Biodiversity Development Assessment Report

32 Bellara Avenue, North Narrabeen

Prepared by: Alex Graham (BAAS19040)
Prepared for: Somers Isles Pty Ltd
Final Report: January 2025

East Coast Ecology

DOCUMENT CONTROL

Project Title: Biodiversity Development Assessment Report –
32 Bellara Avenue, North Narrabeen NSW

Project Manager: Alex Graham *BSc (Biology), Grad Dip. (Bushfire Protection)*
Principal Ecologist & Accredited Assessor BAAS19040

Version	Author	Reviewer	Date
Draft v1.0	Alex Graham (BAAS19040)	Jack Tatler (BAAS21006)	09.01.2025
Final v1.0	Alex Graham (BAAS19040)	-	14.01.2025

EXECUTIVE SUMMARY

East Coast Ecology Pty Ltd was commissioned by Somers Isles Pty Ltd to prepare a Biodiversity Development Assessment Report (BDAR) to accompany a Development Application for a proposed development at 32 Bellara Avenue, North Narrabeen NSW 2101 (Lot 1/-/DP1271591).

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 involve clearing native vegetation within land mapped on the Biodiversity Values map. This assessment has been completed in accordance with Appendix K of the Biodiversity Assessment Method (BAM).

The scope of works is expected to impact one Plant Community Type (PCT), PCT 3592: Sydney Coastal Enriched Sandstone Forest. Field investigation for the proposed development, carried out in accordance with the BAM, determined that 0.03ha of PCT 3592 has the potential to be impacted. Offsets are required for residual impacts to Vegetation Zone 1 (Management Zone 1). The ecosystem credits that are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development are presented in **Table E1**.

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

PCT	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
PCT 3592: Sydney Coastal Enriched Sandstone Forest	Zone 1: Moderate_ Condition	-38.2	0.03	1

One threatened species, *Lathamus discolor* (Swift Parrot), has been assumed present for the proposed development. The species credits that are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development are presented in **Table E2**.

Table E2. Impacts that require an offset – species credits.

Species	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
Lathamus discolor/ Swift Parrot	Zone 1: Moderate_ Condition	-38.2	0.01	1

Due to a lack of available habitat constraints (NSW DCCEEW, 2024b), or due to the habitat being substantially degraded per section 5.2.2 and section 6.4.1.17 of the BAM respectively, no other species credits are required to be offset as a result of the proposed development.

Consideration has been given to avoiding and minimising impacts to biodiversity where possible in the preliminary design. In its current form, the development footprint has not fully avoided vegetation such as PCT 3592, however, the proponent has selected a property that has been historically cleared of groundcover and midstorey and is surrounded on all sides by residential development, making its use by threatened

species unlikely. This area has been historically, and continues to be, exposed to varying disturbances, including weed invasion and fragmentation. Vegetation within the Subject Land is in a poor-moderate condition with a vegetation integrity score of 38.2.

Mitigation measures to address direct and indirect impacts are provided in this assessment to further minimise potential impacts of the proposed development on local biodiversity values. These measures are to be implemented as part of any Construction Environmental Management Plan (CEMP) produced for the site, including tree protection fencing and assigning a Project Ecologist to undertake a pre-clearing survey and to supervise the removal or trimming of any habitat trees and tree replacement. 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 Environment Minister is not required

TABLE OF CONTENTS

TABLES

FIGURES

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 development
Development site	The broader area in which the Subject Land is located
DPE	New South Wales Department of Planning and Environment
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
KFH	Key Fish Habitat

Acronym/ Term	Definition
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
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 Communities
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: 14th January 2025

BAM Assessor Accreditation no.: BAAS19040

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
Alex Graham	BAAS19040	Principal Ecologist	Report preparation, BAM-C data entry and analysis, figure preparation, BAM plot surveys	*BSc (Biology), Grad. Dip. (Bushfire Protection)*
Jack Tatler	BAAS21006	Principal Ecologist	Document review	*BSc (Zoology & Entomology), Hons (Zoology), PhD (Ecology)*

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: 14th January 2025

BAM Assessor Accreditation no.: BAAS19040

1. INTRODUCTION

1.1 Proposed Development

1.1.1 Development Overview

East Coast Ecology Pty Ltd (ECE) was commissioned by Somers Isles Pty Ltd (the proponent) to prepare a Biodiversity Development Assessment Report (BDAR) to accompany a Development Application (DA) for a proposed development at 32 Bellara Avenue, North Narrabeen NSW 2101 (Lot 1/-/DP1271591).

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, Northen Beaches Council.

1.1.2 Proposed Development and the Subject Land

The proposed development will involve a new dwelling at 32 Bellara Avenue, North Narrabeen. All works associated with the proposed development are hereafter referred to as the 'Subject Land'. The Subject Land encompasses all areas to be impacted to facilitate the creation of a new dwelling and driveway which encompasses an area of approximately 0.03ha. The Subject Land excludes areas that were previously approved under a previous application (Class 1 Proceedings No. 2018/00391777) (**Figure 1**).

1.1.3 Location

The Subject Land is located within the suburb of North Narrabeen in the Northen Beaches Local Government Area and forms part of the Metropolitan Local Aboriginal Land Council. The Subject Land is currently occupied by a native canopy over a partly underscrubbed midstorey. The Subject Land is situated within an urban landscape, with residential landholdings to the north, south, east and west. The Subject Land is located on land zoned as Zone C4 – Environmental Living under the Pittwater Local Environmental Plan 2014.

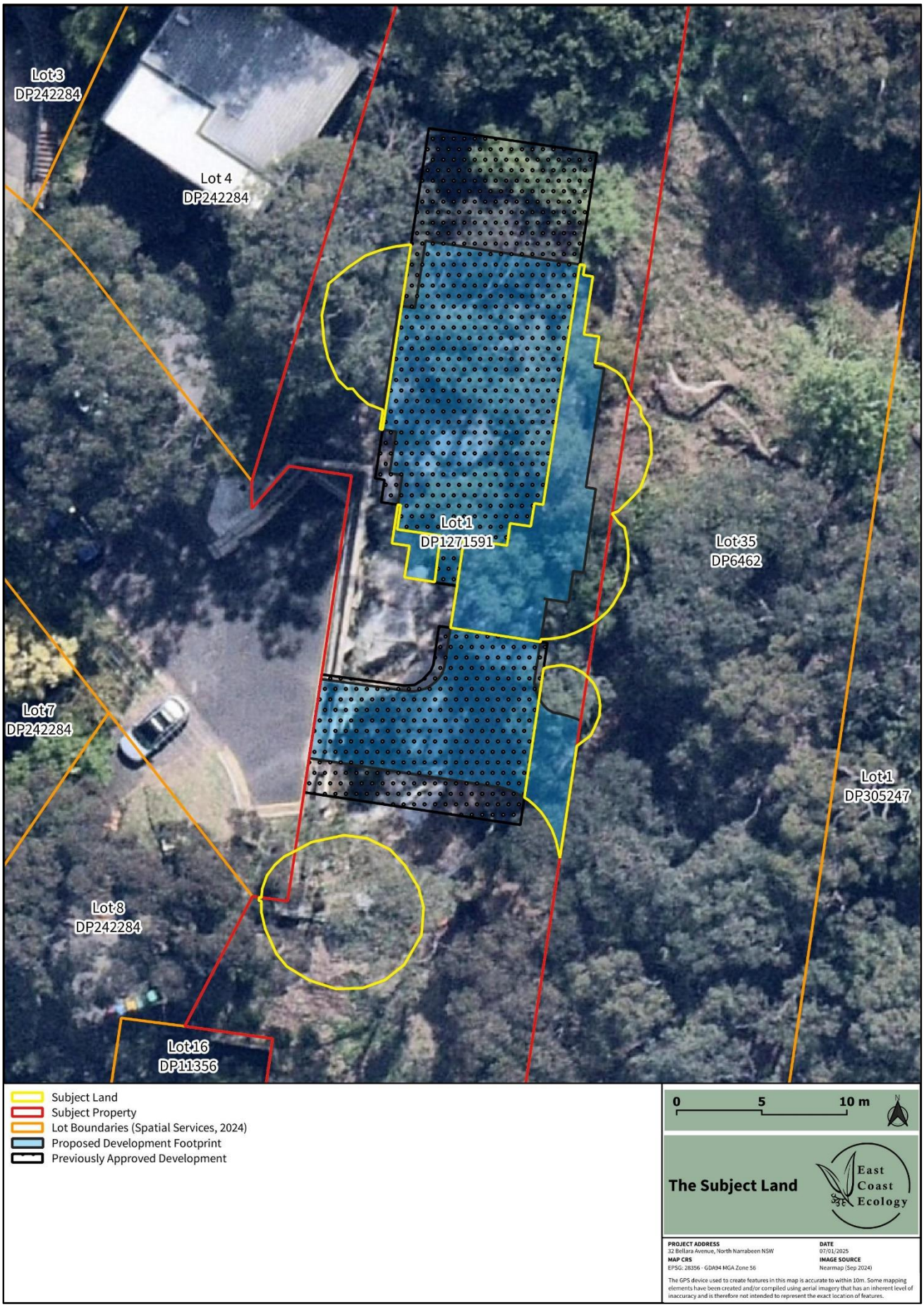


Figure 1. The Subject Land.

