: Downer Group | AEP Ref: 5164 | Date: October 2024	Imagery: Google Satellite Spatial Reference: GDA2020 MGA Zone 56	0 5 10 m Scale: 1:500 N W E S

Figure 1 - Site Location

AEP

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

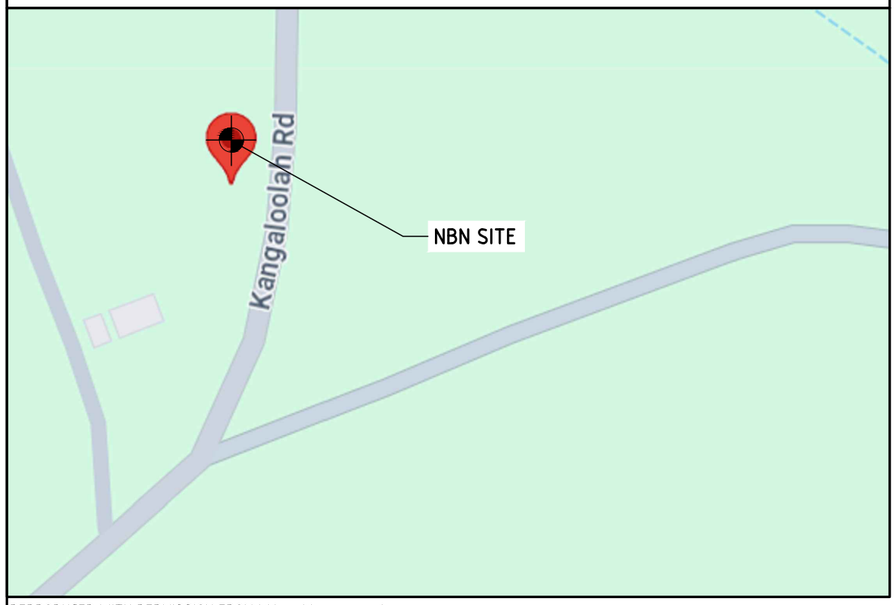
3.0 Proposed Development

The proposed development includes the following features:

- A 60m high NBN tower, with a footprint of 120m^2;
- 2.4m high fencing and gates;
- A 10m gravel access track from Kangaloolah Road; and,
- Compound area including the following:
    - Two (2) outdoor cabinets; and
    - Transmission board.

Figure 2 depicts the proposed development plan within the Subject Site.

SITE LOCATION



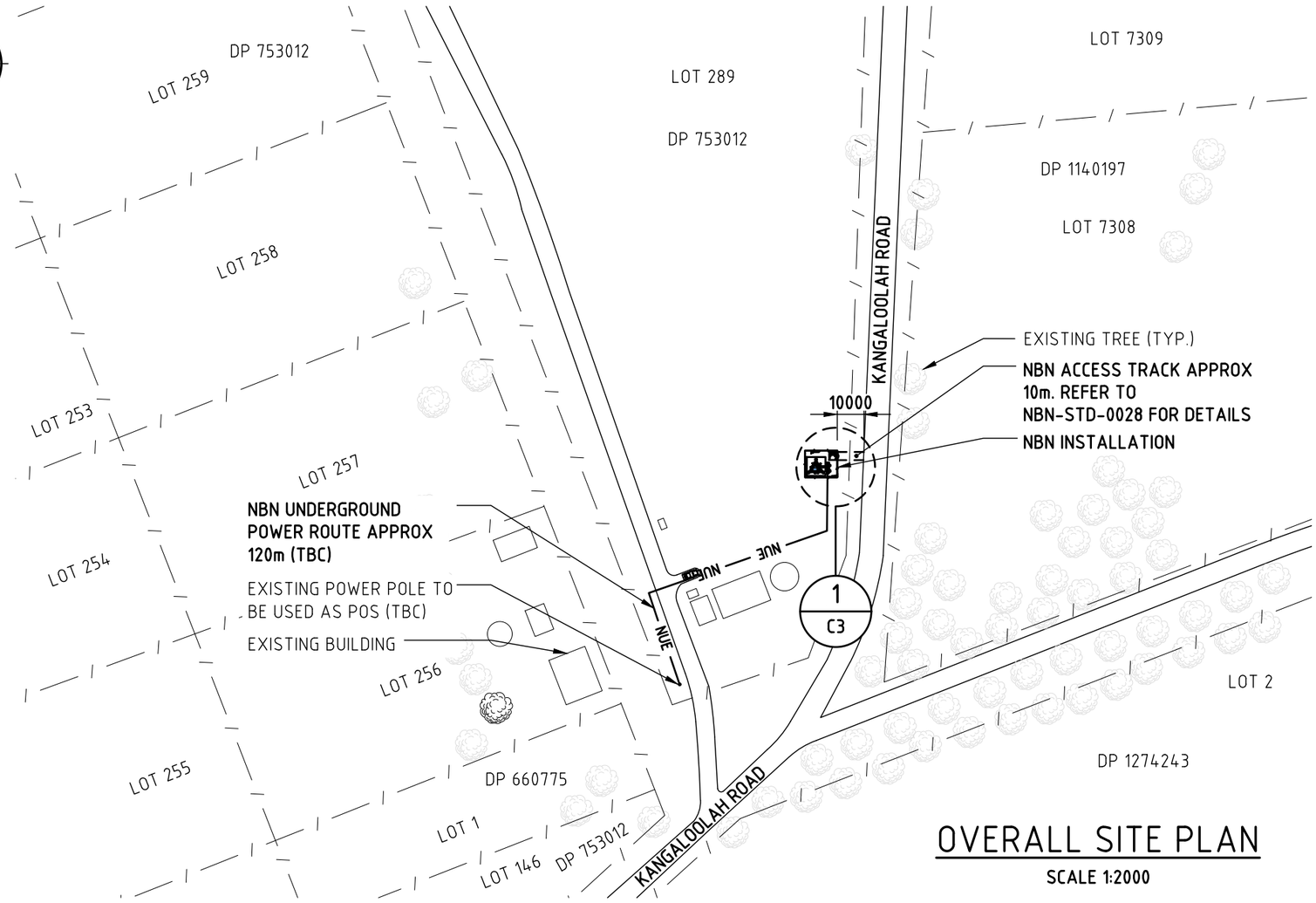
REPRODUCED WITH PERMISSION FROM https://maps.google.com

