Biodiversity Development Assessment Report

13 Jinker Circuit, Clarence Town NSW

Prepared by: Jack Tatler (BAAS21006)
Prepared for: Mitch and Michelle Irwin c/- Perception Planning
Final Report: November 2024

East Coast Ecology

DOCUMENT CONTROL

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13 Jinker Circuit, Clarence Town NSW

Project Manager: Jack Tatler *BSc (Zoology), Hons. (Zoology), PhD (Ecology)*
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Version	Author	Reviewer	Date
Draft v1.0	Jack Tatler (BAAS21006)	Alex Graham (BAAS19040)	22.11.2024
Final v1.0	Jack Tatler (BAAS21006)	-	29.11.2024

EXECUTIVE SUMMARY

East Coast Ecology (ECE) was commissioned by Mitch and Michelle Irwin (the proponent) c/- Perception Planning to prepare a Biodiversity Development Assessment Report (BDAR) to accompany a Development Application (DA) for a single dwelling at 13 Jinker Circuit, Clarence Town NSW 2321 (Lot 407/-/DP1206330). This BDAR will assess the biodiversity impacts of the proposed development in accordance with the requirements of the *Biodiversity Conservation Act 2016* (NSW) and *Biodiversity Conservation Regulation 2017* (NSW). This BDAR is required as the proposed development will exceed the clearing threshold for entry into the Biodiversity Offset Scheme. This assessment has been completed in accordance with Appendix K of the Biodiversity Assessment Method (BAM).

The proposed development will impact one (1) Plant Community Type, PCT 3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest.

The purchase and retirement of Ecosystem Credits will be required for impacts to native vegetation within Zone 1: Canopy (VI = 22). The offset requirement for impacts to native vegetation from the proposed development was calculated using the BAM Calculator and is summarised below in **Table E1**.

Table E1. Impacts that require an offset – ecosystem credits.

PCT	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
PCT 3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Zone 1: Canopy	22	0.29	3

Due to a lack of available habitat constraints, geographic limitations (NSW DCCEEW, 2024b) per section 5.2.2 of the BAM, no species credits are required to be offset as a result of the proposed development.

In its current form, the development footprint has not avoided vegetation such as PCT 3433, which is listed as an EEC under the BC Act. However, the building envelope, which necessitate complete clearing, has been strategically located within an area of bare dirt and very low condition vegetation that is not a TEC. This strategic siting of the development has also meant that the required APZ does not encroach into areas of higher condition vegetation that occur west of the Subject Land. Whilst the EEC on site could not been completely avoided in order to establish an APZ, the proponent in consultation with ecology and bushfire will adopt an approach to APZ management that will retain as much high value vegetation as possible, whilst maintaining compliance with APZ vegetation management requirements. Additionally, the proposed development avoids important habitat for threatened fauna such as hollow-bearing trees and watercourses.

Mitigation measures to address direct, indirect and prescribed impacts are provided in this assessment. The proposed development is not likely to result in a significant impact to species or communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As such a referral to the Australian Government Minister for the Environment is not required.

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GLOSSARY

Acronym/ Term	Definition
Accredited Biodiversity Assessor	Individuals accredited by the Department of Planning and Environment to apply the Biodiversity Assessment Method
ASL	Above Sea Level
ASS	Acid sulfate soils
BAM	New South Wales Biodiversity Assessment Method
BAM-C	New South Wales Biodiversity Assessment Method Calculator
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BC Reg	*Biodiversity Conservation Regulation 2017* (NSW)
BDAR	Biodiversity Development Assessment Report
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified
Biodiversity Offsets	Management actions that are undertaken to achieve a gain in biodiversity values on areas of land in order to compensate for losses to biodiversity from the impacts of development
Biodiversity values	The composition, structure and function of ecosystems, including threatened species, populations and ecological communities, and their habitats
BOS	New South Wales Biodiversity Offset Scheme
DCCEEW	Department of Climate Change, Energy, the Environment and Water
Development footprint	The area of land that is directly impacted by the proposed subdivision
Development site	The broader area in which the Subject Land is located
DPE	New South Wales Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
DPIE	New South Wales Department of Planning, Industry and Environment
Ecosystem credit	The class of biodiversity credit that relates to a vegetation type and the threatened species that are reliably predicted by that vegetation type (as a habitat surrogate)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
ha	Hectares
HTE	High Threat Exotic plants defined under BAM 2020

Acronym/ Term	Definition
KFH	Key Fish Habitat
km	Kilometres
LGA	Local Government Area
m	metres
MNES	Matters of National Environmental Significance
Native Vegetation	Means any of the following types of plants native to New South Wales: (a) trees (including any sapling or shrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation), (d) plants occurring in a wetland
PCT	New South Wales Plant Community Type
Proposal	The development, activity or action proposed
SAII	Serious and Irreversible Impacts
SAII entity	Species and ecological communities that are likely to be the subject of serious and irreversible impacts (SAIIs)
SEPP	State Environmental Planning Policy
Species credit	The class of biodiversity credit that relate to threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection
Subject Land	The areas within or the combined areas of the development site, and any indirect and prescribed impacts, to which the BAM has been applied
TEC	Threatened Ecological Community
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016
VI	Vegetation Integrity
VIS Plot	Vegetation Integrity Survey Plot

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: 29 November 2024

BAM Assessor Accreditation no.: BAAS21006

This BDAR has been prepared to meet the requirements of Appendix K in the BAM 2020.

ii. Details and Experience of Author/s and Contributors

Name	BAM Assessor Accreditation no.	Position/ Role	Tasks Performed	Relevant Qualifications
Jack Tatler	BAAS21006	Principal Ecologist	Report preparation, BAM-C data entry and analysis, figure preparation	*BSc (Zoology & Entomology), Hons (Zoology), PhD (Ecology)*
Jade Minto	-	Ecologist	Vegetation mapping, habitat assessment, BAM plot surveys	*BBioCon*
Ethan Dean	-	Ecologist	Vegetation mapping, habitat assessment, BAM plot surveys	*BBioCon*
Alex Graham	BAAS19040	Principal Ecologist	Document review	*BSc (Biology), Grad. Dip. (Bushfire Protection)*

iii. Conflict of Interest

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

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: 29 November 2024

BAM Assessor Accreditation no.: BAAS21006

1. INTRODUCTION

1.1 Proposed Development

1.1.1 Development Overview

East Coast Ecology (ECE) was commissioned by Mitch and Michelle Irwin (the proponent) c/- Perception Planning to prepare a Biodiversity Development Assessment Report (BDAR) to accompany a Development Application (DA) for a single dwelling at 13 Jinker Circuit, Clarence Town NSW 2321 (Lot 407/-/DP1206330).

This BDAR will assess the biodiversity impacts of the proposed development in accordance with the requirements of the *Biodiversity Conservation Act 2016* (NSW) (BC Act), *Biodiversity Conservation Regulation 2017* (NSW) (BC Reg) and Biodiversity Assessment Method 2020 (BAM).

East Coast Ecology have produced this report in order to assess any potential impacts associated with the proposed development and recommend appropriate measures to mitigate any potential ecological impacts in line with the requirements of the Consent Authority, Dungog Shire Council.

1.1.2 Proposed Development and the Subject Land

The proposed development will involve the construction of a single storey dwelling and small driveway (**Appendix A**). A 35m asset protection zone (APZ) to the east and west, and to the adjoining property boundaries north and south, is required for bushfire protection (Newcastle Bushfire Consulting, 2023).

All works associated with the proposed development are hereafter referred to as the 'Subject Land', which encompasses an area of approximately 0.69ha (**Figure 1**).

1.1.3 Location

The Subject Land is located within the suburb of Clarence Town, situated within the Dungog Shire Local Government Area and forms part of the Worimi Local Aboriginal Land Council. The Subject Land is situated within a peri-urban landscape, with residential landholdings to the east, north and south and Williams River to the west. The Subject Land is located on land zoned as R5: Large Lot Residential under the Dungog Shire Council Local Environmental Plan 2014.

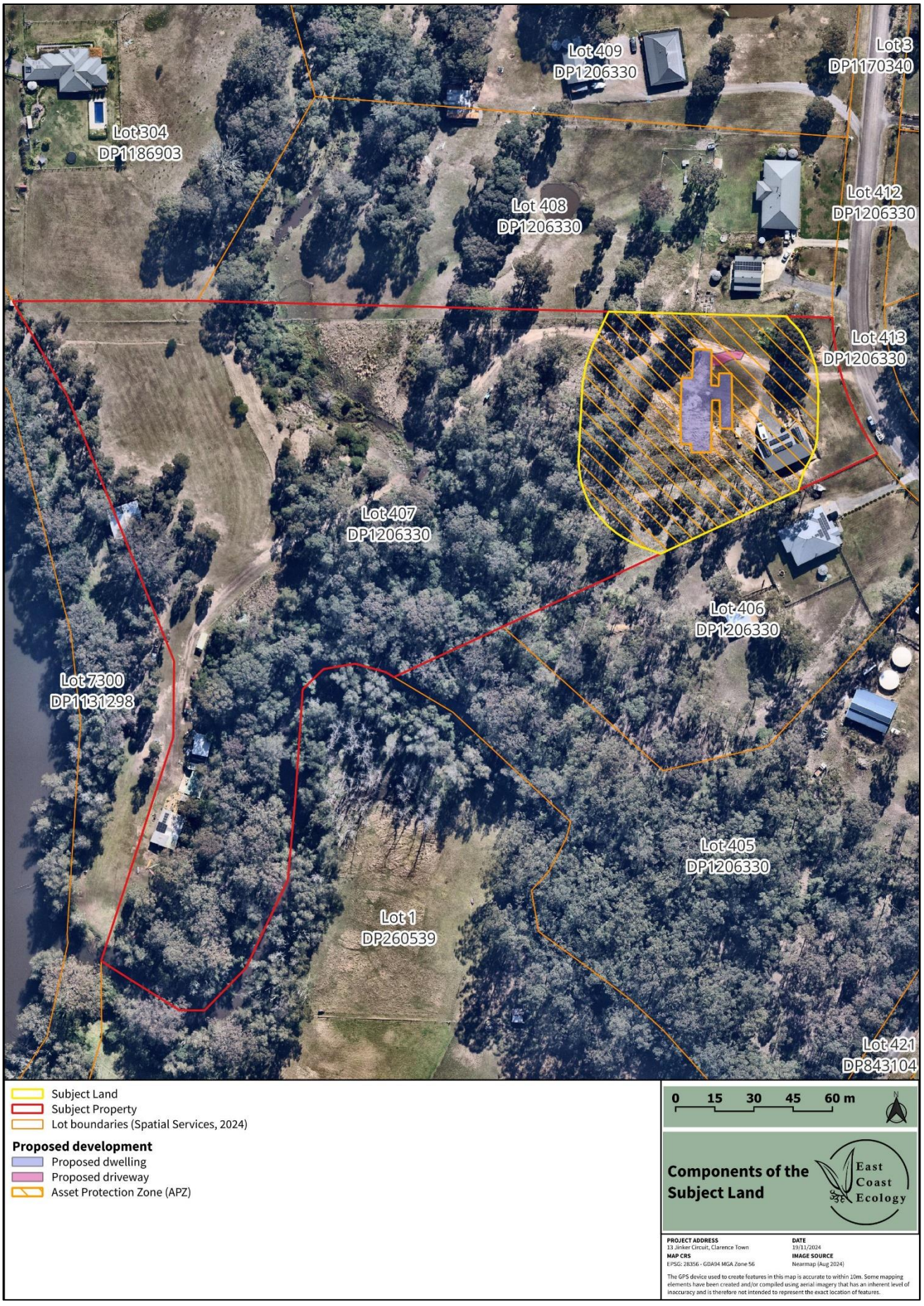

Figure 1. The Subject Land.