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 (DPE, 2020b)
    - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC, 2004b)
- Project Specific Documentation:
    - Site Plans and Site Analysis (Inlet Design Studio, 2024)
    - Arboricultural Impact Assessment Report (Willis. J, 2024)

1.3 Biodiversity Offsets Scheme Entry

This BDAR is required as the proposed works will impact upon land that is mapped as having Biodiversity Values on the Biodiversity Values Map (**Figure 2**). 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. 0.03ha) 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 (DPE, 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 confirmed using the State Vegetation Type Map (NSW DCCEEW, 2024f), as well as aerial imagery and online databases. 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. One plot (20m x 50m) in total was 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' (DPE, 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, 2024f).

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 8th November 2024 within the Subject Land. Weather conditions taken from the nearest weather station (Terrey Hills AWS [station 066059]) 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. Rainfall in the month prior to the survey provided good conditions for the flowering and/ or emergence of the flora species. Such rainfall also allowed for optimal

conditions for the emergence of groundcovers within the Subject Land, which ensured reliable species diversity was observed during the site visit.

Table 2. Weather conditions taken from the nearest weather stations (Station number 066059) in the lead up and during the field survey (BOM, 2024b).

Timing/activities	Date	Day	Temperature		Rainfall (mm)
			Min	Max	
Lead up to the survey	01/11/2024	Friday	14.5	21.1	9.0
	02/11/2024	Saturday	13.5	19.2	8.4
	03/11/2024	Sunday	14.1	28.7	7.6
	04/11/2024	Monday	17.0	19.6	0
	05/11/2024	Tuesday	16.6	21.0	0.6
	06/11/2024	Wednesday	16.8	27.5	0
	07/11/2024	Thursday	19.5	32.4	0
Site Assessment & Habitat Survey	08/11/2024	Friday	14.6	29.0	4.4

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 'Pittwater' Interim Biogeographic Regionalisation for Australia (IBRA) Subregion, which is part of the 'Sydney Basin' IBRA Bioregion (**Figure 2**).

3.2.2 Rivers, streams, estuaries and wetlands

No mapped watercourse or their riparian buffers occur within the Subject Land (**Figure 3**). Narrabeen Lagoon occurs >750m east of the Subject Land. Several 1st, 2nd and 3rd order watercourses are located within the 1,500m buffer.

3.2.3 Habitat Connectivity

Terrestrial habitat connectivity to the Subject Land is provided by isolated patches of native vegetation dispersed amongst residential lots and eventually links up with Ku-ring-gai Chase National Park to the west. Much of the land within the 1,500m buffer is occupied by residential lots and therefore, provides limited habitat connectivity (**Figure 3**).

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

The Subject Land contained some exposed sandstone (i.e. rocks). No other areas of geological significance (i.e. crevices, caves, cliffs or karsts) were present within the Subject Land. The bushland to the south of the Subject Land may contain minor rocky habitat but it is unlikely to contain caves or cliffs. The Subject Land was not mapped as occurring on acid sulfate soils, although areas within the 1,500m buffer have been mapped as high probability of occurrence.

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 across the 'Belrose Coastal Slopes' Mitchell Landscape Ecosystem (**Figure 2**).

3.2.6.1 Belrose Coastal Slopes Mitchell Landscape

Benched hill slopes and deep valleys of the coastal fall on horizontal Triassic quartz sandstone, lithic sandstone and shales. High proportion of rock outcrop with discontinuous cliffs to 5m high. General elevation 0 to 180m, local relief 80m. Shallow uniform or gradational sands and earthy sands on ridges, deeper sands, loamy sands and organic sands on wet benches and in hanging swamps, grey or yellow texture-contrast soils on shale benches. Accumulations of deeper sand and occasional podsols in depositional sites and along streams. Low woodland of Scribbly Gum (*Eucalyptyus haeomostoma*), Red Bloodwood (*Corymbia gummifera*), Yellow-top Ash (*Eucalyptus leuhmanniana*), and Narrow-leaved Apple (*Angophora bakeri*) in deeper soils on ridges. Scrub and heath of She-oak (*Allocasuarina distyla*) and Heath Banksia (*Banksia ericifolia*), with other *Hakea*, *Grevillea*, and *Baeckea* sp., on ridges and upper benches. Wet heath and swamps with *Gahnia* sp. and Swamp Banksia (*Banksia robur*) in hanging valleys. Coastal forest in sheltered areas on better quality shale soil with; Sydney Blue Gum (*Eucalyptus saligna*), Blackbutt (*Eucalyptus pilularis*), Turpentine (*Syncarpia glomulifera*), Grey Ironbark (*Eucalyptus paniculata*), Spotted Gum (*Corymbia maculata*), Southern Mahogany (*Eucalyptus botryoides*), Cabbage-tree Palm (*Livistona australis*) and Burrawang (*Macrozamia* sp.). Coastal headlands with scrub of *Allocasuarina distyla*, Coast Rosemary (*Westringea fruticosa*), and Dwarf Kangaroo Grass (*Themeda triandra*).

3.2.7 Topography, Geology and Soils

The Subject Land is mapped as occurring on the “Warriewood” and “Watagan” soil landscapes (NSW DCCEEW, 2024e), which is characterised by level to gently undulating swales, depressions and infilled lagoons on Quaternary sands and rolling to very steep hills on fine-grained Narrabeen Group sediments. The Subject Land drops steeply from about 36m above sea level (asl) in the northern extent to 26m asl in the southern extent (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 (DPE, 2020a). Native vegetation covers approximately 94.54ha within the 1,500m buffer area (total area = 729.85ha) (**Figure 3**) and was assigned to the >10-30% native vegetation cover class. Areas not assessed as native vegetation included waterbodies, built areas, agricultural areas, fairways 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)	729.85
Total Area of Native Vegetation Cover (ha)	94.54
Percentage of Native Vegetation Cover (%)	13%
Class (0-10, >10-30, >30-70 or >70%)	>10-30%

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 State Vegetation Type Map

The State Vegetation Type Map (NSW DCCEEW, 2024f) indicated the presence of one PCT within the Subject Land:

- PCT 3595: Sydney Coastal Sandstone Gully Forest.

Plant Community Type 3595 has no association with any BC Act or EPBC Act listed threatened ecological community.

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 4**. Detailed description of the PCT is provided in the following subsections.

Table 4. PCT identified within the Subject Land.

PCT ID	PCT Scientific Name	Extent within Subject Land
3592	Sydney Coastal Enriched Sandstone Forest	0.03ha
	Total Area	**0.03ha**

Typical of a residential property in North Narrabeen, some areas are devoid of native vegetation (Error! R eference source not found. & **Plate 1**). These areas are not consistent with the definition of a PCT and are not required to be assessed for ecosystem credits, per Section 9.3 of the BAM (DPE, 2020a).

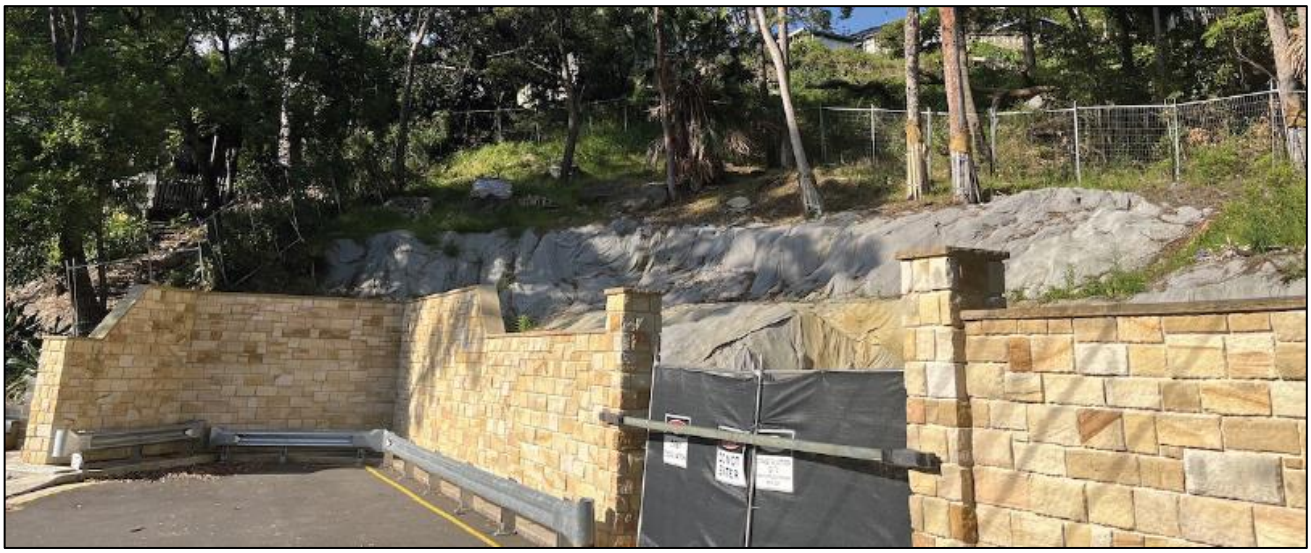


Plate 1. Example of area devoid of native vegetation.