DBY JOB NO. 37107666
ENQUIRE DATE: 11/07/24
CONTRACTOR TO REVALIDATE AT TIME OF CONSTRUCTION

SITE CO-ORDINATES

LATTICE TOWER

DATUM: MGA (GDA94)	ZONE: 55
LATITUDE	-34.318843°
LONGITUDE	149.375127°
EASTING	7 185 37.92
NORTHING	6 199 935.77



DRAFT

LEGEND

- PROPERTY BOUNDARY
- NUE — NUE — NBN UNDERGROUND ELECTRICAL
- — / — / — FENCE LINE
- E NBN ELECTRICAL CABLE PIT
- BUILDING

OVERALL SITE PLAN

SCALE 1:2000

Client:

Client:

Client:

Project:

NATIONAL BROADBAND NETWORK
SITE No: 9CVZ-2CWL-5102
BINDA
117 KANGALOOLAH ROAD,
BINDA
NSW 2583

PRELIMINARY

Rev	Date	Revision Details	CAD
01	19.07.24	PRELIMINARY ISSUE	JM

Downer
Relationships creating success

DRAFTED BY:	AR
CHECKED BY:	IT
APPROVED BY:	SG

Drawing Title:
OVERALL SITE PLAN

Drawing No.	Revision
9CVZ-2CWL-5102-C2	01

20 10 0 10 20 30 40 50mm

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4.0 Scope and Purpose

Investigations were carried out within the Subject Site and via literature / database searches to gather information required to adequately address Section 7.3 of the *BC Act* (known as the "5-part Test"). Also afforded consideration were the *EPBC Act*, and relevant SEPPs.

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development. This was achieved by background research and literature review, database searches, consultation, targeted ecological fieldwork and mapping, detailed habitat assessment, and ultimately impact assessment consideration against the type and form of development proposed.

Impact assessment was undertaken with due reference to the "*Threatened Species Test of Significance Guidelines"* (OEH, 2018).

Specifically, the scope of this study is to:

- Identify vascular plant species occurring within the site, including any threatened species listed under the *BC Act* or *EPBC Act*;
- Identify and map the extent of vegetation communities within the site, including any TECs listed under the *BC Act* or *EPBC Act*;
- Identify any fauna species, including threatened and migratory species, and populations or their habitats, which occur within the site and are known to occur in the wider locality;
- Assess the potential of the proposed development to have a significant impact on any threatened species, populations or ecological communities (or their habitats) identified from the site; and
- Describe measures to be implemented to avoid, minimise, manage or monitor potential impacts of the proposal.

In addition to the survey work conducted within the site and its immediate surrounds, consideration has been afforded to the wider locality, via database searches within a 100km^2 area with the site at its centre and via consideration of habitat areas that may be linked ecologically to the site.

5.0 Study Certification and Licencing

The fieldwork for this assessment was undertaken by Joelan Sawyer (BSc); reporting was undertaken by Geoff Turner (BSc), reviewed and certified by Jeremy Burrill (BEnvSc) of Anderson Environment & Planning.

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101313;
- Animal Research Authority (Trim File No: 14/600(2)) issued by NSW Agriculture; and
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: 14/600(2)) issued by NSW Agriculture.

Certification:

As the certifier, I, Jeremy Burrill, make the following certification:

- The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the Survey Area.
- Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, unless specified departures from industry standard guidelines are justified for scientific and/or animal ethics reasons.
- All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the Animal Research Act 1995, National Parks and Wildlife Act 1974 and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

Reviewer and Certifier:

Jeremy Burrill

Ecologist / Project Manager

Anderson Environment & Planning

6.0 Methodology

The field surveys for the site have been prepared and performed with due recognition of the relevant state survey guidelines (DEC 2004; DPIE 2020a; DPIE 2020b; DPE 2022b).

The size of the site, the type of native vegetation and habitats remaining, the status of existing and proposed surrounding land use, and the level and type of habitat linkages to proximate bushland areas were considered in formulating the methodology employed and described below.

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development.

6.1 Information Sources

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

- Aerial Photograph Interpretation (API) of the site and surrounding locality;
- *NSW Biodiversity Values Map* (accessed September 2024);
- NSW State Vegetation Type Map (DPE 2023);
- State survey guidelines (DEC 2004; DPIE 2020a; DPIE 2020b; DPE 2022b);
- NSW DCCEEW Threatened Species, Populations and Ecological Communities website (*https://www.environment.nsw.gov.au/AtlasA pp/UI_Modules/TSM_/Default.aspx?a=1*) (accessed September 2024); and
- Collective knowledge gained from previous ecological survey and assessment in over the past 25 years.