1.2 Information Sources

The following technical resources were utilised in the preparation of this report:

- State and Commonwealth Datasets:
    - EPBC Protected Matters Search Tool (DCCEEW, 2024)
    - NSW BioNet. The website of the Atlas of NSW Wildlife (NSW DCCEEW, 2024a)
    - NSW BioNet. Threatened Biodiversity Data Collection (NSW DCCEEW, 2024b)
    - NSW BioNet. Vegetation Classification System (NSW DCCEEW, 2024c)
    - NSW Government Spatial Services: Six Maps Clip & Ship (Spatial Services, 2024)
    - BAM Important Habitat Maps
- Vegetation and Soil Mapping:
    - The NSW State Vegetation Type Map (NSW DCCEEW, 2024f)
    - eSPADE v2.2.0 (NSW DCCEEW, 2024e)
- NSW State Guidelines:
    - Biodiversity Development Assessment Method (DPIE, 2020a)
    - Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE, 2019)
    - Biodiversity Assessment Method Calculator Version 1.4.0.00
    - Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPIE, 2020c)
    - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC, 2004b)
- Project Specific Documentation:
    - Site Plans (Sorenson Design and Planning, 2024)
    - Bushfire Assessment Report Performance Based Solution (Newcastle Bushfire Consulting, 2023)

1.3 Biodiversity Offsets Scheme Entry

For assessments under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the Biodiversity Offsets Scheme (BOS) threshold applies, as specified in section 7.2 (1b). As stated in the *Biodiversity Conservation Regulation 2017*, the threshold triggers for entry into the BOS are:

- Clearing of native vegetation of an area declared by clause 7.2 as exceeding the threshold, or
- The clearing of native vegetation, or other action prescribed by clause 6.1, on land included on the Biodiversity Values Map published under clause 7.3.

A BDAR is required because the proposed development will exceed the area clearing threshold of 0.25ha.

The Streamlined Assessment Module – Small Area, Appendix C of the BAM has been applied, on the basis that the cumulative impact area of the proposed development (i.e. 0.69ha) does not exceed the area clearing limits specified in Table 12 of the BAM (**Table 1**).

Table 1. Area limits for application of small area development threshold.

Minimum lot size associated with the property	Maximum area limit for application of the small area development module
Less than 1ha	≤1ha
Less than 40ha but not less than 1ha	≤2ha
Less than 1000ha but not less than 40ha	≤3ha
1000ha or more	≤5ha

Dark border indicates clearing threshold relevant to this report.

2. METHODS

2.1 Site Context Methods

2.1.1 Landscape Features

An investigation of the Subject Land and surrounds (1,500m) was undertaken to provide context for the landscape features detailed in **Section 3.2**.

2.1.2 Native Vegetation Cover

Native vegetation cover and connectivity have been assessed in accordance with Sections 3.1.3 and 3.2 of the BAM (DPIE, 2020a). The native vegetation cover was used to assess the habitat suitability of the Subject Land for threatened species. Areas of connectivity determined the extent of habitat that may facilitate the movement of threatened species across their range. A 1,500m buffer around the boundary of the Subject Land was assessed to determine the extent of native vegetation and habitat connectivity. Areas of native vegetation were determined using the State Vegetation Type Map (NSW DCCEEW, 2024f), as well as aerial imagery and Google Street View. Areas not included as native vegetation included waterbodies, hardstand and exposed soil.

2.2 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity Methods

2.2.1 Existing Information

A review of the State Vegetation Type Map (NSW DCCEEW, 2024f) was used to assist in the identification of Plant Community Types (PCTs) within and surrounding the Subject Land. The PCT of 'best-fit' was determined based on the floristic descriptions within the Vegetation Classification System database (BioNet) (NSW DCCEEW, 2024c) and the vegetation integrity plot data collected from field surveys.

2.2.2 Mapping Native Vegetation Extent

The extent of native vegetation within the Subject Land was determined through a field assessment with the aid of a GPS-enabled tablet. Native vegetation assigned to a PCT was then stratified into vegetation zones based on their condition and structure.

2.2.3 Plot-based Vegetation Survey

A systematic plot-based floristic vegetation survey was undertaken in accordance with BAM subsection 4.2.1. The sampling plot location was chosen as it was representative of the type and condition of vegetation that is proposed to be impacted for the proposed development.

2.2.4 Vegetation Integrity Survey

The vegetation integrity survey was undertaken in accordance with BAM Subsection 4.3.4. Three plots (20m x 50m) in total were required to be sampled to meet the minimum number of plots required.

2.3 Threatened Flora Survey

2.3.1 Review of Existing Information

Threatened flora with potential to occur within the Subject Land and immediate surrounds were identified following review of BioNet and the PMST. Soil mapping (NSW DCCEEW, 2024e) and topography (Google Earth) were also used to provide further context on habitat constraints for threatened flora.

2.3.2 Field Surveys

To determine the presence of threatened flora or suitable habitat for threatened flora species were present, a survey was undertaken using parallel field traverses in accordance with the 'Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method' (DPIE, 2020b).

2.4 Threatened Fauna Survey

2.4.1 Review of Existing Information

Threatened fauna with potential to occur within the Subject Land and immediate surrounds were identified following review of BioNet using a 10km x 10km search area centred on the Subject Land. Soil mapping (NSW DCCEEW, 2024e) and topography (Google Earth) were also used to provide further context on habitat constraints for threatened fauna.

2.4.2 Habitat Constraints

A field survey was undertaken to identify any habitat constraints (e.g. waterbodies, rocky areas, tree hollows), including microhabitat, present within the Subject Land and immediate surrounds. Potential habitat constraints within the broader area (1,500m buffer) were assessed using Google Earth, soil landscape mapping (NSW DCCEEW, 2024e) and recent vegetation mapping (NSW DCCEEW, 2023f).

2.4.3 Field Surveys

Threatened fauna were recorded opportunistically however, their habitats were targeted during the parallel field traverses.

2.5 Permits and Licences

The biodiversity assessment was conducted under the terms of ECE's Scientific Licence issued by the NSW Department of Planning and Environment (SL102667). Fauna survey was conducted under approval RVF22/2367 from the NSW Animal Care and Ethics Committee.

2.6 Weather Conditions

Surveys were undertaken on 5th November 2024 within the Subject Land. Weather conditions taken from the nearest weather station (Nobby Head AWS [station 061390]) in the lead up and during the field survey are outlined in **Table 2**. Pre-survey weather conditions were generally conducive for identifying threatened species should they occur within the Subject Land.

Table 2. Weather conditions taken from the nearest weather stations (Station number 061425) in the lead up and during the field survey (BOM, 2024b).

Timing/activities	Date	Day	Temperature (°C)		Rainfall (mm)
			Min	Max	
Lead up to the survey	29/10/2024	Tuesday	17.4	21.1	1.6
	30/10/2024	Wednesday	16.7	23.2	0
	31/10/2024	Thursday	16.9	23.5	0
	01/11/2024	Friday	17.4	22.1	0.2
	02/11/2024	Saturday	16.4	20.8	10.6
	03/11/2024	Sunday	17.2	31.1	0
	04/11/2024	Monday	20.4	21.2	0
Site Assessment & Habitat Survey	05/11/2024	Tuesday	18.6	21.3	3.4

2.7 Limitations

Not all flora and fauna species could be directly surveyed for during the site assessment. These species include nocturnal fauna and cryptic flora with flowering times outside of the survey period. The presence of nocturnal and cryptic species was assessed based on habitat constraints and historical records.

3. SITE CONTEXT

3.1 Assessment Area

The area assessed as part of this BDAR consisted of the Subject Land and a 1,500m buffer zone (**Figure 2**).

3.2 Landscape Features

3.2.1 IBRA Bioregions and IBRA Subregions

The Subject Land occurs within the 'Upper Hunter' Interim Biogeographic Regionalisation for Australia (IBRA) Subregion, which is part of the 'NSW North Coast' IBRA Bioregion (**Figure 2**).

3.2.2 Rivers, streams, estuaries and wetlands

No watercourses, or their riparian buffers, are located within the Subject Land. Numerous 1st – 3rd order watercourses along with their associated riparian buffers, are located within the 1,500m buffer. In addition, Williams River occurs approximately 200m west of the Subject Land.

3.2.3 Habitat Connectivity

The Subject Land is situated within a large lot residential area. Most of the native vegetation that occurs nearby is fragmented, with remnants persisting along watercourses (riparian vegetation). With the broader landscape, Wallaroo National Park occurs approximately 1km southeast of the Subject Land and Columbey National Park lies approximately 3.7km to the west. Although degraded, the native vegetation within the Subject Land is connected to the considerable area of habitat within Wallaroo National Park. However, the Subject Land would not support movement of threatened species to the north owing to the level of historical clearing that has occurred.

3.2.4 Karst, Caves, Crevices, Cliffs, Rocks or Other of Geological Features of Significance

The Subject Land did not contain any areas of geological significance, such as karsts, caves, cliffs or crevices. There are no areas of geological significance within the 1,500m buffer area. The Subject Land was not mapped as occurring on acid sulfate soils nor mapped as having risk/probability of exhibiting occurrence of acid sulfate soils. Areas within the 1,500m buffer are mapped as occurring on acid sulfate soils.

3.2.5 Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value occur on the Subject Land or surrounding 1,500m buffer area.

3.2.6 NSW (Mitchell) Landscapes

NSW (Mitchell) Landscapes (Mitchell, 2002) groups ecosystems into meso-ecosystems representing larger natural entities based on topography and geology. The naming of ecosystems and meso-ecosystems was standardised so that each name provided location information and a meaningful descriptive landscape term. The Subject Land occurs within the 'Newcastle Coastal Ramp' Mitchell Landscape Ecosystem (**Figure 2**). This landscape is described as undulating lowlands and low to steep hills on complex patterns of faulted and gently folded Carboniferous conglomerate, lithic sandstone, felspathic sandstone, and mudstone, general elevation 50 to 275m, local relief 40 to 150m. Stony red texture-contrast soils on steep slopes, yellow

and brown texture-contrast soils on lower slopes and deep dark clay loams along streams. Woodland of Spotted Gum (*Corymbia maculata*), Forest Red Gum (*Eucalyptus tereticornis*), Red Ironbark (*Eucalyptus sideroxylon*), White Mahogany (*Eucalyptus acmenoides*), large-fruited Grey Gum (*Eucalyptus canaliculata*), with sub-tropical rainforest elements in sheltered gullies. Similar eucalypts with Forest Oak (*Allocasuarina torulosa*) and grasses on lower slopes, merging to forest of Smooth-barked Apple (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*), Blackbutt (*Eucalyptus pilularis*) with Bracken (*Pteridium esculentum*) and grasses nearer the coast.

3.2.7 Topography, Geology and Soils

The Subject Land is mapped as occurring on the 'Glen Williams' soil landscape (NSW DCCEEW, 2024e). This soil landscape is typically characterised by undulating low hills to gently undulating rises on Carboniferous volcanics and sediments; level plain to gently undulating rises on alluvial terrace deposits of undetermined age in the Clarence Town Hills region. The Subject Land occurs is relatively flat at 19m above sea level (asl) although the terrain then drops sharply to 3m asl further west (Google Earth).

3.3 Native Vegetation Cover

Native vegetation cover and connectivity have been assessed in accordance with Section 3.1.3 and 3.2 of the BAM (DPIE, 2020a). Native vegetation covers approximately 327.25ha within the 1,500m buffer area (total area = 747.08ha) (**Figure 3**) and was assigned to the >30-70% native vegetation cover class. Areas of native vegetation were determined using the NSW SVTM mapping. Areas not assessed as native vegetation included waterbodies, hardstand and exposed soil. **Table 3** summarises the extent of native vegetation cover within the assessment area.

Table 3. Native vegetation cover in the assessment area.