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 (NSW DCCEEW, 2024c). The following selection criteria were used in the PCT Filter Tool to develop a PCT shortlist:

- IBRA Bioregion: Sydney Basin
- IBRA Subregion: Pittwater
- LGA: Northern Beaches
- Vegetation Formation: Dry Sclerophyll Forests (Shrubby sub-formation)
- Dominant Species: *Corymbia gummifera, Eucalyptus piperita, Angophora costata, Allocasuarina torulosa, Livistona australis, Ceratopetalum apetalum, Pittosporum undulatum, Glochidion ferdinandi.*

This process delivered a selection of three PCTs that that match the listed 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** and **Table 6**.

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

Plant Community Type (PCT)	Subject Land with suitable geology, landscape position and characteristic species.
PCT 3592: Sydney Coastal Enriched Sandstone Forest	Yes. This PCT is primarily distributed at elevations of less than 200 metres asl downslope of shale soils on the north shore of Sydney and Sutherland and on the Narrabeen sandstone escarpment along the Pittwater Peninsular. It grades into a heathy forest PCT 3595 on rocky Hawkesbury Sandstone gullies. Both PCT 3592 and PCT 3595 contain the same floristic attributes, therefore the determination of 'best-fit' was based on the elevation.
PCT 3595: Sydney Coastal Sandstone Gully Forest	No. This PCT occurs "at elevations of 40-410 metres asl, and in higher coastal rainfall zones of over 1000 mm mean annual rainfall". The Subject Land occurs at a lower elevation of 26 - 36m asl.
PCT 3621: Sydney Hinterland Turpentine-Apple Gully Forest	No. This PCT is described as "mainly occupying steep sheltered Hawkesbury Sandstone slopes and gullies on the Sydney hinterland plateaus…. more common at higher elevations of above 350 metres asl and is generally found in more incised and sheltered topographic positions".

Of the shortlisted PCTs, only one occurred within the correct distribution, landscape position and geologies as well as exhibiting the dominant canopy species found within the Subject Land.

Table 6. Characteristics of the selected PCT.

Candidate PCT	Characteristics (NSW DCCEEW, 2024c)
PCT 3592: Sydney Coastal Enriched Sandstone Forest	**Landscape position/geology**
	A tall to very tall shrubby sclerophyll open forest found on slightly enriched Hawkesbury Sandstone soils on sheltered slopes and occasionally crests on the Sydney coastal sandstone plateaus. This PCT is primarily distributed at elevations of less than 200 metres asl downslope of shale soils on the north shore of Sydney and Sutherland and on the Narrabeen sandstone escarpment along the Pittwater Peninsular. It grades into a heathy forest PCT 3595 on rocky Hawkesbury Sandstone gullies or moist shrub and fern forest PCT 3176 with increased shelter in deeper gullies.
	Characteristic canopy
	The tree canopy very frequently includes a high cover of *Angophora costata* commonly in combination with *Corymbia gummifera* and *Eucalyptus piperita*, with *Eucalyptus pilularis* occasionally locally abundant.
	Characteristic mid-storey/ shrub
	A taller mid-stratum is characterised by very frequent however sparse cover of *Pittosporum undulatum* and *Allocasuarina littoralis* or *Allocasuarina torulosa*. A mid-dense lower shrub layer is comprised of dry sclerophyll species that commonly include *Leptospermum trinervium*, *Persoonia levis*, *Lomatia silaifolia*, *Acacia ulicifolia* and *Dodonaea triquetra*, with *Banksia serrata* and *Banksia spinulosa* recorded occasionally.
	Characteristic groundcovers
	The ground layer is typically a sparse cover of graminoids that almost always includes *Dianella caerulea* and *Lomandra longifolia* with the grass *Entolasia stricta* and fern *Pteridium esculentum*, with frequent occurrences of climbers such as *Smilax australis*.

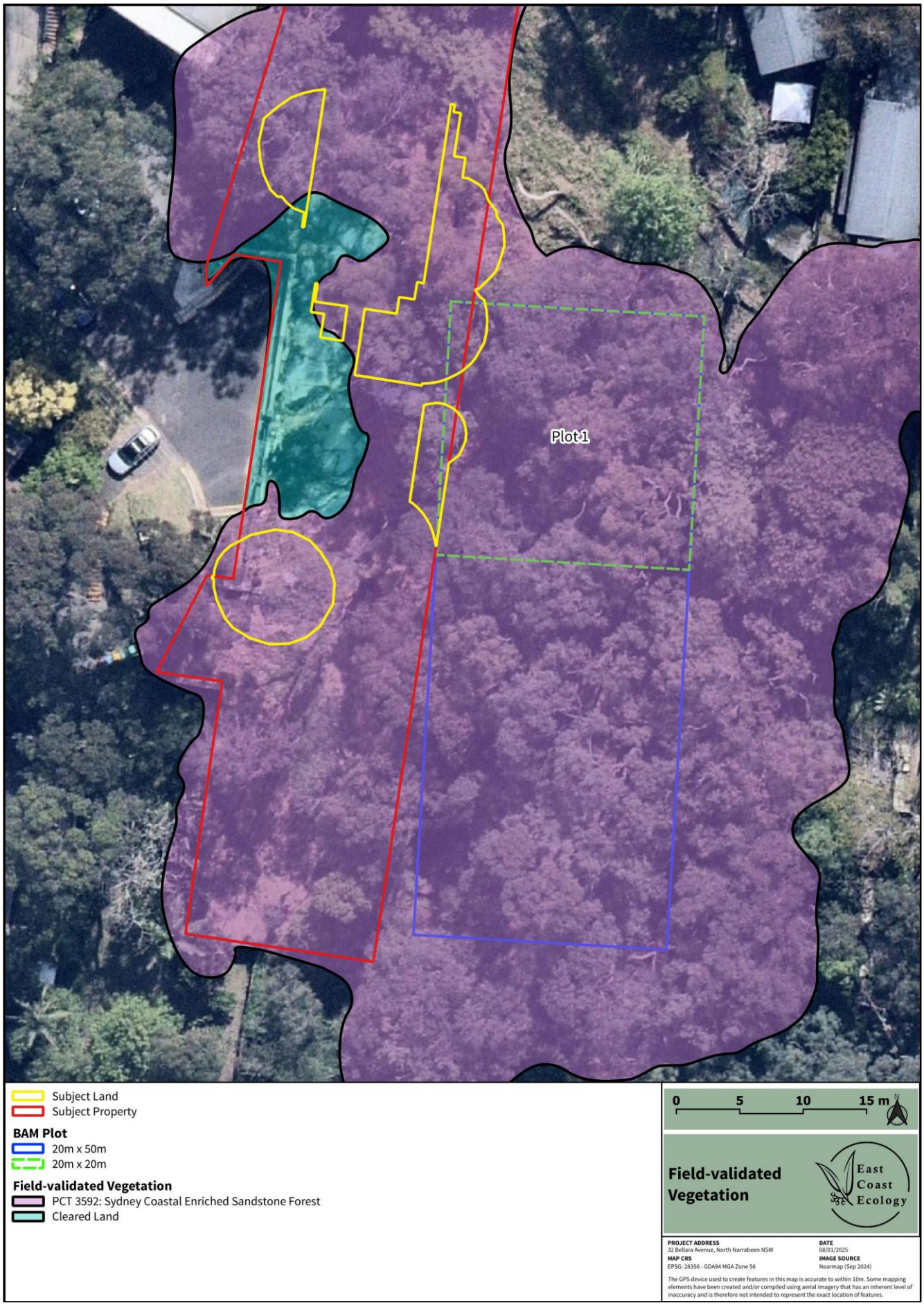


Figure 4. Field-validated vegetation mapping and location of BAM plot within the Subject Land.

4.1.4 PCT 3592: Sydney Coastal Enriched Sandstone Forest

One PCT was determined to occur within the Subject Land:

- PCT 3592: Sydney Coastal Enriched Sandstone Forest (**Table 7**).

Table 7. PCT 3592: Sydney Coastal Enriched Sandstone Forest.

PCT ID	3592
PCT Name	Sydney Coastal Enriched Sandstone Forest
Vegetation Formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation Class	Sydney Coastal Dry Sclerophyll Forests
Percent Cleared Value (%)	60.82%
Extent within Subject Land (ha)	0.03ha

4.1.4.1 Condition States

Native vegetation (PCT 3592) was determined to be represented by one condition class within the Subject Land:

- Vegetation Zone 1: Moderate_Condition (VZ 1).

A description of VZ 1 is provided in **Table 8**, and displayed in **Figure 5**.

Table 8. Native vegetation identified within the Subject Land.

PCT 3592: Sydney Coastal Enriched Sandstone Forest	
Vegetation Zone	Zone 1: Moderate_Condition
Extent within Subject Land (approximate)	0.03ha
Field survey effort	One 20m x 50m BAM plot was established.
Description of vegetation	The vegetation within this zone was characterised by a native canopy of *Eucalyptus piperita*, *Angophora costata*, *Allocasuarina littoralis*, *Livistona australis*, *Ceratopetalum apetalum*, *Glochidion ferdinandi*, *Acacia spp*., sparse native shrub and groundlayer and a mixed native and exotic groundcover. Six High Threat Exotic (HTE) weeds were identified in the BAM plot. See **Plate 2**.
Structure of vegetation	A moderate native canopy cover was evident within the BAM plot, with native trees totalling 39% cover. Native shrub coverage was almost absent at 2%. The native ground layer was low with 0.1% grasses, 0.2% forb, 0.1% fern and 6% 'other' species. A high coverage of leaf litter (73%) was present. The BAM plot contained a high diversity of tree stem sizes, with six tree stem sizes recorded, and 46m of fallen logs.