In addition, database searches were carried out, namely:

- Review of flora and fauna records held by the BioNet Atlas of NSW Wildlife within a 100km^2 search area with the site at its centre (September 2024); and
- Review of flora and fauna records held by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search within a 5km radius of the Subject Site (October 2024).

6.2 Considerations of Biodiversity Offsets Scheme

There are three criteria that require assessment under the Biodiversity Offsets Scheme (BOS) to determine whether or not entry into the NSW Biodiversity Offsets Scheme (BOS) is required. The three criteria are as follows:

- Whether or not the site contains Biodiversity Values Mapped land;
- Whether or not it exceeds the Area Clearing Threshold applicable to the minimum lot size; and / or
- Whether or not a 5-part Test of Significance determines that a significant impact on threatened biodiversity is likely to occur.

The criteria are addressed below.

6.2.1 Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The BOS applies to all local developments, major projects or the clearing of native vegetation where the SEPP (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the BOS if they occur on land mapped on the BV Map. Exempt and complying development or private native forestry are not subject to the BOS.

The Subject Site is not mapped as Biodiversity Values land, therefore, the proposal does not trigger the BOS and the requirement for a Biodiversity Development Assessment Report (BDAR) under this criterion (refer **Appendix D**).

6.2.2 Area Clearing Threshold

"The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The area threshold applies to all proposed native vegetation clearing associated with a development proposal".

Table 2 – Area Clearing Thresholds (BC Act)

Minimum lot size	Threshold for clearing, above which the BOS applies
< 1ha	>0.25ha
1ha to <40ha	**>0.5ha**
40ha to <1000ha	>1.0ha
>1000ha	>2ha

In this case, as per the LEP, the applicable minimum lot size is 2ha. Therefore, the applicable area clearing threshold is 0.5ha. As impacts to native vegetation will not occur, the area clearing threshold will not be impacted. Consequently, the BOS is not triggered in this instance, and a test of significance is required to determine extent of impact.

6.2.3 Test of Significance

Following the above assessments, it is a requirement to determine whether or not the development is likely to significantly affect threatened species, ecological communities or their habitats using a Test of Significance. The Test of Significance is used to undertake qualitative analysis of the likely impacts and determine whether further assessment is required in association with the development. As part of this Ecological Assessment Report, a Five-part Test of Significance has been undertaken in **Section 9.0**.

6.3 Field Survey

All fieldwork was conducted within the Subject Site (**see Figure 5**).

6.3.1 Vegetation Communities

Vegetation was surveyed utilising a variety of methods, as outlined below.

- Consideration of regional mapping for the site by SVTM (DPE, 2023);
- Aerial Photo interpretation (API) to identify any notable variations within the site;
- Consultation of 1:25,000 topographic map series for the area;
- Inspection of the site to ground-truth communities listed by DPE (2022f); and
- Identification of the Plant Community Type (PCT) via identification of required dominant species in community structural layers.

The final derived vegetation map was based on vegetation mapping and ground-truthed vegetation surveys.

Consideration was given to the potential for the derived vegetation communities to constitute TECs as listed under the *BC Act* and/or *EPBC Act*. The floristic composition, geomorphological characteristics and geographical extent were important considerations in this process. The type and location of the relevant vegetation communities can be seen in **Figure 4.**

6.3.2 Flora

A flora survey was undertaken to produce a flora species list for the Subject Site, to search specifically for threatened flora species known from the wider locality, and to gather data necessary to both derive vegetation community type(s) and to meet relevant survey guidelines. Such works included:

- Identification of all vascular plant species encountered during fieldwork;
- Survey involved systematic coverage of the Subject Site. The Random Meander Technique (Cropper, 1993) was utilised to maximise species encountered. All vascular plant species encountered during fieldwork were recorded; and
- One (1) BAM plot and one (1) Rapid Data Point was undertaken, which was placed centrally within the Subject Site.

6.3.3 Habitat

An assessment of the relative habitat values present within the Subject Site was carried out. This assessment focused primarily on the identification of specific habitat types and resources within the site favoured by known threatened species from the region. The assessment also considered the potential value of the Subject Site (and surrounding areas) for all major guilds of native flora and fauna.

The assessment was based on the specific habitat requirements of each threatened fauna species in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology for threatened flora and assemblages.

In particular, focus was put on documenting the presence of key habitat features such as tree hollows. 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 Subject Site and surrounds utilising the methodology of tree hollow identification set by OEH in the BioBanking field plot methodology (2009), namely:

> *"A hollow is only recorded if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm across; (c) the hollow appears to have depth (i.e., you cannot see solid wood beyond the entrance); and (d) the hollow is at least 1 m above the ground (this omits hollows in cut stumps or at the base of trees)".*

6.3.4 Fauna

Fauna surveys were carried out utilising techniques as outlined below and were undertaken with reference to the relevant guidelines The Observed Species List has been generated from incidental and targeted surveys within the Subject Site (**Appendix B**).

Avifauna Surveys

The presence of avifauna within the site was assessed via a diurnal fauna survey. For the diurnal survey, birds were identified by direct observation or by recognition of calls or distinctive features such as nests, feathers etc.

Mammals

The occurrence of mammals within the site was assessed by utilising habitat assessment as an analogue for presence in combination with a diurnal survey including. Habitat assessment included survey for foraging resources (blossom, herbaceous, prey etc), hollows and roosting opportunity, connectivity and water as outlined in **Section 6.3.3** above.