Assessment Area (ha)	747.08
Total Area of Native Vegetation Cover (ha)	327.25
Percentage of Native Vegetation Cover (%)	44
Class (0-10, >10-30, >30-70 or >70%)	>30-70%

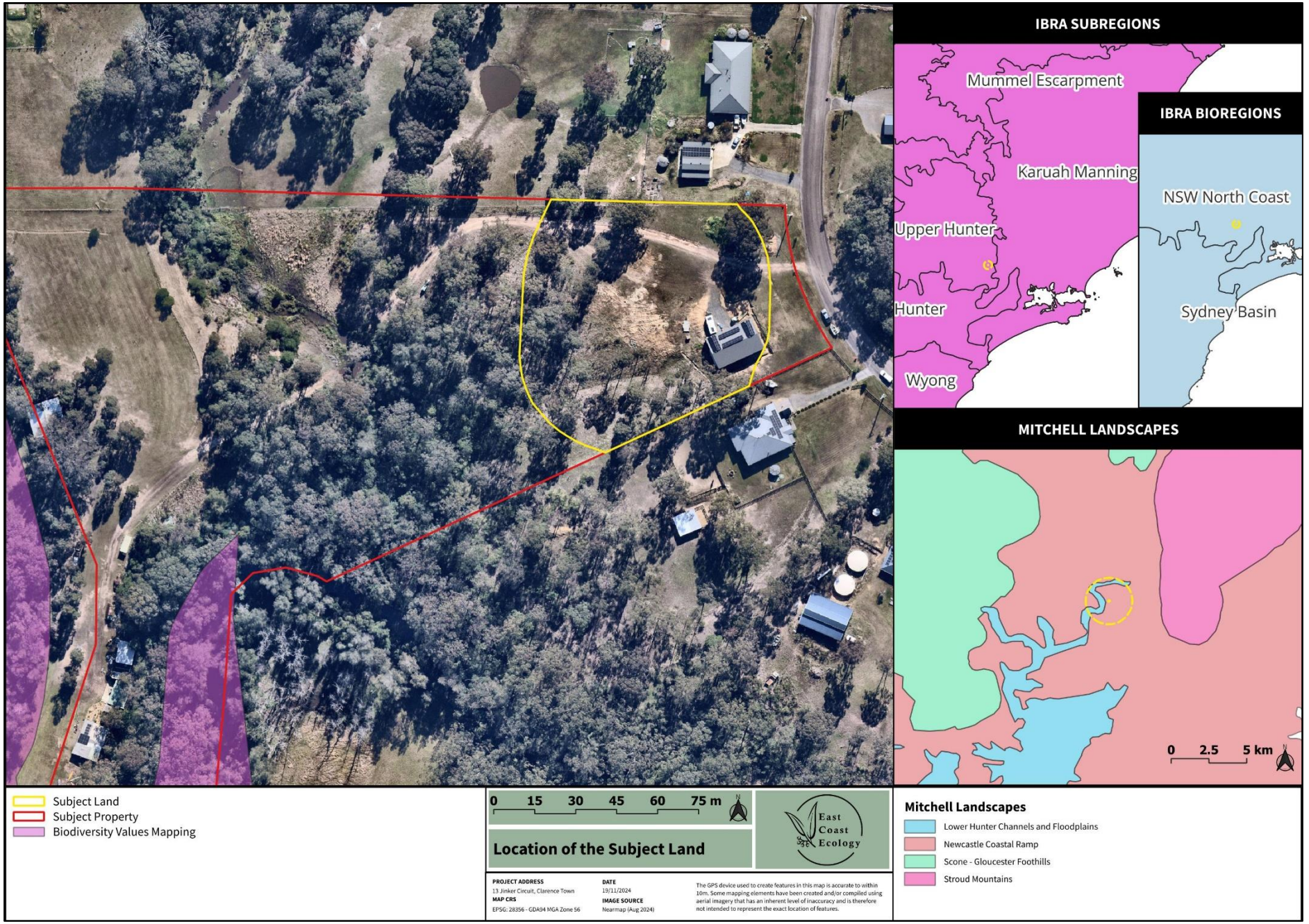

Figure 2. IBRA Bioregion and Subregion of the Subject Land, and within a 1,500m buffer.

Figure 3. Strahler stream order, waterbodies, native vegetation and habitat connectivity.

4. NATIVE VEGETATION, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

4.1 Plant Community Types

4.1.1 Historically Mapped Vegetation

The State Vegetation Type Map (NSW DCCEEW, 2024f) indicated the presence of two PCTs within the Subject Land (**Figure 4**):

- PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest, and
- PCT 3171: Northern Lowland Viney Wet Forest.

PCT 3433 is associated with Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions, which is listed as endangered under the BC Act.

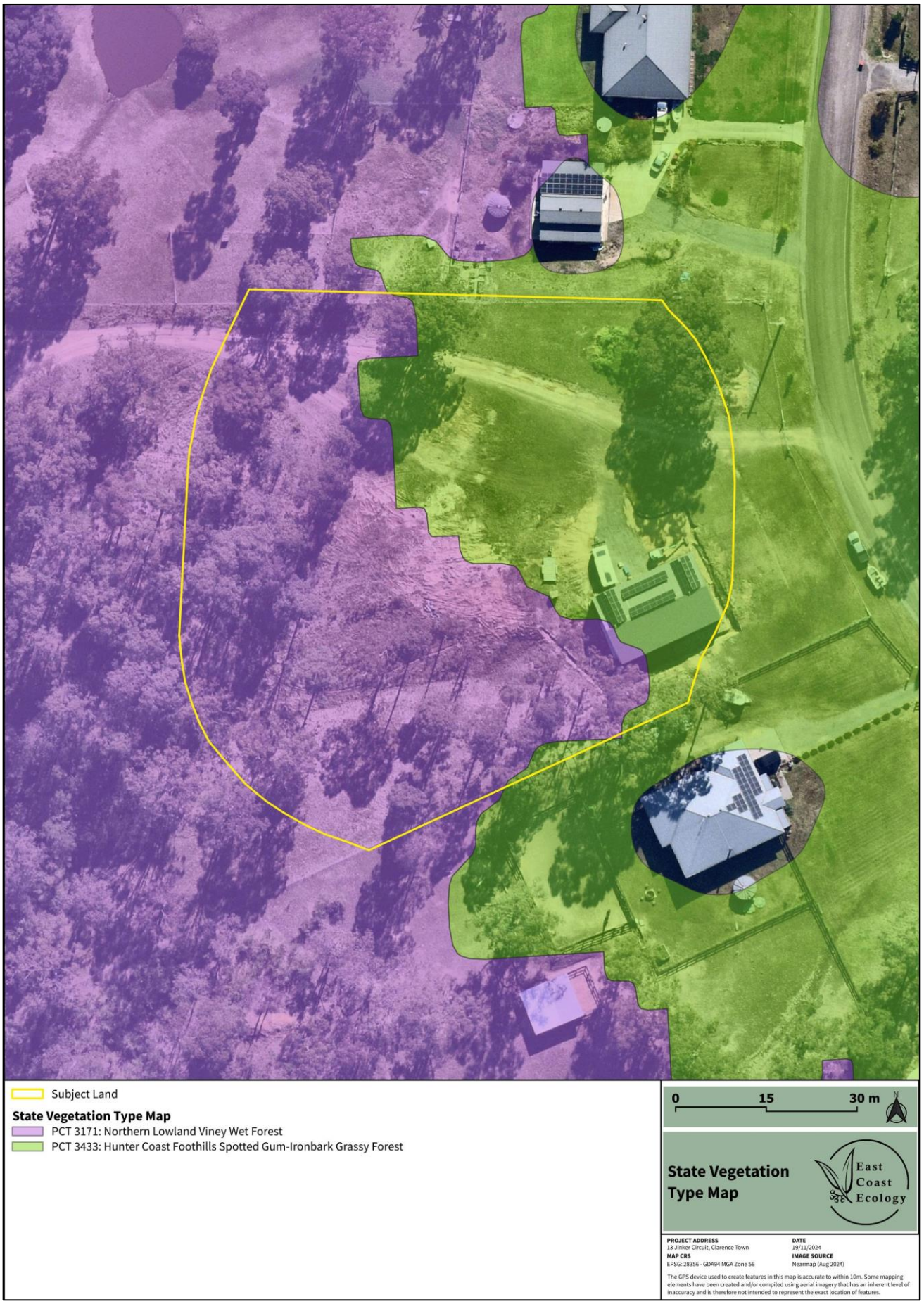

Figure 4. Vegetation Mapping (State Vegetation Type Map) in proximity to the Subject Land.

4.1.2 Field-validated Vegetation

Vegetation within the Subject Land has been assessed as aligning with the BioNet Vegetation Classification PCT identified within **Table 4** and depicted in **Figure 8**. Detailed description of the PCT is provided in the following subsections.

Table 4. PCTs identified within the Subject Land.

PCT ID	PCT Scientific Name	Area within the Subject Land (ha)
PCT 3433	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	0.44
	Total Area	**0.44**

4.1.3 Justification for PCT Selection

PCT selection for native vegetation was undertaken using information and databases provided in the BioNet Vegetation Classification System. The following selection criteria were used in the PCT Filter Tool to develop a PCT shortlist:

- IBRA Bioregion: NSW North Coast
- IBRA Subregion: Upper Hunter
- LGA: Dungog Shire
- Formation: Dry Sclerophyll Forest (Shrub/grass sub-formation)
- Dominant Species: *Eucalyptus fibrosa, Eucalyptus tereticornis, Daviesia ulicifolia, Bursaria spinosa, Acacia ulicifolia, Corymbia maculata* (recorded nearby)

This process delivered five PCTs that met all the selection criteria (**Table 5**). The steps taken to justify the presence/ absence of the candidate PCTs within the Subject Land are detailed in **Table 5**.

Table 5. Output from the PCT Filter Tool (NSW DCCEEW, 2024c) and subsequent shortlisting of candidate PCTs.

Plant Community Type (PCT)	Subject Land within known distribution/suitable geology, landscape position and has the correct floral assemblage?
PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Yes. This PCT occurs on undulating foothills of the Hunter coast hinterland from Tuggerah to Stratford, which is consistent with the Subject Land. This PCT occurs primarily on Permian sediments and the Subject Land is mapped as the Glen Valley soil landscape which is characterised by sediments (of indeterminate age) around Clarence Town. Moreover, the assemblage of trees, shrubs and grasses within the Subject Land is consistent with this PCT.
PCT 3442: Lower Hunter Lowland Ironbark-Paperbark Forest	No. Although the floristic and landscape characteristics of this PCT are very similar to PCT 3433, this PCT mainly occurs between Seaham and Cessnock (south of the Subject Land).

Plant Community Type (PCT)	Subject Land within known distribution/suitable geology, landscape position and has the correct floral assemblage?
PCT 3446: Lower North Foothills Ironbark-Box-Gum Grassy Forest	No. The floristic assemblage of this PCT usually includes *Eucalyptus crebra* or *Eucalyptus siderophloia* and taller acacia species. These species were not identified within the Subject Land.
PCT 3432: Hunter Coast Foothills Apple-Ironbark Grassy Forest	No. Although this community overlaps in distribution with PCT 3433, which occupies similar elevation and substrate and shares many ground cover species, PCT 3432 contains *Angophora costata* and *Corymbia gummifera* which were absent from the Subject Land.
PCT 3436: Hunter Coast Sandy Creekflat Low Paperbark Scrub	No. The main diagnostic attribute of this PCT is the closed canopy of the mid-stratum that almost always is completely dominated by *Melaleuca nodosa.* Although *M. nodosa* was recorded within the Subject Land it was scattered and did not form a closed canopy.

In addition to the candidate PCT identified through the PCT Filter Tool (NSW DCCEEW, 2024c), all mapped PCTs (NSW DCCEEW, 2024f) occurring within proximity to the Subject Land were assessed for suitability. Based on the landscape position, geology and floristics of vegetation within the Subject Land, ECE have assigned the vegetation to one PCT and one novel community type:

- PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest (**Table 6**), and
- Exotic lawn.

Table 6. Criteria of the selected PCT.

Candidate PCT	Characteristics
PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	**Landscape position/ geology**
	A tall to very tall sclerophyll open forest with dry and soft-leaved shrubs and a grassy ground cover on undulating foothills of the Hunter coast hinterland from Tuggerah to Stratford, and the lower Hunter valley around Cessnock. This PCT occurs primarily on Permian sediments, however is also present on claystones of the Narrabeen Group. It is commonly recorded at elevations below 150m asl, with scattered records up to 300m asl, in a moist climate with a mean annual rainfall of 1030mm.
	Characteristic canopy
	The canopy almost always includes *Corymbia maculata* accompanied by one or more ironbarks (*Eucalyptus fibrosa* or *Eucalyptus siderophloia*). Mahoganies (*Eucalyptus umbra* or *Eucalyptus acmenoides*) are also commonly present in the canopy.
	Characteristic mid-storey/ shrub
	The sparse mid-stratum almost always includes one or more Acacia species, of which *Acacia falcata* and *Acacia ulicifolia* are the most frequent and abundant. The shrubs and small trees that complete the mid-stratum very frequently include *Daviesia ulicifolia*, commonly *Bursaria spinosa, Persoonia linearis* and rarely *Pultenaea villosa, Leucopogon juniperinus* or patches of *Melaleuca nodosa*.
	Characteristic groundcover
	The mid-dense ground layer typically includes graminoids, forbs, twiners and a hardy fern. *Entolasia stricta* is almost always present, with *Themeda triandra*, *Lobelia purpurascens, Microlaena stipoides, Aristida vagans, Lomandra multiflora* subsp. *multiflora, Glycine clandestina* and *Cheilanthes sieberi* subsp. *sieberi* all very frequent.

4.1.4 PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest

One PCT was determined to occur within the Subject Land:

- PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest (**Table 7**).

Table 7. PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest.