PCT 3592: Sydney Coastal Enriched Sandstone Forest	
BC Act 2016 Status	Not listed.
EPBC Act 1999 Status	Not listed.
References	Connolly, D., Binns, D., Turner, K., Hager, T., Lyons, M., Magarey, E. (in prep.) A revised classification of Plant Community Types for eastern New South Wales. NSW DPIE, Parramatta

Plate 2. PCT 3592 – typical condition (VZ 1) within the Subject Land.

4.2 Assessing Patch Size

A patch is defined by the BAM (DPE, 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 9** below.

Table 9. 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
PCT 3592	Woody Ecosystems	Zone 1: Moderate_Condition	≥100ha	1	Plot 1

4.3 Vegetation Integrity (Vegetation Condition)

4.3.1 Vegetation Integrity Survey Plots

One BAM Vegetation Integrity (VI) plot was established within VZ 1 (**Figure 4**, **Appendix B**). The location chosen was indicative of the vegetation community and condition class within the vegetation zone.

4.3.2 Scores

The VI scores of VZ 1, including composition, structure and function are detailed in **Table 10**.

Table 10. Vegetation integrity scores.

Vegetation Zone ID	Composition Condition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score	Hollow Bearing Trees Present?
Zone 1: Moderate_Condition	23.8	31.4	74.7	38.2	Yes

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 (DPE, 2020a).

Where clearing is required, it is expected that the Subject Land will experience complete clearing (i.e. no partial impacts are expected), therefore, the future VI score was entered as 0. The attributes influencing the vegetation score within the vegetation zone are detailed in **Table 11.**

Table 11. Management Zones within the Subject Land, and relevant vegetation attributes (composition, structure and function) affecting future VI scores.

Vegetation Zone	Management Zone	Area (ha)	Survey Effort	Composition Condition Score	Structure Condition Score
Zone 1: Moderate_ Condition	MZ1 – Complete removal	0.03	1 x 1000m^2 (20m x 50m) VIS Plot	23.8	31.4
Function Condition Score	**VI Score**	**Future VI Score**	**Total VI Loss**	**Hollow bearing trees**	
74.7	38.2	0	-38.2	Yes	

Figure 5. Management zones within the Subject Land.

5. HABITAT SUITABILITY FOR THREATENED SPECIES

5.1 Identification of Threatened Species for Assessment

The BAM (DPE, 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

All Predicted Ecosystem Credit species associated with the Subject Land were included within the assessment, except for Black Bittern due to the absence of habitat constraints; land within 40 m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation (**Table 12**).

Table 12. Candidate Ecosystem Credit species predicted to occur within the Subject Land.

Scientific Name (italics) and common name	BC Act Status	Included in Assessment?	Reason for Exclusion from Assessment
Artamus cyanopterus cyanopterus Dusky Woodswallow	Vulnerable	Yes	-
Callocephalon fimbriatum Gang-gang Cockatoo (Foraging)	Vulnerable (Endangered EPBC Act)	Yes	-
Calyptorhynchus lathami Glossy Black-Cockatoo (Foraging)	Vulnerable (Vulnerable EPBC Act)	Yes	-
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Vulnerable	Yes	-
Daphoenositta chrysoptera Varied Sittella	Vulnerable	Yes	-
Dasyurus maculatus Spotted-tailed Quoll	Vulnerable (Endangered EPBC Act)	Yes	-
Glossopsitta pusilla Little Lorikeet	Vulnerable	Yes	-
Haliaeetus leucogaster White-bellied Sea-Eagle (Foraging)	Vulnerable	Yes	-

Scientific Name (italics) and common name	BC Act Status	Included in Assessment?	Reason for Exclusion from Assessment
Hieraaetus morphnoides Little Eagle (Foraging)	Vulnerable	Yes	-
Hirundapus caudacutus White-throated Needletail	Not Listed (Vulnerable EPBC Act)	Yes	-
Ixobrychus flavicollis Black Bittern	Vulnerable	No	Subject Land not within 40m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation.
Lathamus discolor Swift Parrot (Foraging)	Endangered (Critically Endangered EPBC Act)	Yes	-
Lophoictinia isura Square-tailed Kite (Foraging)	Vulnerable	Yes	-
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Yes	-
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	Vulnerable	Yes	-
Miniopterus australis Little Bent-winged Bat (Foraging)	Vulnerable	Yes	-
Miniopterus orianae oceanensis Large Bent-winged Bat (Foraging)	Vulnerable	Yes	-
Neophema pulchella Turquoise Parrot	Vulnerable	Yes	-
Pandion cristatus Eastern Osprey (Foraging)	Vulnerable	Yes	-
Petroica boodang Scarlet Robin	Vulnerable	Yes	-
Petroica phoenicea Flame Robin	Vulnerable	Yes	-
Pteropus poliocephalus Grey-headed Flying-fox (Foraging)	Vulnerable (Vulnerable EPBC Act)	Yes	-
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Vulnerable	Yes	-
Varanus rosenbergi Rosenberg's Goanna	Vulnerable	Yes	-

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 13** and **Table 14**). 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.

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 (DPE, 2020a). Habitat constraints are determined by the Threatened Biodiversity Database Collection (NSW DCCEEW, 2024b).

Table 13. 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?
Chalinolobus dwyeri (Large-eared Pied Bat)	No. Habitat Constraints absent. There are no rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, old mines or tunnels, within 100m of the Subject Land. Habitat Constraint: Breeding habitat within 100m.	No	N/A	Very High	No
Lathamus discolour (Swift Parrot) (Breeding)	Yes. Habitat Constraints present. Habitat Constraint: Important Habitat Map.	N/A	N/A	Very High	Yes
Miniopterus australis (Little Bent-winged Bat) (Breeding)	No. Habitat Constraints absent. No breeding habitat was present within the Subject Land. Habitat Constraints: 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'; observation type code 'E nest-roost'; with numbers of individuals >500; or from the scientific literature.	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?
Miniopterus orianae oceanensis (Large Bent-winged Bat) (Breeding)	No. Habitat Constraints absent. No breeding habitat was present within the Subject Land. Habitat Constraints: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave;" observation type code "E nest-roost;" with numbers of individuals >500.	No	N/A	Very High	No

Table 14. Candidate Flora Credit Species predicted to occur within the Subject Land.

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Deyeuxia appressa	No. This species is assumed extinct. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature of available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	No	N/A	High	No
Genoplesium baueri Bauer's Midge Orchid	No. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	No	N/A	Very High	No
Haloragodendron lucasii	No. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature of available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	Yes	No	Very High	No
Hibbertia spanantha Julian's Hibbertia	No. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature of available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	Yes	No	High	No

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Melaleuca deanei Deane's Paperbark	Yes.	Yes	No	Very High	No
Persoonia hirsuta Hairy Geebung	Yes.	Yes	No	High	No
Prostanthera marifolia Seaforth Mintbush	No. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature of available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	Yes	No	High	No
Rhizanthella slateri Eastern Australian Underground Orchid	No. The Subject Land has experienced historical clearing and currently contains numerous weeds including six HTEs. Owing to the degraded nature of available habitat within the Subject Land was determined to be substantially degraded in accordance with section 5.2.3 of the BAM.	Yes	No	High	No

5.3 Surveys for Confirmed Species Credit Species and their Habitats

Surveys for Species Credit species and their habitats were undertaken for species considered likely to have suitable habitat within the Subject Land. These surveys were implemented in accordance with Section 5.3 of the BAM and all relevant DPE threatened species survey guidelines.

5.3.1 Fauna Species Credit Survey

A total of four threatened fauna species were identified within the BAM-C (NSW DCCEEW, 2024d) as having the potential to occur within the Subject Land.

Three (3) species were excluded from the assessment due to the following:

- Species are considered unlikely to occur. No further assessment is required for those species as 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) (DPE, 2020a).

One species, Swift Parrot, has been assumed present due to the presence of the Important Areas Map.

5.3.2 Flora Species Credit Survey

Eight (8) threatened flora species were identified within the BAM-C (NSW DCCEEW, 2024d) as having the potential to occur within the Subject Land.

Six (6) species were excluded from the assessment due to the following:

- Species are considered unlikely to occur due to lack of historical records within 5km, historical clearing and diversity of HTEs. No further assessment is required for those species as 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) (DPE, 2020a).

For the remaining species, a targeted 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' (**Table 15**) (DPE 2020b). These species were not detected within the Subject Land during the NSW DCCEEW endorsed survey period.

Table 15. Species credit flora species requiring targeted surveys. Targeted surveys were conducted within endorsed survey periods.

Candidate Fauna Species	Survey Period (BAMC)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Haloragodendron lucasii											✓	
Hibbertia spanantha											✓	
Melaleuca deanei											✓	
Persoonia hirsuta											✓	
Prostanthera marifolia											✓	
Rhizanthella slateri											✓	
Key	✓ = Surveyed					= NSW DCCEEW endorsed survey period						

Pre-survey weather conditions (**Table 2**) were generally conducive for identifying threatened species should they occur within the Subject Land. Significant rainfall occurred in the weeks and months prior to the targeted flora survey that provided ideal conditions for the emergence and/ or flowering of threatened species should they occur within the Subject Land. Such rainfall also allowed for optimal conditions for the emergence of shrubs and groundcovers within the Subject Land, which ensured maximum species diversity was observed during the site visit.