Incidental Observations & Secondary Indications

Incidental 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 remains from Owls, chewed (Allo) Casuarina cones from Glossy Black-Cockatoos, chewed fruit remains from frugivorous birds etc.

6.3.5 Details of Field Surveys

A summary of the survey effort within the Subject Site is listed below in **Table 3** and shown in **Figure 5**.

Table 3 – Field Survey Periods

Date	Time	Field Activity	No. of Persons on Site
01/10/2024	10:30am-3:30pm	Site assessment including one (1) BAM plot, one (1) Random Data Point (RDP), incidental observations and habitat assessment.	1

The above survey methodology is considered to provide sufficient understanding of the biodiversity of the Subject Site. AEP conducted a habitat assessment for all listed species identified in BioNet Atlas within 100km^2.

7.0 Results

7.1 Vegetation Communities

7.1.1 State Vegetation Type Mapping

State Vegetation Type Mapping (SVTM 2023) indicates that the Subject Site is mapped as non-native vegetation. The following PCTs are mapped within a 1.5km buffer of the Subject Site:

- PCT 4063 - *Central and Southern Tableland River Oak Forest*;
- PCT 3981 – *Tableland Semi-permanent Shallow Wetlands*;
- PCT 3747 – *Southern Tableland Western Hills Scribbly Gym Forest*;
- PCT 3376 – *Southern Tableland Grassy Box Woodland*; and
- PCT 3370 – *Central Tableland Red Stringybark Grassy Forest*.

Figure 3 shows the extent of vegetation communities within and surrounding the Subject Site as mapped in the SVTM 2023

7.1.2 Ground-truthed Vegetation Mapping

Fieldwork was conducted to identify flora species and determine the occurrence of Plant Community Types (PCTs) within the Subject Site. One (1) BAM plot, and one (1) Random Data Point (RDP) were completed within the Subject Site and in the surrounding vegetation. A full list of plant species can be found in **Appendix A.** Vegetation within the site is comprised of exotic grass and forb species that are subject to grazing.

Exotic Grassland Vegetation

Exotic grass vegetation totals 0.02ha and was assessed using a BAM plot. All species present within the plot were exotic and abundant species included, *Lolium perenne* (Perennial Ryegrass), *Romulea rosea* (Onion Grass) and *Hypochaeris glabra* (Smooth Catsear).

Given the highly modified state of the vegetation, the high cover of exotic species and lack of middle- and upper-storey vegetation, it is classified as Exotic Grass and not assigned to a PCT.

Plate 1: BAM Plot 1.

Figure 4 shows the extent of ground-truthed vegetation identified within the Subject Site.

Legend

- Subject Site
- Cadastre

State Vegetation Type Mapping (2023)

- Not classified
- PCT 3370 - Central Tableland Red Stringybark Grassy Forest
- PCT 3376 - Southern Tableland Grassy Box Woodland

Address: 117 Kangaloolah Road, Binda NSW
Client: Downer Group | AEP Ref: 5164 | Date: October 2024

Imagery: Google Satellite
Spatial Reference: GDA2020 MGA Zone 56

0 10 20 m
Scale: 1:1,000

N W E S

Figure 3 - State Vegetation Type Mapping (SVTM, 2023)

AEP

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

Legend

- Subject Site
- Cadastre
- Hydroline

Ground-truthed Vegetation

- Exotic Grass
- Infrastructure

Address: 117 Kangaloolah Road, Binda NSW
Client: Downer Group | AEP Ref: 5164 | Date: October 2024