PCT ID	3433
PCT Name	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
Vegetation Formation	Dry Sclerophyll Forests (Shrub/grass sub-formation)
Vegetation Class	Hunter Macleay Dry Sclerophyll Forest
Percent Cleared Value (%)	68.60%
Extent within Subject Land (ha)	0.44ha

4.1.4.1 Condition States

Native vegetation (PCT 3433) was determined to be represented by two condition classes within the Subject Land:

- Vegetation Zone 1: Canopy, and
- Vegetation Zone 2: Degraded.

These zones are detailed in **Table 8**, and displayed in **Figure 8**.

Table 8. Native vegetation identified within the Subject Land.

PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest		
Vegetation Zone	**Zone 1: Canopy**	**Zone 2: Degraded**
Extent within Subject Land	0.29ha	0.15ha
Field survey effort	One 20m x 50m BAM plot was established. Due to the irregular shape of the vegetation zone, the BAM plot was partially situated outside the Subject Land (**Figure 8**). The location chosen was however indicative of the vegetation community and condition class within the vegetation zone.	One 20m x 50m BAM plot was established. Due to the irregular shape of the vegetation zone, the BAM plot was partially situated outside the Subject Land (**Figure 8**). The location chosen was however indicative of the vegetation community and condition class within the vegetation zone.
Description of vegetation	The vegetation within this zone was characterised by a native canopy dominated by *Eucalyptus fibrosa* and *Eucalyptus tereticornis* growing over a sparse shrub layer and grassy groundlayer (**Figure 5**). No High Threat	The vegetation within this zone was characterised by an absent canopy, sparse shrub layer and a moderately diverse groundlayer (**Figure 6**). One HTE, *Senecio madagascariensis*, was recorded within this zone.

PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest		
Vegetation Zone	**Zone 1: Canopy**	**Zone 2: Degraded**
	Exotics (HTE) were identified in the ground layer of this zone.	
Structure of vegetation	A high native canopy cover was evident within the BAM plot, with native trees totalling 65% cover. Native shrub coverage was very low at 1.1%. The native ground layer cover was low with 17.8% native grasses, 1% forbs, 0.1% ferns and 0.3% 'other'. A moderate coverage of leaf litter (76%) was present. The BAM plot contained a high diversity of tree stem sizes, with five tree stem sizes recorded, although no large trees (>50cm) were recorded. No fallen logs were recorded.	Native canopy cover was absent. Native shrub coverage was very low at 0.3%. The native ground layer cover was low with 15.9% native grasses, 3% forbs, 0% ferns and 0% 'other'. A low coverage of leaf litter (42%) was present. The BAM plot contained no tree stem sizes. No fallen logs were recorded.
BC Act 2016 Status	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions –endangered ecological community listing (**Section 4.1.6**).	Not a TEC (**Section 4.1.6**).
EPBC Act 1999 Status	Not listed.	Not listed.

Figure 5. PCT 3433 – typical condition (Zone 1) within the Subject Land.

Figure 6. PCT 3433 – typical condition (Zone 2) within the Subject Land.

4.1.5 Exotic Lawn

Part of the Subject Land has been identified as an exotic dominated lawn and could not be assigned to a PCT. A description of this vegetation is provided below in **Table 9**.

Table 9. Description of 'Exotic lawn'.

Exotic lawn	
Novel Community	Exotic lawn
Extent within Subject Land	0.09ha
Field survey effort	One 20m x 50m BAM plot was established (**Figure 8**).
Description of vegetation	The vegetation within this zone was characterised by an absent canopy and shrub layer and exotic dominated groundlayer (**Figure 7**). Exotic species constituted >94% cover within the plot, including 90.1% cover of HTEs. Dominant exotic species were *Stenotaphrum secundatum* and *Axonopus fissifolius.*
BC Act 2016 Status	Not listed.
EPBC Act 1999 Status	Not listed.

Figure 7. Exotic lawn typical condition within the Subject Land.

4.1.6 Listing under the *Biodiversity Conservation Act 2016* – Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions - endangered ecological community listing

The NSW Scientific Committee (2019) has determined that the endangered ecological community, Lower Hunter Spotted Gum – Ironbark Forest in the Sydney Basin Bioregion, is characterised by the following:

- Lower Hunter Spotted Gum Ironbark Forest is currently known to occur in the Lower Hunter Valley centred on the Cessnock-Beresfield area and approximately bounded by the towns of Paxton, Branxton, Clarence Town, Beresfield, Mt Vincent and the northern boundary of Watagans National Park
- Lower Hunter Spotted Gum Ironbark Forest is known to occur principally on Permian and Carboniferous geology in the central to lower Hunter Valley
- A dominance of *Corymbia maculata*, (Spotted Gum) and *Eucalyptus fibrosa* (Broad-leaved Ironbark), while *E. punctata* (Grey Gum) and *E. crebra* (Grey Ironbark) occur occasionally
- Understorey is marked by the tall shrub, *Acacia parvipinnula*, and by the prickly shrubs, *Daviesia ulicifolia, Bursaria spinosa, Melaleuca nod*osa and *Lissanthe strigosa*.
- The ground layer is diverse; frequent species include *Cheilanthes sieberi, Cymbopogon refractus, Dianella revoluta, Entolasia stricta, Glycine clandestina, Lepidosperma laterale, Lomandra multiflora, Microlaena stipoides, Pomax umbellata, Pratia purpurascens, Themeda australis* and *Phyllanthus hirtellus*

The vegetation within the Subject Land occurs in Clarence Town on Carboniferous geology. The canopy within Vegetation Zone 1 is dominated by *E. fibrosa* (*C. maculata* was recorded nearby) and dominant shrub species were *Daviesia ulicifolia, Bursaria spinosa, Melaleuca nodosa*. Therefore, Vegetation Zone 1 has been determined to form a part of the endangered ecological community.

Vegetation Zone 2 was degraded and lacked a tree canopy, and was not determined to conform to the BC Act listed TEC.

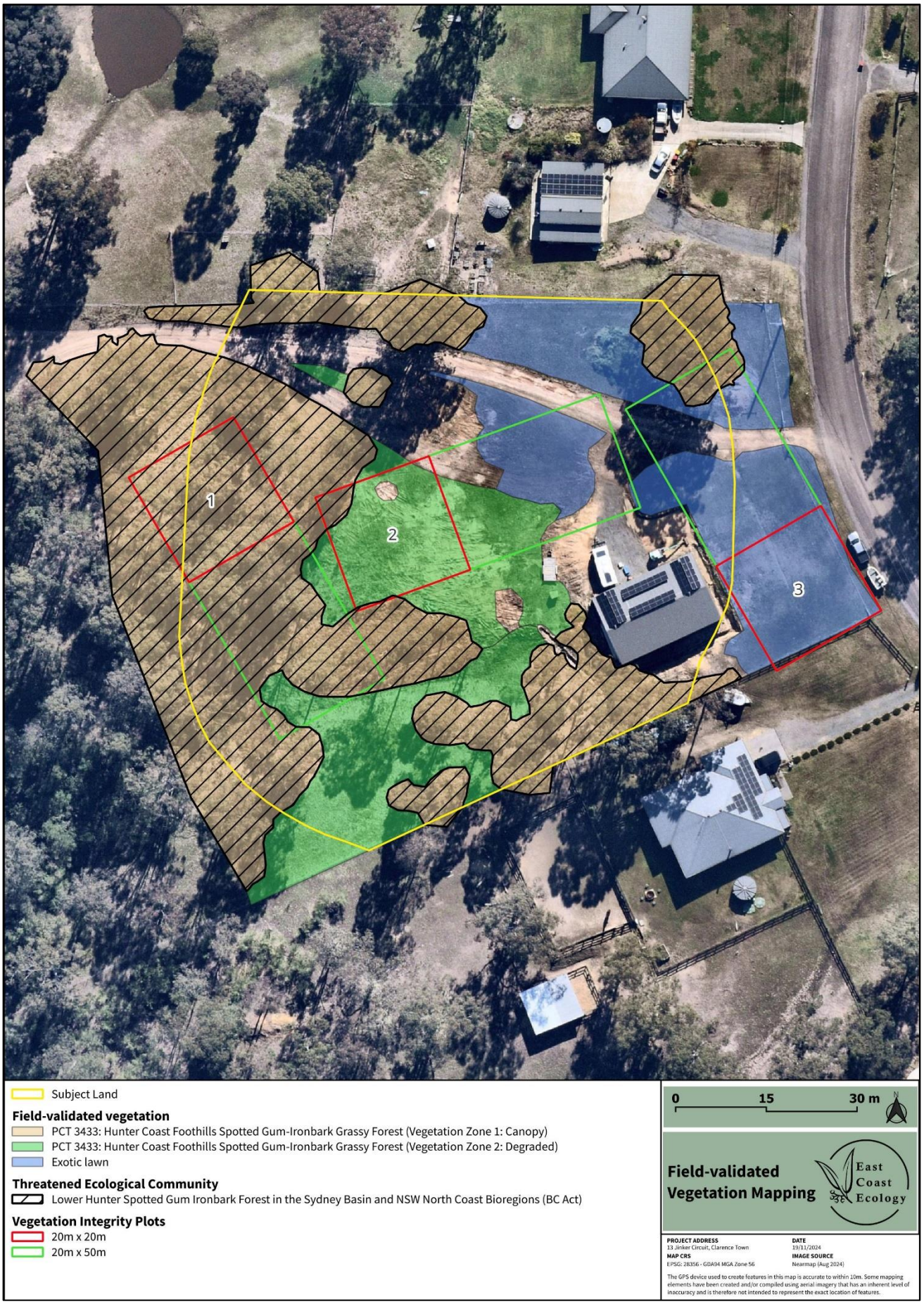

Figure 8. Field-validated vegetation mapping and location of BAM plots within the Subject Land.

4.2 Assessing Patch Size

A patch is defined by the BAM (DPIE, 2020a) as 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 (or ≤ 30m for non-woody ecosystems). A patch may extend onto adjoining land. For each vegetation zone, the assessor must determine the patch size in hectares and assign it to one of the following classes:

- <5ha
- 5–<25ha
- 25–<100ha, and
- ≥100ha.

The patch size class is used to assess habitat suitability on the Subject Land for threatened species. The assessor may assign more than one patch size class to the vegetation zone if both of the following apply:

- A vegetation zone comprises two or more discontinuous areas of native vegetation, and
- The areas of discontinuous native vegetation have more than one patch size class.

The patch size class of the vegetation in the Subject Land is shown in **Table 10** below.

Table 10. Patch size classes that the PCT and associated vegetation zone fall into.

Plant Community Type	Category	Vegetation Zone	Patch Size Class	No. of Plots	Plot IDs used in assessment
3433	Woody Ecosystems	Zone 1: Canopy	>100ha	1	Plot 1
3433	Woody Ecosystems	Zone 2: Degraded	>100ha	1	Plot 2

4.3 Vegetation Integrity (Vegetation Condition)

4.3.1 Vegetation Integrity Survey Plots

One BAM Vegetation Integrity (VI) plot was established within each vegetation zone. The location chosen was indicative of the vegetation community and condition class within the vegetation zone.

4.3.2 Scores

The VI scores of Zone 1 and 2, including composition, structure and function are detailed in **Table 11**.

Table 11. Vegetation integrity scores.

Vegetation Zone ID	Composition Condition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score	Hollow Bearing Trees Present?
Zone 1: Canopy	28.9	36.1	45	36.1	Absent
Zone 2: Degraded	50.6	3.8	11.4	13	Absent

4.3.3 Use of Benchmark Data

The site value attributes were then assessed against the BAM-C default benchmark data.

4.3.4 Determining Future Vegetation Integrity Scores

Most projects will result in complete clearing of vegetation and threatened species habitat within the development footprint. In this scenario, the assessor must assess the proposed future value of each of the VI attributes as zero in the BAM-C. However, in circumstances where partial clearing of vegetation is proposed and remaining vegetation will be maintained, the assessor may determine that the future value of the relevant VI attributes are greater than zero (DPIE, 2020a).

It is expected that the Subject Land will experience both complete (for the proposed dwelling and driveway) and partial clearing (for the APZ). As a result, two management zones have been assigned (**Figure 9**):

- Management Zone 1: Complete clearing:
    - Vegetation Zone 2: Degraded
- Management Zone 2: Partial clearing:
    - Vegetation Zone 1: Canopy

Although native groundcover vegetation within Vegetation Zone 2 will continue to persist within the APZ, its future score has been set at 0 to streamline the BAM-C assessment process (i.e. a VI score above 0 for Vegetation Zone 2 will not reduce the offset liability). The attributes influencing the vegetation score within the vegetation zone are detailed in **Table 12**. Future VI scores are detailed in **Table 13**.