5.4 Species Polygons

The species polygon for Swift Parrot should align with native vegetation within the Subject Land that is on the Important Habitat Areas Map. All areas of native vegetation (PCT 3592) within the Subject Land have been mapped in the species polygon for Swift Parrot. A total of <0.01ha of habitat was mapped (**Figure 7**).

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

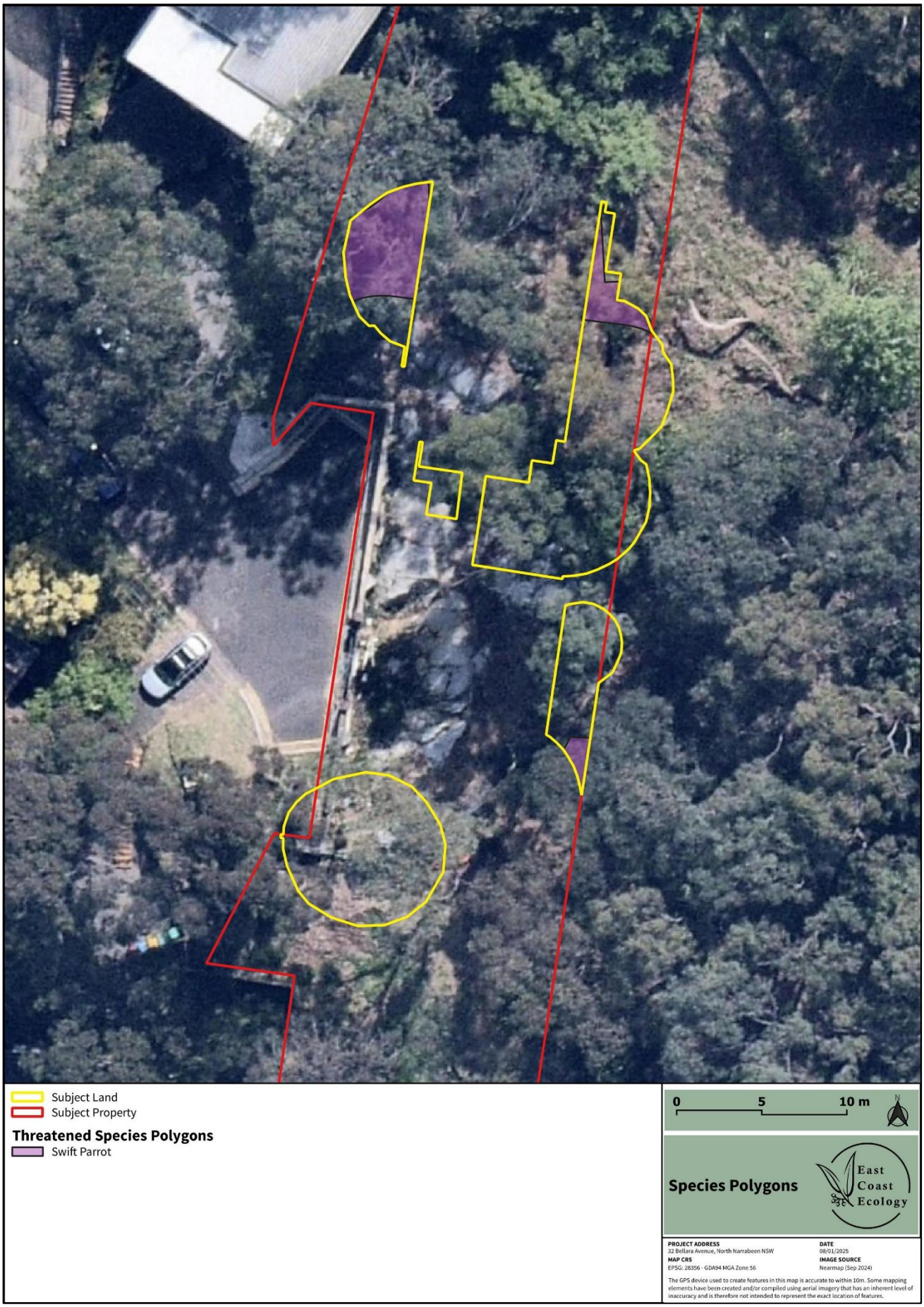


Figure 6. Species polygon for Swift Parrot.

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 proposed development 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 additional construction.

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, cliffs and other features of geological significance on or near the Subject Land. There was some exposed sandstone with minor crevices within the Subject Land, however this was not suitable habitat for threatened species. Non-native vegetation was present within the Subject Land in the form of exotic plantings and common environmental and exotic weeds. No threatened species predicted to occur within the Subject Land are believed to be reliant on this non-native vegetation.
On areas connecting threatened species habitat, such as movement corridors	No	The vegetation in the south of the Subject Land may provide connectivity for threatened species however there is not likely to be any impacts associated with the proposed development. Therefore, it is unlikely the proposed development will impact the movement of species throughout the corridor.
That affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)	No	It is unlikely that changes to hydrological processes within the Subject Land will impact threatened species reliant on these processes. Stormwater from the Subject Land will continue to flow from south over site. It is highly unlikely that the proposed development would result in changes to hydrology or water quality (beyond existing levels). No mapped Groundwater Dependent Ecosystems occur within the Subject Land (BOM, 2024a).

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
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 has the very low potential to support threatened species. Given the existing land use (i.e. residential), it is highly unlikely that risk of vehicle strikes will be increased as a result of the proposed development.

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.

Consideration has been given to avoiding and minimising impacts to biodiversity where possible in the preliminary design. In its current form, the development footprint has not fully avoided vegetation such as PCT 3592 (non-TEC), however, the proponent has selected a property that has been historically cleared of groundcover and midstorey and is surrounded on all sides by residential development, making it unlikely to be relied upon by threatened species.

8. IMPACT ASSESSMENT

8.1 Direct Impacts

8.1.1 Native Vegetation Clearing

The proposed development will require the removal of approximately 0.03ha of PCT 3592, including 11 native trees:

- Tree 15: *Eucalyptus piperita* (Sydney Peppermint)
- Tree 27: *Livistona australis* (Cabbage tree palm)
- Tree 43: *Angophora costata* (Sydney Red Gum)
- Tree 44: *Glochidion ferdinandi* (Cheese tree)
- Tree 45: *Acacia spp.* (Wattle)
- Tree 46: *Angophora costata* (Sydney Red Gum)
- Tree 47: *Angophora costata* (Sydney Red Gum)
- Tree 48: *Livistona australis* (Cabbage tree palm)
- Tree 49: *Angophora costata* (Sydney Red Gum)
- Tree 50: *Allocasuarina littoralis* (Black She-Oak)
- Tree 51: *Angophora costata* (Sydney Red Gum)

The vegetation within the Subject Land is degraded and located within a disturbed landscape that makes it unlikely that threatened species, except highly-mobile species like Swift Parrot, would rely on this vegetation.

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 tree protections during construction, implementation of a site-specific Construction Environmental Management Plan detailing best practice environmental protection measures and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent vegetation.
Reduced viability of adjacent habitat due to edge effects	Adjacent habitats are currently subject to a high degree of edge effects due to prior clearing and surrounding existing land use, as such an increase to edge effects is not expected to occur to the surrounding vegetation as a result of the proposed development. Further, the site assessment recorded numerous environmental and priority weeds both within and adjacent to the Subject Land.
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 negligible increase to indirect impacts created by noise, dust and light spill, during construction and operation of the future development of the Subject Land. Any of these indirect impacts will be managed via best practices outlined in an approved Construction Environmental Management Plan.
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 highly disturbed nature of the vegetation adjacent to the Subject Land, it is unlikely that this impact will be significant.

Potential Indirect Impact	Nature, extent and duration
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 nearby 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.
Increase in predatory species populations	It is likely that predatory species, such as foxes and cats, already inhabit areas surrounding the Subject Land. The impacts to vegetation proposed by the development are unlikely to increase predatory species populations.
Increase in pest animal populations	The Subject Land occurs in an area that likely has pest animal populations (e.g. feral cats, foxes, rabbits). 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.

8.4 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). No vegetation within the Subject Land has been mapped as a Groundwater Dependent Ecosystem. Vegetation south of the Subject Land has been mapped as high potential for GDE but will not be impacted by the proposed development.

8.5 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 18**).

Table 18. Recommended measures to be implemented before, during and after construction to avoid and minimise the impacts of the project.