Imagery: Google Satellite
Spatial Reference: GDA2020 MGA Zone 56

0 4 8 m
Scale: 1:400

N
W E
S

Figure 4 - Ground-truthed Vegetation

AEP

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

7.2 Flora

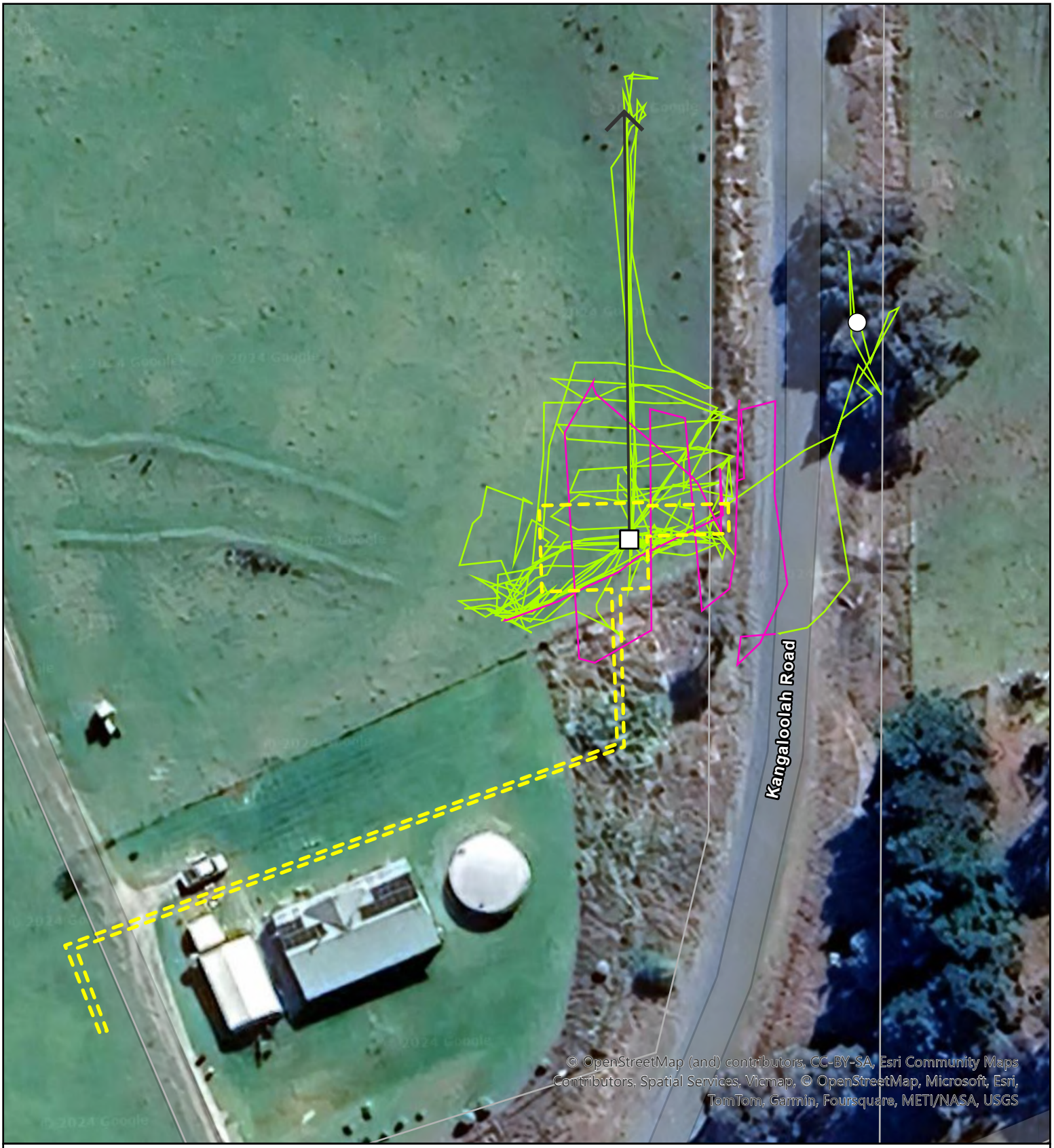
Flora surveys have resulted in the identification of 6 species within the Subject Site, all of which are exotic species.

A full list of flora species identified within the site is included in **Appendix A**.

7.3 Habitat Assessment

The Subject Site provides extremely limited habitat for threatened flora and fauna species. There exists only a ground layer of vegetation, which consists of exotic species and is regularly grazed by horses. During the site inspection, no rocky outcrops, water bodies, or tree hollows were observed, suggesting the site's utility is likely confined to transient fauna.

Fauna survey identified four (4) fauna species; no threatened species were observed during assessment. A full list of Fauna observed within the site is included in **Appendix B**.



Legend

- Subject Site
- BAM Plot
- Tracks - 10m Transects (Sep 2024)

Survey Effort

- BAM Direction
- Tracks - BAM & RDP (Sep 2024)
- Random Data Point (RDP)

Address: 117 Kangaloolah Road, Binda NSW
Client: Downer Group | AEP Ref: 5164 | Date: October 2024

Imagery: Google Satellite
Spatial Reference: GDA2020 MGA Zone 56

0 6 12 m
Scale: 1:600

N W E S

Figure 5 - Survey Effort

AEP

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

7.4 Database Searches

Searches were undertaken of databases within a 100km^2 search area with the Subject Site at its centre for *BC Act* listings and *EPBC Act* listings. Any records considered erroneous, historic only, or obviously of no relevance to the site in regards to habitat (e.g., seabirds, marine species etc.) were omitted.

The potential for listed threatened species to occur within the site is considered in **Appendix C** and selection for subject species in **Table 4** below. Detailed ecological profiles of threatened species can be found at: https://www.environment.nsw.gov.au/threatenedspeciesapp/

The assessment of the potential listed species in **Appendix C** resulted in two (2) key species. These species are considered key subject or indicator species for the Subject Site due to potential likelihood of occurrence. The site potentially forms an important part of a local home range for resident species and some potential habitat will be removed by the proposal.

Table 4 – Subject Species

Scientific Name	Common Name	NSW status	EPBC Act
Flora			
Eucalyptus aggregata	Black Gum	V	V
Aves			
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-

Table Key - Status (BC Act & EPBC Act): E: Endangered, V: Vulnerable

8.0 Key Species Considerations

The species identified for further consideration have been categorised into guilds in **Table 5**. By considering these species and their lifecycle needs, many other species are also inadvertently considered. The analysis below considers key lifecycle features for each guild of species in more detail, and assists in informing the subsequent 5-part Test assessment.

Table 5 – Key Species Analysis

Guild / Species	Reason for Inclusion	Comment
Flora		
Eucalyptus aggregata (Black Gum)	Proximity of local records.	BioNet records indicate that a population of this species occurs within the locality. While the site is highly modified and unlikely to support this species, further consideration is warranted due to the occurrence of records within the locality. Species was not identified during site inspection.
Aves		
Artamus cyanopterus cyanopterus (Dusky Woodswallow)	Proximity of records and foraging habitat	BioNet records indicate one (1) sighting within 5km of the Subject Site. The site lacks structured and abundant vegetation which this species forages amongst. Species was not observed during site inspection.