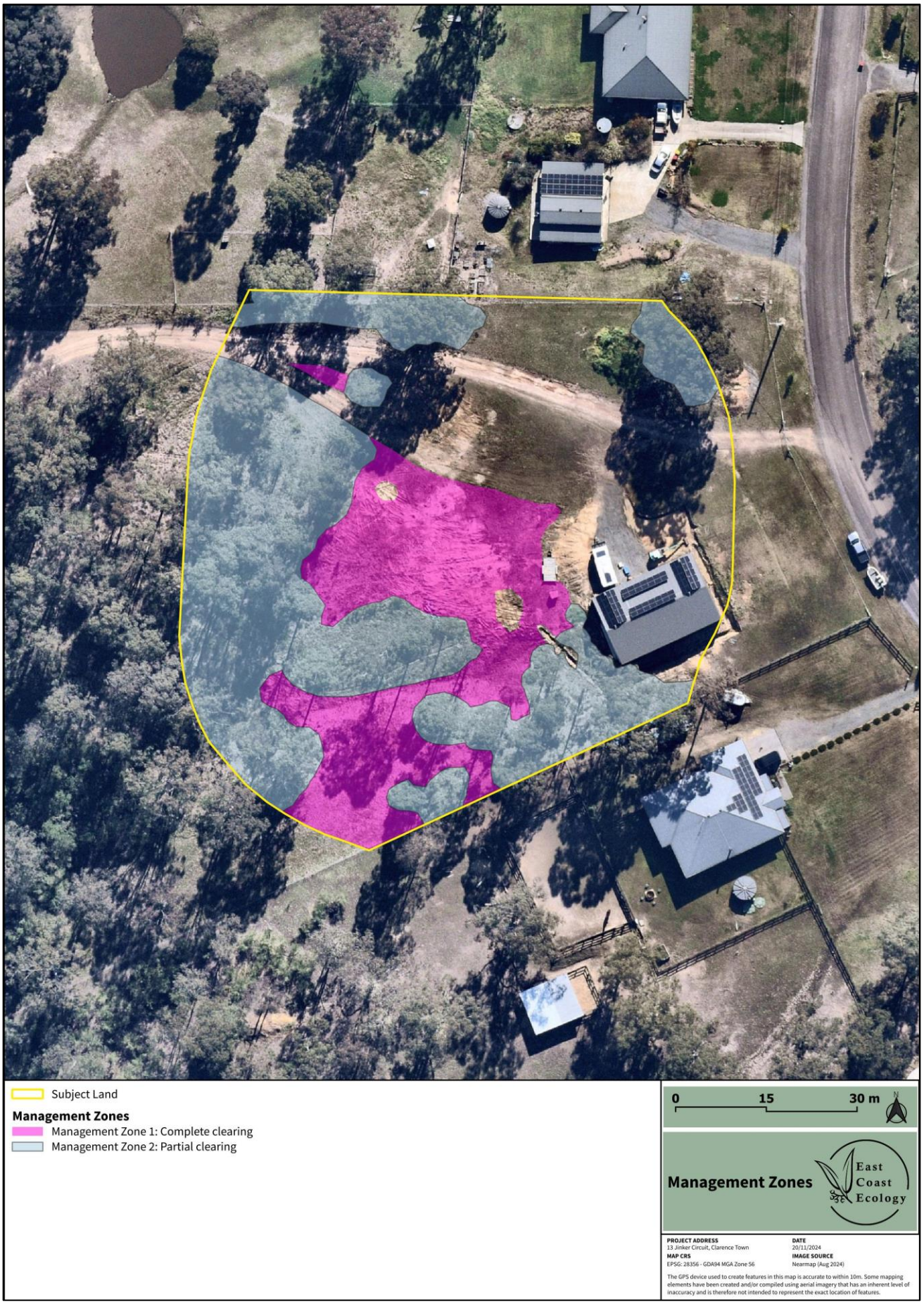

Figure 9. Management zones within Subject Land.

Table 12. Management Zone within the Subject Land, and relevant vegetation attributes (composition, structure and function) affecting future VI scores.

Management Zone	Vegetation Zone	Changes in current vegetation attributes	Vegetation attributes not changed	Future vegetation scores and justification
Zone 1 – Complete clearing	Zone 2: Degraded	**Vegetation Composition**		
		Tree, Shrub, Grass, Forb Other and Fern	N/A	▪ All values will be 0.
		Vegetation Structure		
		Tree, Shrub, Grass, Forb Other and Fern	N/A	▪ All values will be 0.
		Vegetation Function		
		Stem Size Classes, Litter Cover, Logs	N/A	▪ All values will be 0.
Zone 2 – Partial clearing	Zone 1: Canopy	**Vegetation Composition**		
		N/A	Tree, Shrub, Grass, Forb Other and Fern	▪ Vegetation composition has not been reduced based on perceived ability to maintain current levels whilst meeting APZ requirements.
		Vegetation Structure		
		Tree	Shrub, Grass, Forb Other and Fern	▪ Tree structure = 15%. APZ requirement (<15%) of an IPA. ▪ Shrub structure = 1.1%. Per requirement (<10%) of an IPA. ▪ Fern structure = 0.1%. ▪ Grass structure = 17.8%. Forb structure = 0.1%. Other structure = 0.3%.
		Vegetation Function		
		Litter Cover, Logs, Stem Size Classes	N/A	▪ Litter cover = 0. All litter cover will be cleared to accommodate the proposed APZ. ▪ Stem size classes = 3. ▪ Length of logs = 0.

Table 13. Vegetation integrity scores for each vegetation zone.

Vegetation Zone	Management Zone	Area (ha)	Survey Effort	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Future VI Score	Total VI Loss	Hollow bearing trees
Zone 1: Canopy	Zone 2 – Partial clearing	0.29	1 x 1,000m^2 (20m x 50m) VIS Plot	28.9	7	13.8	14.1	-22	-22	Absent
Zone 1: Degraded	Zone 1 – Complete removal	0.15	1 x 1,000m^2 (20m x 50m) VIS Plot	0	0	0	0	-13	-13	Absent

5. HABITAT SUITABILITY FOR THREATENED SPECIES

5.1 Identification of Threatened Species for Assessment

The BAM (DPIE, 2020a) is the assessment manual that outlines how an accredited person assesses impacts on biodiversity at development sites. The BAM provides:

- A consistent method for the assessment of biodiversity on a proposed development or major project, or clearing site
- Guidance on how a proponent can avoid and minimise potential biodiversity impacts
- The number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity.

A BDAR identifies how the proponent proposes to avoid and minimise impacts, any potential impact that could be characterised as serious and irreversible (according to specified principles) and the offset obligation required to offset the likely biodiversity impacts of the development or clearing proposal, expressed in biodiversity credits.

5.1.1 Candidate Ecosystem Credit Species

Two predicted Ecosystem Credit species were excluded from the BAM-C, Glossy Black-Cockatoo and Black Bittern, due to an absence of habitat constraints. All other Ecosystem Credit species associated with the Subject Land were included within the assessment (**Table 14**).

Table 14. Candidate Ecosystem Credit species predicted to occur within the Subject Land.

Scientific Name (italics) and common name	BC Act Status	Excluded from Assessment	Reason for Exclusion from Assessment
Anthochaera phrygia Regent Honeyeater (Foraging)	Critically Endangered	No	-
Artamus cyanopterus cyanopterus Dusky Woodswallow	Vulnerable	No	-
Callocephalon fimbriatum Gang-gang Cockatoo (Foraging)	Vulnerable	No	-
Calyptorhynchus lathami Glossy Black-Cockatoo (Foraging)	Vulnerable	Yes	No presence of allocasuarina or casuarina species
Chthonicola sagittata Speckled Warbler	Vulnerable	No	-
Circus assimilis Spotted Harrier	Vulnerable	No	-
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Vulnerable	No	-
Daphoenositta chrysoptera Varied Sittella	Vulnerable	No	-
Dasyurus maculatus Spotted-tailed Quoll	Endangered	No	-
Ephippiorhynchus asiaticus Black-necked Stork	Endangered	No	-

Scientific Name (italics) and common name	BC Act Status	Excluded from Assessment	Reason for Exclusion from Assessment
Falsistrellus tasmaniensis Eastern False Pipistrelle	Vulnerable	No	-
Glossopsitta pusilla Little Lorikeet	Vulnerable	No	-
Haliaeetus leucogaster White-bellied Sea-Eagle (Foraging)	Vulnerable	No	-
Hieraaetus morphnoides Little Eagle (Foraging)	Vulnerable	No	-
Hirundapus caudacutus White-throated Needletail	Not Listed (EPBC Act only)	No	-
Ixobrychus flavicollis Black Bittern	Vulnerable	Yes	Subject Land not within 40m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation
Lathamus discolor Swift Parrot (Foraging)	Endangered	No	-
Lophoictinia isura Square-tailed Kite (Foraging)	Vulnerable	No	-
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	Vulnerable	No	-
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	Vulnerable	No	-
Miniopterus australis Little Bent-winged Bat (Foraging)	Vulnerable	No	-
Miniopterus orianae oceanensis Large Bent-winged Bat (Foraging)	Vulnerable	No	-
Neophema pulchella Turquoise Parrot	Vulnerable	No	-
Petaurus australis Yellow-bellied Glider	Vulnerable	No	-
Petroica boodang Scarlet Robin	Vulnerable	No	-
Petroica phoenicea Flame Robin	Vulnerable	No	-
Phoniscus papuensis Golden-tipped Bat	Vulnerable	No	-
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies)	Vulnerable	No	-
Pseudomys gracilicaudatus Eastern Chestnut Mouse	Vulnerable	No	-
Pseudomys novaehollandiae New Holland Mouse	Not Listed (EPBC Act only)	No	-

Scientific Name (italics) and common name	BC Act Status	Excluded from Assessment	Reason for Exclusion from Assessment
Pteropus poliocephalus Grey-headed Flying-fox (Foraging)	Vulnerable	No	-
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Vulnerable	No	-
Scoteanax rueppellii Greater Broad-nosed Bat	Vulnerable	No	-
Stagonopleura guttata Diamond Firetail	Vulnerable	No	-

5.2 Candidate Species Credit Species Summary

This section provides a summary of the Candidate Species Credit fauna and flora species for the Subject Land derived from BAM-C (NSW DCCEEW, 2024d) (**Table 15**). A summary of the targeted survey effort applied to each species is provided along with the results of the survey effort, specifically whether the species credit needs to be offset through retiring of Biodiversity Offset Credits. No candidate flora species were identified in the BAM-C.

Habitat constraints are essential habitat features that must be present for the species to occupy or periodically use the Subject Land. Habitat constraints include, but are not limited to, caves, rocky areas, hollow bearing trees, swamps (DPIE, 2020a). Habitat constraints are determined by the Threatened Biodiversity Database Collection (NSW DCCEEW, 2024b).

Table 15. Candidate Fauna Credit Species predicted to occur within the Subject Land.

Scientific Name (italics) and common name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Anthochaera phrygia Regent Honeyeater (Breeding)	No. Habitat Constraints absent. Habitat Constraint: Important Habitat Map.	No	N/A	Very High	No
Chalinolobus dwyeri Large-eared Pied Bat	No. Habitat Constraints absent. The streamlined assessment module requires assessment of threatened species that are at risk of a Serious and Irreversible Impact (SAII). Impacts to foraging habitat for this species is not a SAII however, any impacts on breeding habitat used by this species could be considered potentially serious and irreversible. Potential breeding habitat is PCTs associated with the species within 100m of rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings. No potential breeding habitat occurs within 100m of the Subject Land. In addition,	No	N/A	Very High	No

Scientific Name (italics) and common name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
	there are no records of this species within 5km of the Subject Land. Habitat Constraint (for SAII): Potential breeding habitat is PCTs associated with the species within 100m of rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings.				
Erythrotriorchis radiatus Red Goshawk	No. There is likely only one breeding pair in NSW. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. These habitats were not recorded within the Subject Land although may exist within the broader landscape.	No	N/A	High	No
Lathamus discolour Swift Parrot (Breeding)	No. Habitat Constraints absent. Habitat Constraint: Important Habitat Map.	No	N/A	Moderate	No
Miniopterus australis Little Bent-winged Bat (Breeding)	No. There are no Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding within the Subject Land. Habitat Constraint: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'	No	N/A	Very High	No
Miniopterus orianae oceanensis Large Bent-winged Bat (Breeding)	No. Habitat Constraints absent. There are no Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding within the Subject Land.	No	N/A	Very High	No

Scientific Name (italics) and common name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
	Habitat Constraint: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave				

5.3 Surveys for Confirmed Species Credit Species and their Habitats

5.3.1 Fauna Species Credit Survey

A total of six threatened fauna species were identified within the BAM-C as having the potential to occur within the Subject Land. All species, Regent Honeyeater, Large-eared Pied Bat, Red Goshawk, Swift Parrot, Little Bent-winged Bat and Large Bent-winged Bat were excluded due to the following:

- Species are considered unlikely to occur and no further assessment is required for that species if it is determined that no habitat constraints are present on the entire Subject Land for the threatened species (as per Section 5.2.2 of the BAM; DPIE, 2020a).