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
B5	**Artificial hollow replacement**	All hollows removed to facilitate the proposed development should be replaced with artificial hollows at a 1:1 ratio. The final number of hollows removed will be confirmed by the Project Ecologist following an inspection of the felled trees.	Pre-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

Measure	Action	Outcome	Timing	Responsibility
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
B8	**Replacement Planting**	In order to compensate for the loss of potential foraging habitat for Swift Parrot, trees scheduled to be removed will be replaced at a 1:1 ratio within the property (or neighbouring properties under same ownership) and outside of the Subject Land. Tree species for replacement planting can be any one or a combination of the following: ▪ *Corymbia gummifera* ▪ *Eucalyptus piperita,* and ▪ *Angophora costata.*	Construction, Post-construction phase	Proponent

9. SERIOUS AND IRREVERSIBLE IMPACTS

9.1 Assessment for Serious and Irreversible Impacts (SAIIs) of Biodiversity Values

One (1) threatened species that has been assumed present within the Subject Land has been identified as an entity at risk of a SAII in the Threatened Biodiversity Data Collection (NSW DCCEEW, 2024b):

- *Lathamus discolor* (Swift Parrot).

Swift Parrot is identified in the TBDC as meeting the following criteria:

- Species or ecological community currently in a rapid rate of decline (Principal 1)

Due to the potential sensitivity of this species to any impact, a determination of whether or not the proposed impacts are serious and irreversible is to be undertaken in accordance with Section 9.1 of the BAM (DPE, 2020a) as outlined in **Appendix D**.

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.

As the vegetation integrity (VI) score for Vegetation Zone 1: Moderate_Condition is above 20 (VI = 38.2), the purchase and retirement of Ecosystem Credits will be required for impacts to native vegetation within VZ 1. The purchase and retirement of Biodiversity Offset Credits will not be required for exotic vegetation. The offset requirement for impacts to native vegetation from the proposed development was calculated using the BAM-C and is summarised below in **Table 19** (and refer to the credit report in **Appendix B**).

Table 19. Ecosystem credits required to offset the proposed development.

PCT	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
PCT 3592: Sydney Coastal Enriched Sandstone Forest	Zone 1: Moderate_ Condition	-38.2	0.03ha	1

10.1.2 Offset Requirement for Species Credits

One threatened species, *Lathamus discolor* (Swift Parrot), has been assumed present for the proposed development. The species credits that are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development are presented in **Table 20**.

Table 20. Impacts that require an offset – species credits.

Species	Vegetation Zone	Vegetation Integrity Score Loss	Area (ha)	Credit Requirement
Lathamus discolor (Swift Parrot)	Zone 1: Moderate_ Condition	-38.2	0.01	1

No other 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 5.2.3 of the BAM.

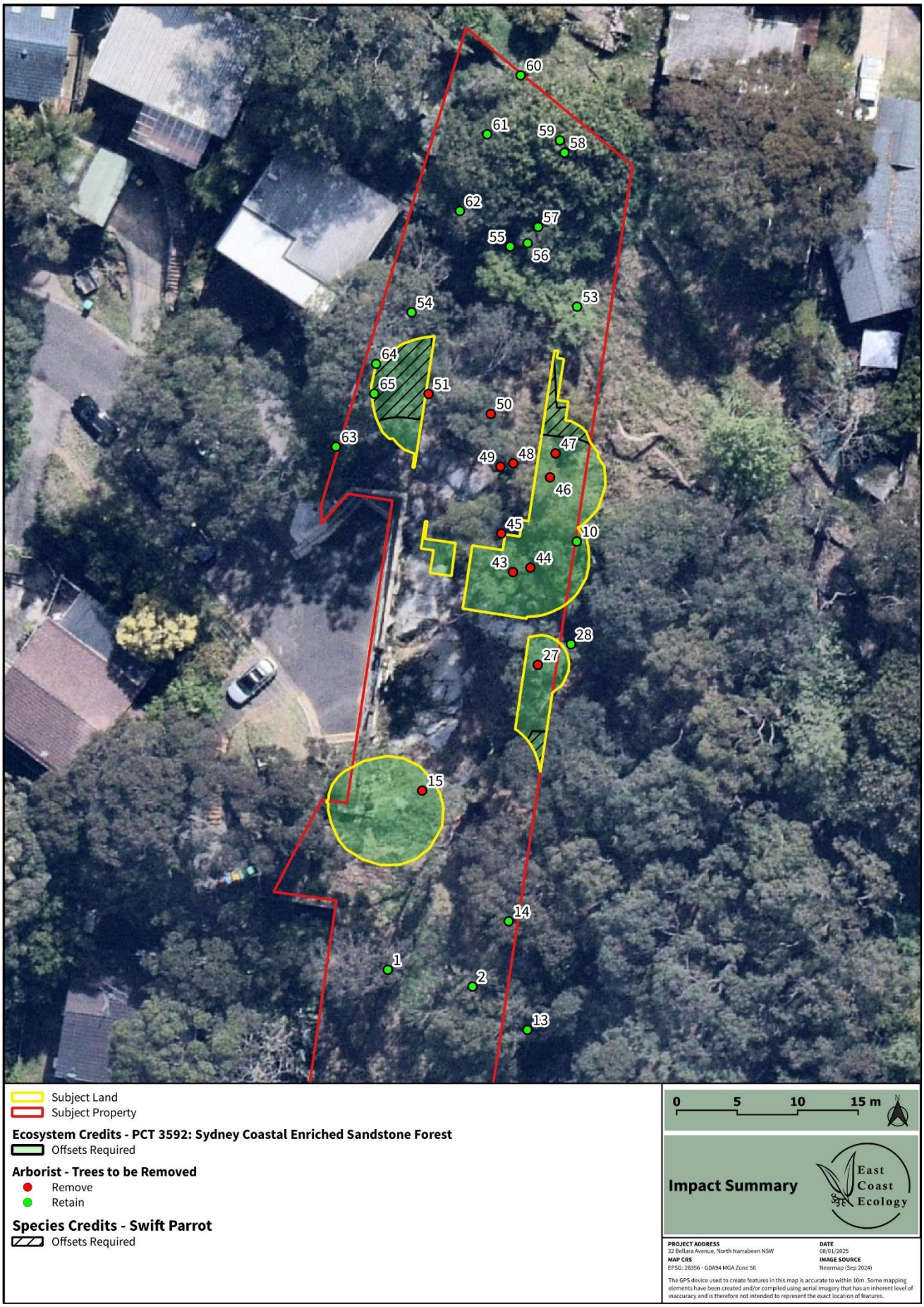


Figure 7. Impacts on native vegetation and area requiring offsets.

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 (DPE, 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 identified the following as potentially occurring within the Subject Land (or within the area):

- 5 Threatened Ecological Communities
- 85 threatened species
- 43 Migratory species

An assessment of the impacts of the proposed development on MNES outlined in Department of Agriculture, Water and the Environment's Matters of National Environmental Significance, Significant Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999* (DCCEEW, 2013) was prepared to determine whether referral of the proposed development to the Environment Minister is required.

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

Table 21. EPBC Act Assessment of Significant Impact.

MNES	Proposed Development Specifics	Impact
Threatened species	One EPBC Act listed threatened species has the potential to be impacted by the proposed development. Assessment is provided in **Appendix E**.	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, 43 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 adjacent riparian habitats associated with the Pittwater. 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* (NSW)

The *Biosecurity Act 2015* (NSW) provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by a development 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.

Two priority weeds for the Greater Sydney region (DPI, 2024) were identified within the Subject Land:

- *Asparagus aethiopicus* (Ground Asparagus), and
- *Lantana camara* (Lantana).

Priority weeds must be managed in accordance with the *Biosecurity Act 2015* (NSW).

11.4 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 Coastal Management of the State Environmental Planning Policy (Resilience and Hazards) 2021 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.

The Subject Land is not mapped as occurring within the coastal zone, and therefore the controls in the SEPP do not apply.

11.5 State Environmental Planning Policy (Biodiversity and Conservation) 2021

11.5.1 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 of State Environmental Planning Policy (Koala Habitat Protection) 2021, but not if the local government area is marked with an * in that Schedule:

- Zone RU1 Primary Production
- Zone RU2 Rural Landscape, and
- Zone RU3 Forestry.

The Subject Land is zoned as C4: Environmental Living and therefore, this chapter does not apply to the proposed DA.

11.5.2 Chapter 4 - Koala Habitat Protection 2021

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 SEPP applies to LGAs that are listed in Schedule 2 'Local government areas' of the SEPP. As the Northern Beaches is included in Schedule 2, this SEPP applies to the Subject Land. The development control provisions of the SEPP apply to development applications relating to the land, if the land:

- Has an area of at least 1 hectare (including adjoining land within the same ownership), and
- Does not have an approved koala plan of management applying to the land.

The Subject Land occurs on a lot that is <1ha, the development controls of koala habitats do not apply to the proposed DA.

12. REFERENCES

Australian Standard 4970 (2009) Protection of Trees on Development Sites

Biodiversity Conservation Act (2016) https://legislation.nsw.gov.au/#/view/act/2016/63/full

Biodiversity Conservation Regulation (2017)
https://www.legislation.nsw.gov.au/#/view/regulation/2017/432

Bureau of Meteorology (BOM) (2024a). Groundwater Dependent Ecosystem GDE Atlas Home: Water Information: Bureau of Meteorology. Bureau of Meteorology: Climate Data Online.
http://www.bom.gov.au/water/groundwater/gde/

Bureau of Meteorology (BOM) (2024b) New South Wales. November 2024 Daily Weather Observations
http://www.bom.gov.au/

Department of Climate Change Energy the Environment and Water (DCCEEW) (2013). Matters of National Environmental Significance, Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. Australian Government Department of the Environment, Commonwealth of Australia, Canberra. Australian Government Department of the Environment. Canberra, Australian Capital Territory

Department of Climate Change Energy the Environment and Water (DCCEEW) (2024) Protected Matters Search Tool

Department of Environment and Climate Change (DECC) (2008) Soil and Land Resources of the Hawkesbury-Nepean Catchment, Department of Environment and Climate Change, Sydney.