9.0 Five-part Test Assessment

Section 7.3 of the *BC Act* lists five factors that must be taken into account in determining the significance of potential impacts of proposed activities on threatened species, populations, ecological communities and/or their habitats as listed within the *BC Act*.

The 5-part test is used to determine whether there is likely to be a significant impact, and thus whether the Biodiversity Offsets Scheme (BOS) is triggered.

a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Eucalyptus aggregata

The site contains a highly modified understorey and lacks native species. This species was not identified during site inspection. Considering this species was not identified, and known populations within the locality will not be impacted, it is not considered likely that the proposal will have an adverse effect on the life cycle of such that a viable local population is likely to be placed at risk of extinction.

Dusky Woodswallow

While the removal of a small amount of vegetation within the site may reduce potential foraging habitat, the wider locality has larger areas of intact vegetation which will not be impacted by the proposal. Therefore, it is not considered that the proposal will have an adverse effect on the life cycle, as such that a viable local population is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Due to the dominance of exotic vegetation, no PCTs were identified within the site. As such, no ecological communities, including Threatened Ecological Communities (TEC) will be impacted by the proposal.

c) in relation to the habitat of a threatened species or ecological community:

i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The area of vegetation to be removed within the site is approximately 0.02ha. The immediate locality and wider landscape contain areas of higher quality vegetation. Therefore, the small amount of vegetation to be removed does not represent a significant extent of habitat.

ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

A small area of exotic vegetation within the site would be affected by the proposal. Removal of vegetation would not significantly fragment or isolate vegetation as the site already occurs within a highly fragmented area.

iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality

A small area of exotic vegetation within the site would be affected by the proposal. The site as a whole does not support any ecological communities, and represents marginal habitat suitability for a small number of threatened species. The suitability of the impacted vegetation within the site is negligible to the survival of any threatened species, given its small extent, its low quality (dominance of exotic species) and the proximity to areas of similar intact, high-quality vegetation.

d) Whether the proposed development or activity is likely to have an adverse effect on any declared Area of Outstanding Biodiversity Value (either directly or indirectly)

No Area of Outstanding Biodiversity Value is present on site or in proximity of it.

e) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process (KTP)

The development has potential to contribute to the following KTPs:

- ***Anthropogenic climate change***

The proposed development is unlikely to contribute to the processes causing anthropogenic climate change in a significant way. A small area of exotic ground-layer vegetation, which could act as a small carbon sink, is proposed to be removed within an urban area.

- ***Invasion and establishment of aggressive weed species and exotic perennial grasses***

With a large number of weed species already well established on site, further invasion is not considered significant.

- ***Infection of native plants by Phytophthora cinnamomic***

Controls including the disinfection of equipment before entering site should be undertaken to further minimise any risks of infection. Therefore, provided that appropriate hygiene measures are in place, the works undertaken during the proposed development are not considered as likely to contribute to this KTP.

- ***Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae***

Controls including the disinfection of equipment before entering site should be undertaken to minimise any risks of infection. Provided such processes are implemented, it is not expected that earthworks undertaken during the construction phase would contribute significantly to this KTP.

10.0 EPBC Act Assessment

A search was conducted in October 2024 for Matters of National Environmental Significance (MNES) as relevant to the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act). The following MNES are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The site is not designated as a National Heritage Place.

Wetlands of International Significance (declared Ramsar wetlands):

The Subject Site is not located near any wetlands of international significance:

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities (TECs):

There are two (2) listed TECs known or assumed to occur within a 5km radius of the Subject Site:

- CEEC – *Natural Temperate Grassland of the South Eastern Highlands;* and,
- CEEC – *White Box-Yellow Box-Blakely's Red Gym Grassy Woodland and Derived Native Grassland.*

Vegetation within the site is not associated within any of the above.

Threatened Species:

A total of 43 threatened fauna or flora listed under the EPBC Act are predicted to occur on, or within 5km of the site. No threatened flora or fauna species listed under the *EPBC Act* have been identified on or in close proximity to the site.

Migratory Species:

There is very little potential for terrestrial migratory species listed in the *EPBC Act* to visit the site on an irregular basis. Therefore, it is considered that the proposal is unlikely to significantly affect the availability of potential habitat for such mobile species, or disrupt migratory patterns.

EPBC Act Assessment Conclusion:

Consideration of the *EPBC Act* revealed that it is highly unlikely that significant impacts on Matters of National Environmental Significance will occur as a result of the proposal. As such a referral is not considered likely to be necessary.

11.0 State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) commenced on the 6th February 2024, under the Environmental Planning and Assessment Act 1979, and repealing the previous State Environmental Planning Policy (Koala Habitat Protection) 2020 and State Environmental Planning Policy (Koala Habitat Protection) 2021. The aims of Chapter 3 – Koala Habitat Protection 2020 are to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

Chapter 3 – Koala Habitat Protection of SEPP (Biodiversity and Conservation) 2021, are to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The land which comprises the Subject Site has no approved koala plan of management.

According to the BC SEPP 2021, the policy applies if:

3.5 Land to which Chapter applies

(a) that is land to which this Chapter applies, and

(b) that is land in relation to which a development application has been made, and

(c) that, whether or not the development application applies to the whole, or only part, of the land—

(i) has an area of more than 1 hectare, or

(ii) has, together with adjoining land in the same ownership, an area of more than 1 hectare.