5.3.2 Flora Species Credit Survey

No threatened flora species were identified within the BAM-C as having the potential to occur within the Subject Land.

5.4 Species Polygons

No species credit species were present within the Subject Land. Therefore, no species polygons were assigned.

6. PRESCRIBED IMPACTS

Certain projects may have impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/ or loss of habitat. For many of these impacts, the biodiversity values may be difficult to quantify, replace or offset, making avoiding and minimising impacts critical. Prescribed biodiversity impacts require an assessment of the impacts of the project on the habitat of threatened species or ecological communities. This is discussed in **Table 16**.

Table 16. Prescribed and uncertain impacts associated with the proposed development.

Will there be impacts on any of the following?	Yes/No	If Yes, Address all of the assessment questions from section 6 of the BAM
Habitat of threatened entities including: ▪ karst, caves, crevices, cliffs, rocks and other geological features of significance, or ▪ human-made structures, or ▪ non-native vegetation	No	There are no karsts, caves, crevices, cliffs and other features of geological significance within the Subject Land. The newly constructed shed and non-native vegetation present within the Subject Land are not considered to constitute habitat for threatened species.
On areas connecting threatened species habitat, such as movement corridors	No	The building footprint and driveway are situated wholly within very low condition vegetation that provides no habitat or connectivity to the broader landscape. The minor impacts to vegetation within the APZ would not reduce the ability of threatened species to move through the landscape. Much of the native vegetation surrounding the Subject Land is fragmented, with the only large areas of remnant habitat occurring >500m to the east. The vegetation within the Subject Land would provide some stepping stone habitat for mobile species such as birds and bats, and will continue to provide this following development. Groundlayer vegetation is sparse within the Subject Land and therefore unlikely to provide habitat connectivity for small, ground dwelling mammals.

Will there be impacts on any of the following?	Yes/No	If Yes, Address all of the assessment questions from section 6 of the BAM
That affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)	No	The development footprint does not contain any water bodies or hydrological features.
On threatened and protected animals from turbine strikes from a wind farm	No	No wind farms are associated with the proposed development.
On threatened species or fauna that are part of a TEC from vehicle strikes.	No	The Subject Land is within a large lot residential area, bound to the east by a road. The proposal is therefore unlikely to further exacerbate the potential for vehicle strikes to occur.

7. AVOID AND MINIMISE IMPACTS

This section demonstrates the efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposed development in accordance with the BAM, including:

- Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology
- Routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route
- 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 proposed development is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site
- Efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through Concept design, and
- Other site constraints that the proponent has considered in determining the location and design of the proposed development.

The principal means to reduce impacts on biodiversity values within the development site is to avoid and/ or minimise the removal of native vegetation and fauna habitat. In its current form, the development footprint cannot wholly avoid vegetation such as PCT 3433, which is listed as an EEC under the BC Act. However, the building envelope, which necessitates complete clearing, has been strategically located within an area of bare dirt and very low condition vegetation that is not a TEC. This strategic siting of the development has also meant that the required APZ does not encroach into areas of higher condition vegetation that occur west of the Subject Land. Whilst the EEC on site could not been completely avoided in order to establish an APZ, the proponent in consultation with ecology and bushfire will adopt an approach to APZ management that will retain as much high value vegetation as possible, whilst maintaining compliance with APZ vegetation management requirements. Additionally, the proposed development avoids important habitat for threatened fauna such as hollow-bearing trees and watercourses.

8. IMPACT ASSESSMENT

8.1 Direct Impacts

8.1.1 Native Vegetation Clearing

The proposed development will require the complete clearing of 0.15ha of very low condition PCT 3433 and the partial clearing for establishment of an APZ of 0.29ha of moderate condition PCT 3433. This vegetation contains no hollow-bearing trees and is located within a fragmented landscape that makes potential use by threatened species unlikely.

8.2 Prescribed Impacts

There will be no prescribed impacts on threatened entities associated with the proposed development. Consideration of prescribed impacts resulting from the proposed development are discussed in **Section 6.1**.

8.3 Indirect Impacts

Indirect impacts occur when the proposal or activities relating to the construction or operation of the proposal affect native vegetation, threatened ecological communities and threatened species habitat beyond the Subject Land. Indirect impacts may also result from changes to land-use patterns, such as an increase in vehicular access and human activity on native vegetation, threatened ecological communities and threatened species habitat. The indirect impacts relevant to the proposed development are outlined in **Table 17.**

Table 17. Indirect impacts associated with the proposed development.

Potential Indirect Impact	Nature, extent and duration
Inadvertent impacts on adjacent habitat or vegetation	Impacts to adjacent vegetation can be prevented or minimised through appropriate exclusion fencing, implementation of a site-specific Construction Environmental Management Plan detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent vegetation. It is unlikely that the proposed development would impact any nearby groundwater dependent ecosystems as it is not expected to require any deep soil cuts/ excavation nor are any other activities requiring groundwater drawdown required.
Reduced viability of adjacent habitat due to edge effects	Adjacent habitats are currently subject to a degree of edge effects due to prior clearing and existing land use. Subject to appropriate controls, potential spread of weeds can be prevented. Edge effects to adjacent habitats are unlikely to be exacerbated by the proposed development.

Potential Indirect Impact	Nature, extent and duration
Reduced viability of adjacent habitat due to noise, dust or light spill	It is predicted that adjacent habitat outside the Subject Land is likely to experience a minor increase to indirect impacts created by noise, dust and light spill during construction, and negligible increase during occupation. Site lighting will be designed to minimise glare and light spillage into adjoining properties and vegetation and be consistent with the requirements of Australian Standards and Guidelines 4282-2019 Control of the obtrusive effects of outdoor lighting. Additional control measures can be installed to minimise glare and light spillage into adjoining vegetation to minimise potential impacts to fauna species and lighting can be installed in a direction oriented away from sensitive habitats. These indirect impacts will be managed via best practices outlined in an approved Construction Environmental Management Plan. These impacts are not likely to substantially increase due to the proposed future development. Any potential impacts are not considered significant as it is highly unlikely that species abundance would be diminished.
Transport of weeds and pathogens from the site to adjacent vegetation	Weeds occurring within the Subject Land are common with those occurring within adjacent vegetation to be retained. Increased transport of pathogens and weeds is unlikely to occur, however this would be managed by biosecurity measures outlined in the Construction Environmental Management Plan.
Increased risk of starvation, exposure and loss of shade or shelter	It is highly unlikely that any threatened fauna would be exposed to increased risks from starvation, exposure, and loss of shade and shelter beyond the Subject Land as a result of the proposed development. No habitat is to be removed beyond the Subject Land, although disturbances from noise during construction and utilisation may deem such habitats unsuitable for certain species. However, due to the relatively disturbed nature of the vegetation adjacent to the Subject Land, it is unlikely that this impact will be significant.
Loss of breeding habitats	No breeding habitat features (e.g., hollows, nests, caves) were identified immediately adjacent to the Subject Land. It is therefore considered unlikely that the proposed development would result in a loss of breeding habitats.
Trampling of threatened flora species	No impacts to threatened flora as a result of trampling are expected as a result of the proposed development. No threatened flora have been identified within the Subject Land, nor is suitable habitat considered to exist.

Potential Indirect Impact	Nature, extent and duration
Increase in predatory species populations	It is likely that predatory species, such as foxes and cats, already inhabit areas surrounding the Subject Land. The vegetation clearance proposed by the development, and proposed land use, is unlikely to increase predatory species populations.
Increase in pest animal populations	The Subject Land occurs in a peri-urban landscape with impacts including introduced domestic pets such as cats *Felis catus* currently occurring within the locality. Pest animals such as Black Rats *Rattus rattus* are likely to be widely spread within the region and are likely to occur across the locality. The proposed development would not result in an increase in available habitat for these species and is unlikely to lead to an increase in pest animal populations. Suitable waste disposal implemented during and post construction would further reduce the resources available for pest species.
Disturbance to specialist breeding and foraging habitat, e.g., beach nesting for shorebirds.	No specialist breeding and foraging habitat was identified adjacent to the Subject Land. It is therefore not expected that the proposed development will disturb any specialist breeding and foraging habitat.

8.4 Key Threatening Processes

There are currently 39 Key Threatening Processes (KTPs) listed under the BC Act, 21 KTPs under the EPBC Act, and eight listed under the FM Act. Several KTPS are listed under more than one Act. KTPs relevant to the proposed development are discussed in **Table 18**. Mitigation measures to limit the impacts of these KTPs are detailed in **Section 8.6**.

Table 18. Key Threatening Processes relevant to the proposed development.

Key Threatening Process	Status	Potential Impacts from the Proposed Development
Native Vegetation and Terrestrial Habitat Impacts		
Land clearance/ Clearing of native vegetation	EPBC Act BC Act	Clearing of native vegetation would occur as a result of the proposed development. A total of 0.44ha of native vegetation is proposed to be impacted across one PCT (PCT 3433).

8.5 Impacts to Groundwater Dependent Ecosystems (GDE)

Assessment of the potential for the Subject Land to support groundwater dependent ecosystems was carried out using the Commonwealth's Bureau of Meteorology Groundwater Dependent Ecosystems Atlas (BOM, 2024a). Vegetation within the Subject Land has been mapped as a 'Moderate potential GDE - from regional studies'. It is unlikely that the proposed development would impact this potential GDE as it is not expected to require any deep soil cuts/ excavation nor are any other activities requiring groundwater drawdown required.

8.6 Mitigating Residual Impacts – Management Measures and Implementation

This section details the measures to be implemented before, during and post construction to avoid and minimise the impacts of the proposed development (**Table 19**).

Table 19. Recommended measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposed development.

Measure	Action	Outcome	Timing	Responsibility
B1	**Preparation of a Construction Environmental Management Plan (CEMP)**	A CEMP will be required for the construction phase of the project, and will be prepared prior to issue of the Construction Certificate. The CEMP would include, as a minimum, industry-standard measures for the management of soil, surface water, weeds, pathogens and pollutants, as well as site-specific measures, including the procedures outlined below. The proposed mitigation measures would include environmental safeguards for protection of neighbouring properties in accordance with relevant policy documentation and Government guidelines. In order to address the potential impacts of the proposal on biodiversity, the mitigation and management measures outlined within this table would be implemented as part of the CEMP. The CEMP would contain an adaptive management component. Adaptive management strategies would be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and are key to the successful implementation of crucial objectives yet also allow flexibility to changing dynamics and ongoing feedback and results.	Pre-construction phase	Proponent
B2	**Fauna management**	Prior to works, the applicant should commission the services of a qualified and experienced Ecologist (minimum 3 years' experience). The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act. The Ecologist will be commissioned to: ▪ Undertake an extensive pre-clearing survey, delineating habitat trees and trees to be retained/ removed	Pre-construction phase	Proponent

Measure	Action	Outcome	Timing	Responsibility
		▪ Supervise the clearance of trees and shrubs (native and exotic) in order to capture, treat and/ or relocate any displaced fauna.		
B3	**Tree Protection**	Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS 4970:2009) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on construction sites. It is an area isolated from construction disturbance so that the tree remains viable. Ideally, works should be avoided within the TPZ. A Minor Encroachment is less than 10% of the TPZ and is outside the structural root zone (SRZ). A Minor Encroachment is considered acceptable by AS 4970:2009 when it is compensated for elsewhere and contiguous within the TPZ. A Major Encroachment is greater than 10% of the TPZ or inside the SRZ. Major Encroachments generally require root investigations undertaken by non-destructive methods or the use of tree sensitive construction methods. Temporary tree protection fencing should be installed prior to the commencement of works.	Pre-construction phase, construction phase	Proponent
B4	**Erosion and Sedimentation**	Appropriate erosion and sediment control must be erected and maintained at all times prior to, and during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom, 2004).	Pre-construction phase, construction phase	Proponent
B6	**Storage and Stockpiling (Soil and Materials)**	Allocate all storage, stockpile and laydown sites away from any native vegetation that is planned to be retained. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values.	Construction phase	Proponent
B7	**Stormwater management**	Potential impacts relating to stormwater and runoff will be managed during construction and operation phases. The CEMP will guide stormwater management during the construction phase of development.	Construction, Post-construction phase	Proponent

Measure	Action	Outcome	Timing	Responsibility
B8	**Retention of vegetation within the APZ**	Whilst complying with APZ vegetation management requirements, native tree, shrub and groundlayer diversity must be maintained within the APZ (see **Appendix B**). In addition, at least three stem size classes (e.g. 10-19cm, 20-29cm and 30-49cm) must be retained within the APZ. The ecologist and bushfire assessor may work collaboratively to determine the best outcome for biodiversity whilst maintaining a safe vegetative fuel load within the APZ. Wholesale clearing of native vegetation within the APZ will not occur.	Construction, Post-construction phase	Proponent Bushfire consultant Ecologist

9. SERIOUS AND IRREVERSIBLE IMPACTS

9.1 Assessment for Serious and Irreversible Impacts (SAII's) of Biodiversity Values

No threatened species or ecological communities at risk of a SAII were identified within the Subject Land.