Department of Environmental Conservation (DEC) (2004b) Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft)

Department of the Environment and Energy (2018) Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Subregions)

Department of Planning and Environment (DPE) (2020a) Biodiversity Assessment Method

Department of Planning and Environment (DPE) (2020b) Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method

Department of Primary Industries (DPI) (2024) Priority weeds for the Greater Sydney Region
https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=106

Department of Planning, Industry and Environment (DPIE) (2019) Guidance to assist a decision-maker to determine a serious and irreversible impact https://www.environment.nsw.gov.au/-media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/guidance-decision-makers-determine-serious-irreversible-impact-190511.pdf

Inlet Design Studio (2024) Site Plans and Site Analysis. 32 Bellara Ave & 62, 64 Powderworks Rd North Narrabeen

Landcom (2004) Managing Urban Stormwater: Soils and Construction 'The Blue Book', Volume 1, Fourth Edition, New South Wales Government, ISBN 0-9752030-3-7

Mitchell (2002) NSW Ecosystems Study: Background and Methodology (Unpublished)

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024a) BioNet. The website of the Atlas of NSW Wildlife http://www.bionet.nsw.gov.au/

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024b) BioNet. Threatened Biodiversity Data Collection

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024c) BioNet. Vegetation Classification System

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024d) Biodiversity Assessment Method Calculator Version 1.4.0.00

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024e) Soil Landscapes http://espade.environment.nsw.gov.au

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024f) The NSW State Vegetation Type Map

NSW Department of Climate Change, Energy the Environment and Water (NSW DCCEEW) (2024g) Biodiversity Values Mapping

NSW Spatial Services (2024a). Search and Discovery - Historical, Aerial and Satellite Imagery.

NSW Spatial Services (2024b) Six Maps Clip & Ship https://maps.six.nsw.gov.au/clipnship.html

PlantNET (2024) The NSW Plant Information Network System, Royal Botanic Gardens and Domain Trust, Sydney. http://plantnet.rbgsyd.nsw.gov.au

Robinson (2003) Field Guide to the Native Plants of Sydney, Third Edition, Kangaroo Press

Willis. J (2024) Arboricultural Impact Assessment Report.32 Bellara Avenue, North Narrabeen NSW 2101

13. APPENDICES

Appendix A. Site Plan (Somers Isles, 2024).

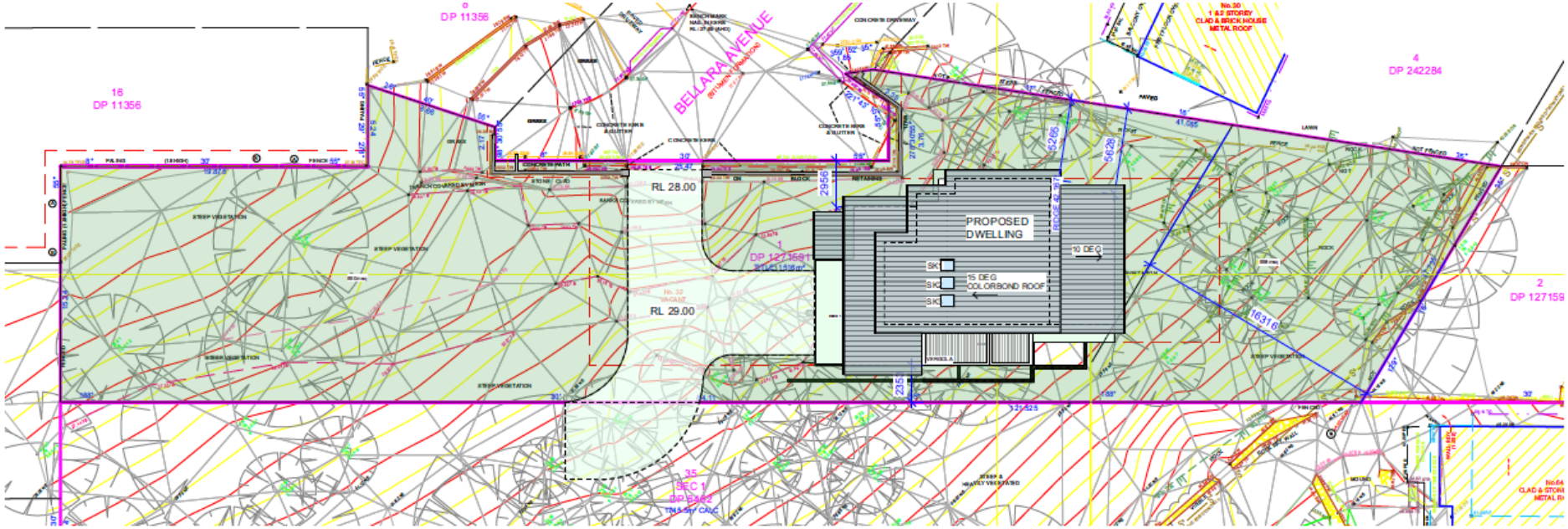
Appendix B. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

Appendix C. BAM-C Generated Biodiversity Credit Report.

Appendix D. Additional impact assessment provisions for threatened species that are at risk of a serious and irreversible impact.

Appendix E. EPBC Act Assessment of Significant Impact.

Appendix A. Site Plan (Somers Isles, 2024).



1 Site Plan
Scale: 1:250

SITE FEATURES	AREA
PROPOSED LGF	32.3msq
GARAGE 42.2sqm	10sqm
PROPOSED GF	104.4sqm
PROPOSED FF	102.6msq
TOTAL FLOOR AREA	249.3msq
PROPOSED BUA	174.8sqm
PRIVATE OPEN SPACE	45.6msq
LANDSCAPE AREA SOFT	1188msq
TOTAL SITE AREA	1516msq
FLOOR SPACE RATIO	0.17:1

Inlet Design Studio
Newport, NSW, 2106,
P 0415647351
E robyn@inletdesign.com.au
ABN: 26 075 061 335
Copyright © JJC AVANDA TRADING COMPANY PTY LTD

REVISION: DATE: REVISION NOTE:

CLIENT: ERIC & JILL SANDERSON
ADDRESS: 32 BELLARA AVE
NORTH NARRABEEN

DRAWING: SITE PLAN ANALYSIS
PROJECT: PROPOSED DWELLING
PROJECT NO: BEL001
ISSUE TYPE: 1
DRAWN: IW
CHKD: RJ
ISSUE DATE: 18/11/24
SHEET NO: A01
SCALE @ A3: 1:250
REVISION:

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

BAM Site – Field Survey Form					
Date:	08/11/2024	**Plot ID:**	1	**Photo #:**	0
Zone:	MGA 56	**Plot Dimensions:**	20m x 50m	**Easting:**	341524
Datum:	GDA94	**Middle bearing from 0m:**	188	**Northing:**	6269548
PCT:	PCT 3592: Sydney Coastal Enriched Sandstone Forest				

Growth Form	Scientific Name	Cover	Abundance
Tree (TG)	*Corymbia gummifera*	15	4
Tree (TG)	*Allocasuarina torulosa*	2	2
Tree (TG)	*Angophora costata*	15	4
Tree (TG)	*Ceratopetalum apetalum*	2	5
Tree (TG)	*Eucalyptus paniculata*	3	1
Tree (TG)	*Toona ciliata*	1	0
Tree (TG)	*Glochidion ferdinandi*	0.5	1
Tree (TG)	*Brachychiton acerifolius*	0.5	1
Shrub (SG)	*Pittosporum undulatum*	2	2
Other (OG)	*Livistona australis*	5	4
Other (OG)	*Eustrephus latifolius*	0.1	6
Other (OG)	*Archontophoenix cunninghamiana*	0.5	1
Other (OG)	*Cissus hypoglauca*	0.1	1
Other (OG)	*Calochlaena dubia*	0.1	2
Other (OG)	*Geitonoplesium cymosum*	0.1	2
Other (OG)	*Stephania japonica*	0.1	2
Grass & grasslike (GG)	*Entolasia stricta*	0.1	1
Forb (FG)	*Commelina cyanea*	0.1	2
Forb (FG)	*Sigesbeckia orientalis subsp. orientalis*	0.1	2
Fern (EG)	*Pteridium esculentum*	0.1	2
Exotic	*Erigeron bonariensis*	0.1	20
Exotic	*Hedychium gardnerianum*	0.1	2
Exotic	*Clivia spp.*	0.1	2
HTE	*Ipomoea purpurea*	1	10
HTE	*Asparagus aethiopicus*	0.1	5
HTE	*Lantana camara*	1	20
HTE	*Ehrharta erecta*	0.1	10
HTE	*Senna pendula var. glabrata*	0.1	2
HTE	*Ochna serrulata*	0.1	2

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	0	0
50-79cm	1	0
30-49cm	Present	0

20-29cm	Present	0
10-19cm	Present	1
5-9cm	Present	0
<5cm	Present	0

Length of Logs (m)	46

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	70
2 (15m)	65
3 (25m)	80
4 (35m)	70
5 (45m)	80
Average	73

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	8	39
Shrub	1	2
Grass	1	0.1
Forb	2	0.2
Fern	1	0.1
Other	7	6
High Threat Exotics	6	2.4

Appendix C. BAM-C Generated Biodiversity Credit Report.