The property associated with the Subject Site, has an area of more than 1 hectare, therefore the SEPP applies.

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.

As the site does not contain any trees listed under *Schedule 1*, the site does not constitute potential koala habitat. As such, no further assessment under the SEPP is required.

12.0 Upper Lachlan Local Environmental Plan 2010

The LEP conveys local environmental planning provisions in line with the relevant standard environmental planning instrument, under section 3.20 of the Environmental Planning and Assessment Act (the EP&A Act,1979). Specific aims relating to the natural environment, listed under Section 1.2, Clause 2 include:

(b) to encourage the sustainable management, development and conservation of natural resources;

(d) to protect and conserve the environmental and cultural heritage of Upper Lachlan;

(f) to allow development only if it occurs in a manner that minimises risks due to environmental hazards, and minimises risks to important elements of the physical environment, including water quality;

(h) to protect and enhance watercourses, riparian habitats, wetlands and water quality within Upper Lachlan's drinking water catchments so as to enable the achievement of the water quality objectives.

Part 6 (Local provisions) of the LEP contains Section 6.2 – Biodiversity. The objectives of Section 6.2 are outlines in Clause 1, below:

(1) The objective of this clause is to maintain terrestrial and aquatic biodiversity including—

(a) protecting native fauna and flora, and;

(b) protecting the ecological processes necessary for their continued existence, and;

(c) encouraging the recovery of native fauna and flora, and their habitats.

The proposals have been assessed against the remaining clauses (2-4) within Section 6.2, below:

(2) This clause applies to land identified as "sensitive land" on the Natural Resources Sensitivity—Biodiversity Map.

Part of the Subject Site is located within land identified as 'Sensitive Land' on the Natural Resources Sensitivity Map.

(3) Before determining a development application for land to which this clause applies, the consent authority must consider any adverse impact from the proposed development on—

(a) a native ecological community, and

(b) the habitat of any threatened species, populations or ecological community, and

(c) a regionally significant species of fauna and flora or habitat, and

(d) a habitat element providing connectivity.

This Ecological Assessment Report has been prepared to identify and address the matters listed under this Clause. No significant adverse impacts have been identified, however, general recommendations to ameliorate potential localised adverse impacts are provided within **Section 13**.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid any adverse environmental impact, or

(b) if that impact cannot be avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

The development has been sited such that no impacts to native vegetation and no adverse environmental impacts are proposed.

13.0 Recommendations

The following general recommendations are made for consideration to minimise localised impacts on biodiversity in general as a result of the proposed development:

- Prior to construction commencing, exclusion flagging tape and signage will be installed to delineate construction zone from retained vegetation.
- Clearing of any vegetation on site should be undertaken at the direction of a suitably experienced ecologist.
- The ecologist would manage displaced native fauna, either by relocating in suitable retained vegetation adjacent to the site or within the locality, or, if the fauna is injured or immature, by handing over to local Native Fauna Carers or veterinary clinic if required.
- In the event of encountering hollow-bearing trees (noting none were recorded on site), the Ecologist will guide and supervise sectional removal of the hollow ensuring the safety of any potentially present fauna.
- Equipment should be cleaned thoroughly and disinfected before entering and exiting site to prevent weed and disease introduction such as *Phytophthora cinnamomi* (Root-rot fungus), *Puccinia psidii* (Myrtle Rust).
- An Erosion and Sedimentation Control Plan (ESCP) should be prepared for the proposal following guidelines from the “Blue Book” (Landcom, 2004).
- Best practice erosion and sedimentation controls should be put in place to limit offsite movement of materials into the adjacent vegetation.
- Landscape planting should incorporate locally appropriate species.

14.0 References

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Appendix A – Flora Species List

The following list includes all species of vascular plants observed on site during fieldwork. It should be noted that such a list cannot be considered comprehensive, but rather indicative of the flora present on the site. It can take many years of flora surveys to record all of the plant species occurring within any area, especially plant species that are only apparent in some seasons such as Orchids.

A number of species cannot always be accurately identified during a brief survey, generally due to a lack of suitable flowering and/or fruiting material. Any such species are identified as accurately as possible, and are indicated in the list as thus:

- specimens that could only be identified to genus level are indicated by the generic name followed by the abbreviation “sp.”, indicating an unidentified species of that genus;
- specimens for which identification of the genus was uncertain are indicated by a question mark (“?”) placed in front of the generic, which is followed by the abbreviation “sp.” and;
- specimens that could be accurately identified to genus level, but could be identified to species level with only a degree of certainty are indicated by a (“?”) placed in front of the epithet.

Authorities for the scientific names are not provided in the list. These follow the references outlined below.

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Names of families and higher taxa follow a modified Cronquist System (1981).

Introduced species are indicated by an asterisk “*”.

Threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are indicated in **bold font.**

Family	Scientific Name	Common Name
Asteraceae	*Cirsium vulgare*	Spear Thistle
Asteraceae	*Hypochaeris glabra*	Smooth Catsear
Juncaceae	*Juncus spp.*	
Poaceae	*Lolium perenne*	Perennial Ryegrass
Iridaceae	*Romulea rosea*	Onion Grass
Fabaceae	*Trifolium repens*	White clover

Appendix B – Observed Fauna Species List

Observed Fauna

The following list includes fauna species that could be reasonably expected to occur on the Subject Site at some point, given site attributes and location.