10. IMPACT SUMMARY

10.1 Determine an Offset Requirement for Impacts

The preferred approach to offset the residual impacts of the proposal is to purchase and retire the appropriate species credits from registered Biodiversity Stewardship Sites that comply with the trading rules of the NSW BOS in accordance with the 'like for like' report generated by the BAM-C. If such credits are unavailable, credits would be sourced in accordance with the 'variation report' generated by the BAM-C.

A payment to the Biodiversity Conservation Trust (BCT) would be considered as a contingency option if a suitable number and type of biodiversity credits cannot be secured.

10.1.1 Offset Requirement for Ecosystem Credits

The assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

a) ≥15, where the PCT is representative of an EEC or a CEEC
b) ≥17, where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community
c) ≥20, where the PCT does not represent a TEC and is not associated with threatened species habitat.

The purchase and retirement of Ecosystem Credits will be required for impacts to native vegetation within Zone 1: Canopy (VI = 36.1) (**Figure 10**). The purchase and retirement of Biodiversity Offset Credits will not be required for Vegetation Zone 2 (VI = 13) or Exotic lawn.

The offset requirement for impacts to native vegetation from the proposed development was calculated using the BAM-C and is summarised below in **Table 20** (and refer to credit report in **Appendix B**).

Table 20. Ecosystem credits required to offset the proposed development.

PCT	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
PCT 3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Zone 1: Canopy	22	0.29	3
	Zone 2: Degraded	13	0.15	0

10.1.2 Offset Requirement for Species Credits

No candidate species credit species will require offsetting through the retiring of biodiversity offset species credits under the BOS as a result of the proposed development. This is due to all other candidate species credit species being excluded from occurring on the Subject Land based on available habitat constraints or the habitat being substantially degraded such that the species is unlikely to utilise the Subject Land in accordance with section 6.4.1.17 of the BAM.

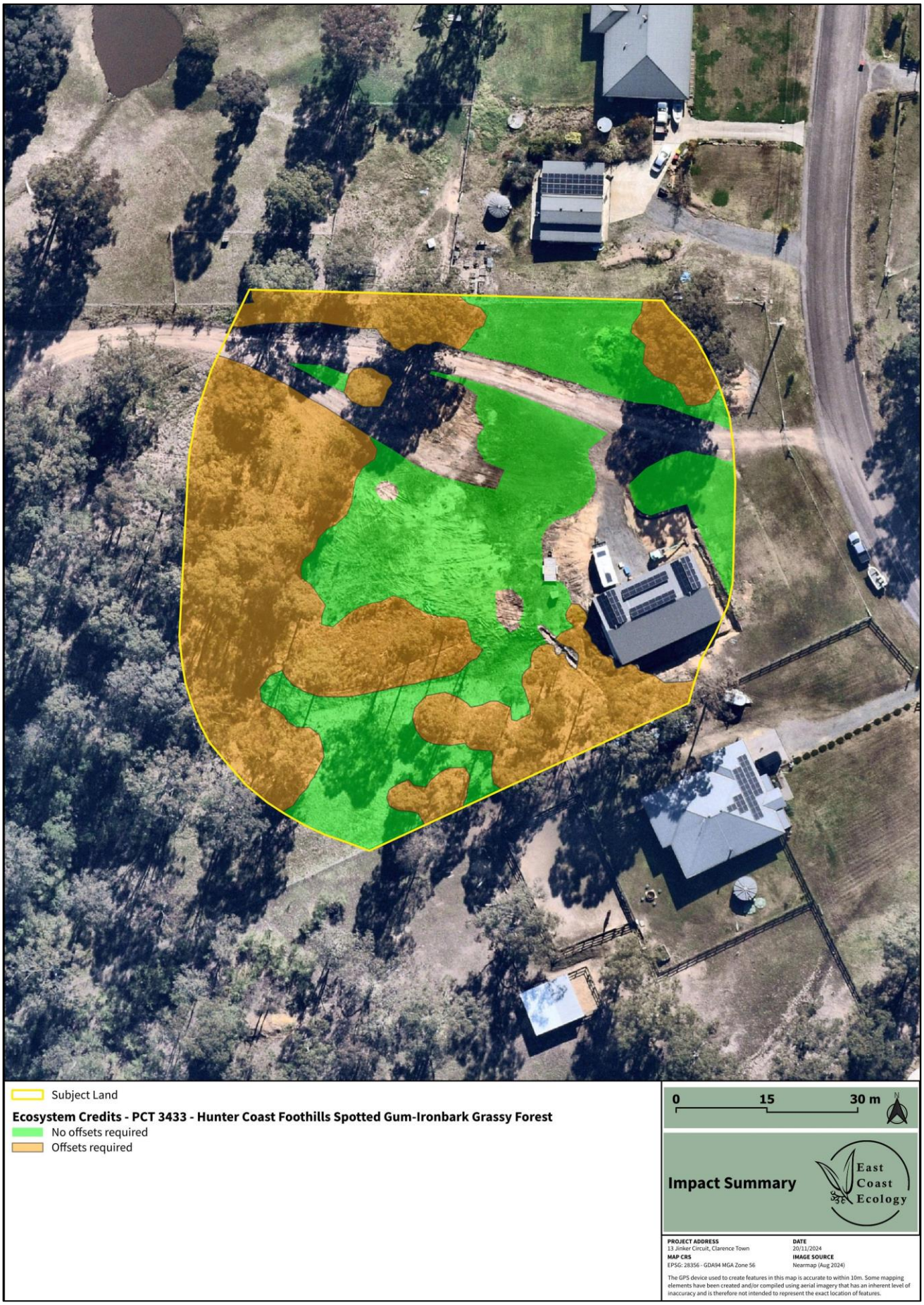

Figure 10. Impacts on native vegetation.

11. LEGISLATION AND POLICY

11.1 *Biodiversity Conservation Act 2016*

The purpose of the *Biodiversity Conservation Act 2016* (NSW) (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.

The BC Act seeks to establish a framework for assessment and offsetting of development impacts as well as investment in biodiversity conservation, specifically:

- The NSW Biodiversity Offsets Scheme, established under Part 6 of the BC Act
- The BAM, established under Section 6.7 of the BC Act. The purpose of the BAM is to assess certain impacts on threatened species and threatened ecological communities (TECs), and their habitats, and the impact on biodiversity values, where required under the BC Act.

This report has been prepared to address all requirements set out under the BAM (DPIE, 2020a).

11.2 *Environment Protection and Biodiversity Conservation Act 1999*

Under the EPBC Act, a proponent must not take an action if that action will have, or is likely to have, a significant impact on matters protected under the EPBC Act, referred to as Matters of National Environmental Significance (MNES). The EPBC Act identifies eight MNES:

1. World Heritage properties
2. National Heritage places
3. Wetlands of international importance (those listed under the Ramsar Convention)
4. Listed threatened species and communities
5. Migratory species listed under international agreements
6. Great Barrier Reef Marine Park
7. Commonwealth marine areas
8. Nuclear actions

The Protected Matters Search Tool (**Appendix C**) identified the following as potentially occurring within the Subject Land (or within the area):

- 5 Threatened Ecological Communities
- 52 threatened species
- 11 Migratory species

MNES relevant to the proposed development are summarised in **Table 21**.

No EPBC Act listed threatened or migratory species were identified during the site assessment nor are likely to be impacted by the proposed development. Therefore, a referral to the Commonwealth Minister for the Environment and Water will not be required.

Table 21. EPBC Act Assessment of Significant Impact.

MNES	Proposed Development Specifics	Impact
Threatened species	No EPBC Act listed threatened species have the potential to be impacted by the proposed development.	No significant impact likely.
Threatened ecological communities	The PCT within the Subject Land is not associated with an EPBC Act listed TEC.	No significant impact likely.
Migratory species	Based on the results of the Protected Matters Search Tool (**Appendix D**), 11 listed migratory species may occur in the broader locality. Migratory species are unlikely to occur within the Subject Land given the location in the landscape and historical land use.	Some EPBC Act listed threatened and migratory wader birds including the Curlew Sandpiper, Great Knot, Red Knot, Eastern Curlew, Greater Sand Plover, Lesser Sand Plover, Bar-tailed Godwit and Black-tailed Godwit may occur in the proximal riparian habitats associated with the Williams River. The habitats in the Subject Land are not important habitats for migratory birds. The proposed development would not substantially modify, destroy or isolate an area of important habitat for the migratory species, and it would not seriously disrupt the lifecycle of an ecologically significant proportion of a population of migratory birds.
National Heritage Places	The Subject Land does not contain any National Heritage Places.	No significant impact likely.
Wetlands of international importance (Ramsar sites)	The Subject Land does not contain any wetlands of international or national importance.	No significant impact likely.

11.3 *Biosecurity Act 2015*

The *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by an activity as a matter of biosecurity. As defined in Part 3, section 23 of the Act, any non-conformance by an individual is defined as guilty of an offence.

One priority weed for the Hunter region (DPI, 2024c) was identified within the Subject Land:

- *Senecio madagascariensis* (Fireweed).

If any priority weeds are encountered during construction they must be managed in accordance with the *Biosecurity Act 2015* (NSW).

11.4 State Environmental Planning Policy (Biodiversity and Conservation) 2020 – Chapter 3 Koala Habitat Protection 2020

This Chapter aims 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. This Chapter applies to land in the following land use zones, or an equivalent land use zone, in a local government area specified in Schedule 2, but not if the local government area is marked with an * in that Schedule—

(a) Zone RU1 Primary Production

(b) Zone RU2 Rural Landscape, and

(c) Zone RU3 Forestry.

As the Subject Land is zoned R5 Large Lot Residential, this chapter does not apply to the proposed development.

11.5 State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 4 Koala Habitat Protection 2021

SEPP applies to LGAs that are listed in Schedule 2 'Local government areas' of the SEPP. Dungog Shire LGA is included in Schedule 2, and forms part of the Central Coast Koala Management Area. As such, the development control provisions of the SEPP apply if the land:

(a) has an area of at least 1 hectare (including adjoining land within the same ownership), and

(b) does not have an approved koala plan of management applying to the land.

As the property has an area of at least 1ha, this chapter applies to the proposed development. There are several records of Koalas within 500m of the Subject Land from the last decade, including diseased individuals, although none indicate breeding. No signs of Koalas were observed within the Subject Land during the site assessment. The vegetation within the Subject Land contains feed trees for Koalas (*Eucalyptus fibrosa* and *E. tereticornis*) and although some smaller trees may require removal to comply with bushfire protection, feed trees with a DBH up to 80cm will be retained. Given no nearby records of breeding Koalas and the lack of Koala signs within the Subject Land, it is unlikely that it would constitute core Koala habitat. Regardless, the siting of the proposed building and driveway in bare dirt and degraded vegetation

plus the retention of Koala feed trees in the APZ, suggests that Koala movement as well as foraging and sheltering resources will be maintained with the proposed development.

11.6 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021: Chapter 2 – Coastal Management applies to land within the coastal zone. The coastal zone means the area of land comprised of the following coastal management areas:

- The coastal wetlands and littoral rainforests area
- The coastal vulnerability area
- The coastal environment area, or
- The coastal use area.