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id 00054116/BAAS19040/25/00054117	Proposal Name 32 Bellara Ave North Narrabeen	BAM data last updated * 28/10/2024
Assessor Name Alexander Graham	Assessor Number BAAS19040	BAM Data version * Current classification (live - default) (80)
Proponent Names Eric Sanderson	Report Created 14/01/2025	BAM Case Status Finalised
Assessment Revision 0	BOS entry trigger BOS Threshold: Biodiversity Values Map	Assessment Type Part 4 Developments (Small Area)
Date Finalised 14/01/2025	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Lathamus discolor / Swift Parrot		

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
Ixobrychus flavicollis / Black Bittern

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

No Ecosystem Credit Data

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

Appendix D. Additional impact assessment provisions for threatened species that are at risk of a serious and irreversible impact.

Serious and Irreversible Impact (SAII) Impact assessment provisions for threatened species: *Lathamus discolor* (Swift Parrot)		
BC Act Status: Endangered		
a) the action and measures taken to avoid the direct and indirect impact on the potential entity for a SAII		The Subject Land continues to experience various disturbances such as weed invasion and fragmentation. The vegetation on the Subject Land is in poor condition, with a vegetation integrity score of 38.2. The surrounding potential foraging habitat will not be affected by the development. Through consultation with the Project Arborist, the Proponent has amended the design (following finalisation) to further avoid impacts to biodiversity. Specifically, Tree 31, 66 & 76 have been retained by shrinking and shifting the building design to minimise impacts to the tree protection zones to allow retention of these trees.
b) The size of the local population directly and indirectly impacted by the development, clearing or biodiversity certification.		The most recent record of Swift Parrot within 5km of the Subject Land was from 2021 where 3 individuals were counted (BioNet, 2024). The closest of these records occurs approximately 960m north of the Subject Land.
c) a description of the extent to which the impact exceeds the threshold for the potential entity		The impact thresholds for this species are currently under development.
d) The likely impact (including direct and indirect impacts) that the development, clearing or biodiversity certification will have on the habitat of the local population, including but not limited to:	**i. an estimate of the change in habitat available to the local population as a result of the proposed development**	The proposed development will require the removal of 11 trees. However, potential foraging habitat will be preserved within and immediately surrounding the Subject Land. These areas will remain connected to the Subject Land, particularly in the southern and southeastern sections, where native vegetation and habitat connectivity are present.
	ii. the proposed loss, modification, destruction or isolation of the available habitat used by the local population	The removal of canopy vegetation will not isolate available habitat for this species.

Serious and Irreversible Impact (SAII) Impact assessment provisions for threatened species: *Lathamus discolor* (Swift Parrot)	
BC Act Status: Endangered	
	iii. modification of habitat required for the maintenance of processes important to the species' life cycle (such as in the case of a plant – pollination, seed set, seed dispersal, germination), genetic diversity and long-term evolutionary development.	It is not expected that the removal of 11trees will reduce the habitat required for the maintenance processes important to the species' life cycle. Foraging habitat will remain within and immediately surrounding the Subject Land. This species does not breed in NSW.
e. The likely impact on the ecology of the local population. At a minimum, address the following: **- breeding** **- foraging** **- roosting, and** **- dispersal or movement pathways**		The removal of 11 trees is not likely to impact the ecology of any locally occurring Swift Parrots. Breeding habitat will not be impacted and foraging, roosting and dispersal habitat will remain within and surrounding the Subject Land.
f) A description of the extent to which the local population will become fragmented or isolated as a result of the proposed development.		The proposed development will not fragment or isolate any locally occurring Swift Parrot populations.
g) The relationship of the local population to other population/populations of the species. This must include consideration of the interaction and importance of the local population to other population/populations for factors such as breeding, dispersal and genetic viability/diversity, and whether the local population is at the limit of the species' range.		Swift Parrots are highly mobile and the proposed development is not likely to impact the movement or dispersal of any locally occurring individuals. The Subject Land is not at the limit of the species' range.
h) The extent to which the proposed development will lead to an increase in threats and indirect impacts, including impacts from invasive flora and fauna, that may in turn lead to a decrease in the viability of the local population.		The proposed development is not likely to lead to an increase in threats and indirect impacts given the avoidance measures taken during the design phase. The viability of any locally occurring population will not be decreased.

Serious and Irreversible Impact (SAII) Impact assessment provisions for threatened species: *Lathamus discolor* (Swift Parrot)	
BC Act Status: Endangered	
i) An estimate of the area, or number of populations and size of populations that is in the reserve system in NSW, the IBRA region and the IBRA subregion.	The Swift Parrot breeds in Tasmania, where the breeding population has declined from in excess of 10,000 pairs to less than 1,000 pairs. Numbers in New South Wales are considerably less than this.
j. The measure/s proposed to contribute to the recovery of the species in the IBRA subregion.	In NSW, Saving our Species aims to secure as many threatened species and ecological communities as possible. This conservation strategy aims to secure the species in the long term. This strategy was developed by experts who identified the priority management areas and conservation actions required to manage critical threats to conserve the species. Management actions include: ▪ Raise public awareness of the importance of large old trees of species that provide important food resources. Protect large old trees, including from the effects of fire. Ensure the recruitment of large old trees by retaining medium-sized trees, facilitating regeneration, and undertaking replanting. ▪ Within a region, increase the extent and quality of habitat to increase food supply and improve foraging efficiency. Focus on sites that may better function as drought refuges. Include locally occurring species that provide important food resources in revegetation programs where appropriate. Ensure that fuel reduction burns do not result in canopy scorch, which can reduce flowering in subsequent years. Manage aggressive honeyeater impacts through habitat modification (e.g. reduce the amount of edge and establish a structurally complex understorey). ▪ Engage the community in the identification and enhanced management of priority sites. Priority sites are those that (1) have been used by a large proportion of the population, or (2) have been used in multiple seasons, or (3) have been used for an extended period of time

Serious and Irreversible Impact (SAII) Impact assessment provisions for threatened species: *Lathamus discolor* (Swift Parrot)
BC Act Status: Endangered

	within a season. Engage stakeholders in the identification and development of site-based management projects for priority areas, being areas containing a high proportion of priority sites, or areas that contribute to the overall diversity and distribution of resources available to swift parrots under a range of environmental conditions. ▪ With the assistance of the community, monitor swift parrot distribution, abundance, and habitat use. Investigate knowledge gaps to improve the effectiveness of management actions, including understanding the phenology of key food species, determining movement strategies, patterns and pathways between regions, and modelling the impacts of climate change projections on the distribution and abundance of foraging habitat and resources. ▪ Establish the Beak and Feather Disease Virus (BFDV) status of rehabilitated parrots proposed to be released using appropriate tests and quarantine procedures. Parrots carrying BFDV should not be released into the wild. ▪ Raise public awareness on collision risks and how these can be minimised. At priority sites and movement pathways assessed as having a high risk of collision, develop and implement mitigation strategies.

Appendix E. EPBC Act Assessment of Significant Impact.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999 **Assessment of Significant Impact Criteria** **for** ***Lathamus discolor* (Swift Parrot)**	
EPBC Act Status: Critically Endangered	
Significant impact criteria **An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:**	
lead to a long-term decrease in the size of a population	The proposed action will not lead to a long-term decrease in the size of an important population of this species. No breeding habitat will be impacted. While the proposal will require the removal of 11 trees, which are potential foraging habitat, this species will continue to have areas of foraging habitat within the Subject Land and locality.
reduce the area of occupancy of an important population	The proposed action will not reduce the area of occupancy of an important population of this species. While the proposal will require the removal of 11 trees which are potential habitat, this species will continue to have areas of habitat within the Subject Land and locality.
fragment an existing important population into two or more populations	The proposed action is unlikely to fragment any existing important population into two or more populations. The Subject Land occurs in a residential area with native vegetation that is already fragmented from larger patches of habitat for this species. No additional clearing is to occur beyond the Subject Land.
adversely affect habitat critical to the survival of a species	The proposed action will not adversely affect habitat critical to the survival of this species. Potential foraging habitat to be impacted is not considered critical to the survival of this species.
disrupt the breeding cycle of a population	No breeding habitat for *L. discolor* will be impacted.
modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action will lead to a very minor decrease in the available foraging habitat for this species. It is not expected that this will lead to a decline given the areas of potential habitat remaining within the Subject Land in the wider locality.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999 **Assessment of Significant Impact Criteria** **for** ***Lathamus discolor* (Swift Parrot)**	
EPBC Act Status: Critically Endangered	
result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Subject to weed control measures, the development will not result in the introduction of an invasive species harmful to this species.
introduce disease that may cause the species to decline	Subject to pathogen control measures, the development will not result in the introduction of a disease that may cause this species to decline.
interfere substantially with the recovery of the species	The proposal action is not expected to interfere substantially with the recovery of this species. Areas of potential habitat will continue to exist within the Subject Land and in the broader locality.

www.ececology.com.au

Greater Sydney | Canberra | South Coast