Key to Records:

Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)

Scientific Name	Common Name	NSW status	Comm. status	Surveyed Observations
Aves				
Acridotheres tristis	Common Myna	P		O
Dacelo novaeguineae	Laughing Kookaburra	P		O
Grallina cyanoleuca	Magpie Lark	P		O
Gymnorhina tibicen	Australian Magpie	P		OH

Appendix C – Threatened Species Appraisal

Threatened Species Appraisal 100km^2

Scientific Name	Common Name	BC Act status	EPBC Act status	BioNet Records (10km x 10km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Flora							
Eucalyptus aggregata	Black Gum	V	V	1	Black Gum is found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. In NSW it occurs in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Grows in the lowest parts of the landscape. Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora*), Manna or Ribbon Gum (*E. viminalis*), Candlebark (*E. rubida*), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). Black Gum usually occurs in an open woodland formation with a grassy ground layer dominated either by River Tussock (*Poa labillardierei*) or Kangaroo Grass (*Themeda australis*), but with few shrubs. Also occurs as isolated paddock trees in modified native or exotic pastures.	There were no records located on site, with the closest sighting over 6.5km away. No shale-sandstone transition habitat on site, not considered likely to occur.	Y
Aves							
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		1	The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs	Only one (1) record within 10km of the site. Considering the paucity of records	Y

Scientific Name	Common Name	BC Act status	EPBC Act status	BioNet Records (10km x 10km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	and degraded habitat it is not considered likely to occur. Species was not observed on site during surveys.	

Table Key - Status (BC Act & EPBC Act): CE: Critically Endangered, E: Endangered, V: Vulnerable (#) – Indicates number of Atlas Records within 10km of the Subject Site

Appendix D – BOSET 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		11/10/2024 4:30 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	**Does the development Footprint intersect with BV mapping?**	no
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?**	no
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	**Size of the development or clearing footprint**	62,528.8 sqm
2.2	**Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint)	1,466.2 sqm
2.3	**Method for determining Minimum Lot Size**	LEP
2.4	**Minimum Lot Size** (10,000sqm = 1ha)	20,000 sqm
2.5	**Area Clearing Threshold** (10,000sqm = 1ha)	5,000 sqm
2.6	**Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance)	no

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)	**no**

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)

11/10/2024 04:30 PM

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

692.3 0 346.16 692.3 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

11/10/2024 04:29 PM

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 E – Site Photographs

Above: View onto site from Kangaloolah Road.

Below: Grazed and ungrazed exotic grasses.

Above: Subject Site along Kangaloolah Road.

Below: Vegetation in and surrounding the Subject Site.

Appendix F – Author CVs

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.

JEREMY BURRILL

Ecologist & Project Manager

Profile Summary

Jeremy works with AEP in the role of Ecologist / Project Manager. He is a graduate of environmental science and management, and has experience in voluntary roles in environmental fields, involving threatened fauna and flora surveying, biodiversity reporting, management plans, consultancy projects and project management. His background in environmental fields with his growing ecological knowledge and management experience is utilised in a diverse array of applications in his current role.

Academic Qualifications

- Bachelor of Environmental Science (Environmental Management and Sustainability) Deakin University (2020)

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- Work Safely at Heights

Professional Experience

Ecologist / Project Manager — 2022 – Present
Anderson Environment & Planning
Sydney NSW

Ecologist — 2020 – 2022
Anderson Environment & Planning
Sydney NSW

Relevant Project Experience

Ecological Surveys

- Botanical surveys including Biodiversity Assessment Method (BAM) vegetation plots under supervision of BAM accredited assessors Frances O'Brien and Timothy Mouton across various sites.
- Threatened flora surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, North Kellyville, Loftus and Pleasure Point.
- Threatened Nocturnal Fauna surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, Cattai, Barrington Tops and Somersby.
- Threatened Diurnal Fauna Surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, Cattai, Barrington Tops, Pleasure Point and Somersby.
- Microbat Nocturnal Harp Trapping: Wallsend and Mardi.

- Koala Spot Assessment Technique Surveys: Greendale, Wadalba, Girvan and Somersby.
- Nestbox installation: Glenning Valley and Narellan Vale.
- Habitat surveys including hollow bearing tree identification: Bundanoon, Greendale, Edmondson Park, Wyee, Somersby, Cattai, Barrington Tops and Somersby.
- Vegetation Clearance Surveys and Supervision: Glenning Valley, Wyee, Warnervale, Chain Valley Bay, Narellan Vale and Carramar.

Ecological Assessment

- Biodiversity Development Assessment Report contribution: Greendale, Edmondson Park, Austral, Rouse Hill and Annangrove.
- Ecological Assessment Reports: Minto, Berkeley Vale, Rooty Hill, Warriewood, Macquarie Park, Carramar and Ambarvale.
- Biocertification Assessments: West Wilton, Edmondson Park and Schofields.
- Weed Management Plan: Pheasants Nest and Tahmoor.
- Vegetation/ Biodiversity Management Plans: Woy Woy, Pheasants Nest, Vineyard, Grantham Farm, Warriewood, Loftus and Greendale.
- Riparian Assessment Reports: Schofields, Greendale, Quakers Hill and Ingleside.
- BDAR Waiver Letters: Revesby, Strathfield and Schofields.
- Plant Community Type determination.
- GIS Mapping.

Ecological Monitoring

- Vegetation Monitoring Plots: Pheasants Nest, Warriewood and Werrington.
- Fauna Monitoring/ Nestbox Monitoring: Glenning Valley and Wyee.

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