As the Subject Land does not occur within the Coastal Zone, this SEPP does not apply.

12. REFERENCES

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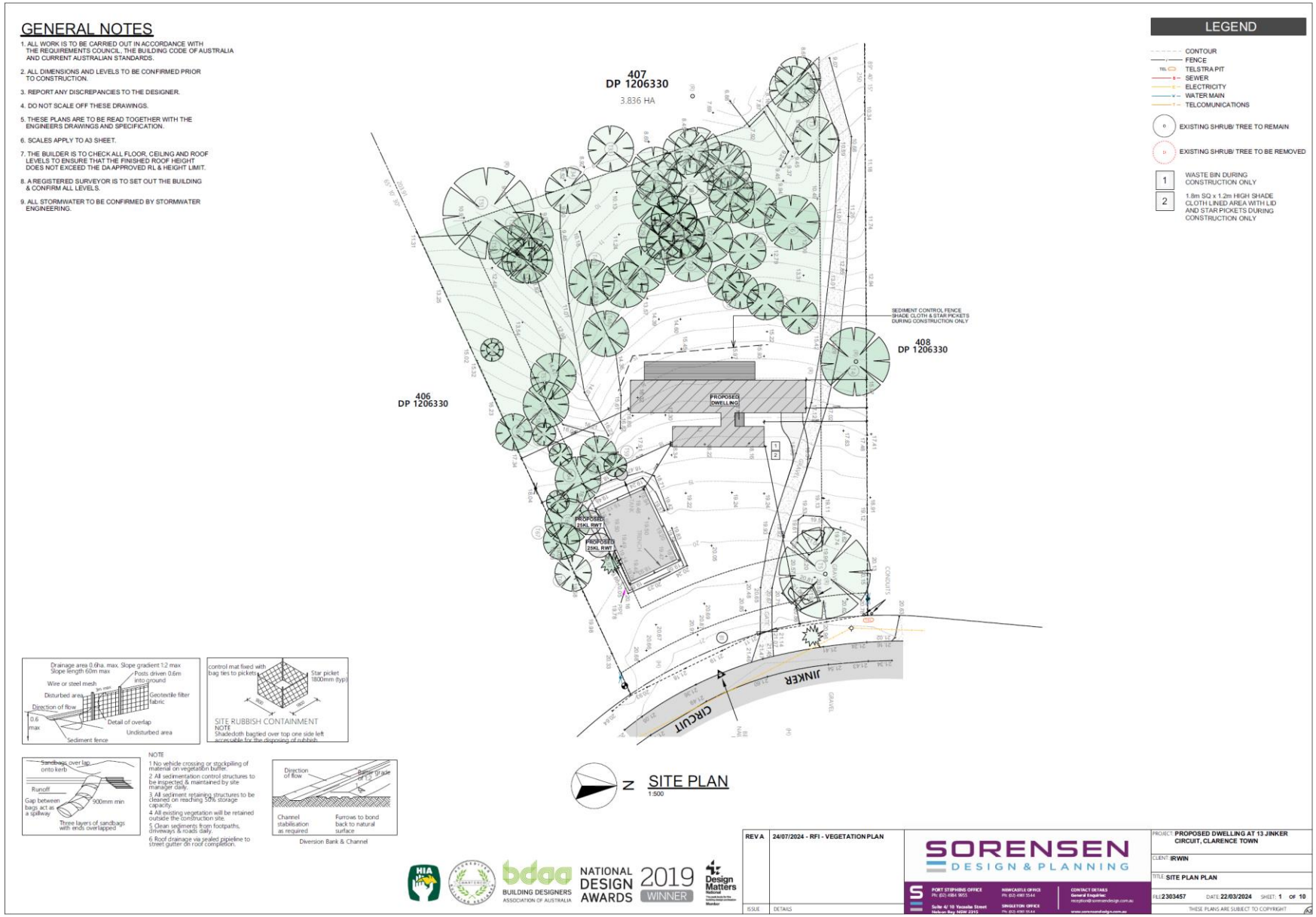
13. APPENDICES

Appendix A. Site plan.

Appendix B. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

Appendix C. BAM-C Generated Biodiversity Credit Report.

Appendix A. Site plan.



Appendix B. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

BAM Site – Field Survey Form					
Date:	5.11.24	**Plot ID:**	1	**Photo #:**	-
Zone:	56	**Plot Dimensions:**	20m x 50m	**Easting:**	386888.66
Datum:	GDA94	**Middle bearing from 0m:**	150	**Northing:**	6393861.15
PCT:	PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest				

Growth Form	Scientific Name	Cover	Abundance
Fern (EG)	*Cheilanthes sieberi*	0.1	15
Forb (FG)	*Pratia purpurascens*	1	40
Grass & grasslike (GG)	*Aristida vagans*	0.5	20
Grass & grasslike (GG)	*Dichelachne crinita*	0.1	6
Grass & grasslike (GG)	*Echinopogon ovatus*	2	50
Grass & grasslike (GG)	*Entolasia stricta*	0.1	5
Grass & grasslike (GG)	*Rytidosperma tenuius*	0.1	1
Grass & grasslike (GG)	*Themeda triandra*	15	100
Other (OG)	*Desmodium varians*	0.1	2
Other (OG)	*Glycine clandestina*	0.1	3
Other (OG)	*Polymeria calycina*	0.1	1
Shrub (SG)	*Bursaria spinosa*	0.1	2
Shrub (SG)	*Leptospermum trinervium*	1	1
Tree (TG)	*Eucalyptus fibrosa*	60	12
Tree (TG)	*Eucalyptus tereticornis*	5	2
Exotic	*Gamochaeta purpurea*	0.1	1
Exotic	*Hypochaeris radicata*	0.1	5
Exotic	*Lysimachia arvensis*	0.1	1

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	Absent	0
50-79cm	Absent	0
30-49cm	Present	0
20-29cm	Present	0
10-19cm	Present	0
5-9cm	Present	0
<5cm	Present	0

Length of Logs (m)	0

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	85
2 (15m)	40
3 (25m)	75
4 (35m)	90
5 (45m)	90
Average	76

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	2	65
Shrub	2	1.1
Grass	6	17.8
Forb	1	1
Fern	1	0.1
Other	3	0.3
High Threat Exotics	0	0

BAM Site – Field Survey Form					
Date:	5.11.24	**Plot ID:**	2	**Photo #:**	0
Zone:	56	**Plot Dimensions:**	20m x 50m	**Easting:**	386914.11
Datum:	GDA94	**Middle bearing from 0m:**	70	**Northing:**	6393842.21
PCT:	PCT 3433: Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest				

Growth Form	Scientific Name	Cover	Abundance
Forb (FG)	*Chrysocephalum apiculatum*	0.2	1
Forb (FG)	*Comesperma sphaerocarpum*	0.1	3
Forb (FG)	*Gonocarpus tetragynus*	0.2	10
Forb (FG)	*Hypericum gramineum*	0.1	10
Forb (FG)	*Lagenophora spp.*	0.1	1
Forb (FG)	*Poranthera microphylla*	1	50
Forb (FG)	*Pratia purpurascens*	1	50
Forb (FG)	*Stylidium graminifolium*	0.1	8
Forb (FG)	*Tricoryne elatior*	0.1	2
Forb (FG)	*Wahlenbergia gracilis*	0.1	5
Grass & grasslike (GG)	*Aristida vagans*	0.2	15
Grass & grasslike (GG)	*Dichelachne crinita*	0.2	10
Grass & grasslike (GG)	*Echinopogon ovatus*	0.2	10
Grass & grasslike (GG)	*Entolasia stricta*	0.1	5
Grass & grasslike (GG)	*Lachnagrostis filiformis*	0.1	10
Grass & grasslike (GG)	*Lomandra filiformis*	0.1	6
Grass & grasslike (GG)	*Microlaena stipoides*	10	300
Grass & grasslike (GG)	*Schoenus apogon*	5	100
Grass & grasslike (GG)	*Themeda triandra*	0.1	4
HTE	*Senecio madagascariensis*	0.1	4
Shrub (SG)	*Acacia ulicifolia*	0.1	1
Shrub (SG)	*Daviesia ulicifolia*	0.1	1
Shrub (SG)	*Leptospermum trinervium*	0.1	6
Exotic	*Briza major*	0.1	5
Exotic	*Facelis retusa*	0.1	5
Exotic	*Gamochaeta purpurea*	0.1	3
Exotic	*Gamochaeta calviceps*	0.1	5
Exotic	*Hypochaeris radicata*	0.2	10
Exotic	*Oxalis sp.*	0.1	3

	# Tree Stems Count	# Hollow Bearing Trees
80+cm	0	0
50-79cm	0	0
30-49cm	Absent	0
20-29cm	Absent	0
10-19cm	Absent	0
5-9cm	Absent	0
<5cm	Absent	0

Length of Logs (m)	0

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	75
2 (15m)	20
3 (25m)	45
4 (35m)	50
5 (45m)	20
Average	42

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	0	0
Shrub	3	0.3
Grass	9	16
Forb	10	3
Fern	0	0
Other	0	0
High Threat Exotics	1	0.1

BAM Site – Field Survey Form					
Date:	5.11.24	**Plot ID:**	3	**Photo #:**	0
Zone:	56	**Plot Dimensions:**	20m x 50m	**Easting:**	386991.99
Datum:	GDA94	**Middle bearing from 0m:**	330	**Northing:**	6393828.82
PCT:	Exotic lawn				

Growth Form	Scientific Name	Cover	Abundance
Forb (FG)	*Plantago debilis*	0.1	10
Forb (FG)	*Pratia purpurascens*	0.1	2
Forb (FG)	*Wahlenbergia gracilis*	0.1	5
Grass & grasslike (GG)	*Cynodon dactylon*	10	100
Grass & grasslike (GG)	*Dichelachne crinita*	0.2	10
Grass & grasslike (GG)	*Lachnagrostis filiformis*	0.2	10
HTE	*Axonopus fissifolius*	10	100
HTE	*Paspalum dilatatum*	0.1	5
HTE	*Stenotaphrum secundatum*	80	500
Exotic	*Briza minor*	0.2	20
Exotic	*Gamochaeta americana*	0.5	100
Exotic	*Hypochaeris radicata*	0.2	20
Exotic	*Juncus cognatus*	1	50
Exotic	*Lotus angustissimus*	0.2	100
Exotic	*Plantago lanceolata*	0.2	10
Exotic	*Sisyrinchium micranthum*	0.2	50
Exotic	*Solvia sessilis*	0.2	50
Exotic	*Trifolium repens*	2	100

	# Tree Stems Count	# Hollow Bearing Trees
80+cm	1	0
50-79cm	0	0
30-49cm	Absent	0
20-29cm	Absent	0
10-19cm	Absent	0
5-9cm	Absent	0
<5cm	Absent	0

Length of Logs (m)	0

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	15
2 (15m)	10
3 (25m)	40
4 (35m)	5
5 (45m)	30
Average	20

Growth Form	Composition Data	Structure Data

	(Count of Native Cover)	(Sum of Cover)
Tree	0	0
Shrub	0	0
Grass	3	10.4
Forb	3	0.3
Fern	0	0
Other	0	0
High Threat Exotics	3	90.1

Appendix C. BAM-C Generated Biodiversity Credit Report.

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id 00052850/BAAS21006/24/00052851	Proposal Name 13 Jinker Cct Clarence Town	BAM data last updated * 28/10/2024
Assessor Name Jack Tatler	Assessor Number BAAS21006	BAM Data version * Current classification (live - default) (80)
Proponent Names Mitch Iriwn	Report Created 29/11/2024	BAM Case Status Finalised
Assessment Revision 0	BOS entry trigger BOS Threshold: Area clearing threshold	Assessment Type Part 4 Developments (Small Area)
Date Finalised 29/11/2024	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	

Potential Serious and Irreversible Impacts

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

Species
Nil

Additional Information for Approval

BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo
Ixobrychus flavicollis / Black Bittern

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
3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	0.4	0	3	3

BAM Biodiversity Credit Report (Like for like)

3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3433_Canopy	No	3	Upper Hunter, Ellerston, Hunter, Karuah Manning, Mummel Escarpment and Tomalla. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3433_Degraded	No	0	Upper Hunter, Ellerston, Hunter, Karuah Manning, Mummel Escarpment and Tomalla. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

BAM Biodiversity Credit Report (Like for like)

Credit Retirement Options

Like-for-like credit retirement options

www.ececology.com.au

Greater Sydney | Canberra | South Coast | Central Coast