April 2025

Taronga Zoo Sky Safari

Appendix S
Biodiversity Development Assessment Report (BDAR)
RTS Revision 2

PREPARED BY

NARLA environmental

PREPARED FOR

TARONGA CONSERVATION SOCIETY AUSTRALIA

For the Wild

Streamlined Biodiversity Development Assessment Report

Taronga Zoo Sky Safari –Taronga Zoo Sydney

Report prepared by Narla Environmental Pty Ltd

For the Taronga Conservation Society Australia

April 2025

NARLA
environmental

Report:	Streamlined Biodiversity Development Assessment Report
Prepared for:	Taronga Conservation Society Australia
Prepared by:	Narla Environmental Pty Ltd
Project no:	TAZO6
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Report Certification

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Document Control

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As the accredited assessor, I Luke Johnson, certify that the information presented in this report is a true and accurate record of the study findings in the opinion of the authors.

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Narla Environmental Pty Ltd

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Glossary

Acronym/ Term	Definition
Accredited Biodiversity Assessor	Individuals accredited by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to apply the Biodiversity Assessment Method.
BAM	The NSW Biodiversity Assessment Method
BAMC	The NSW Biodiversity Assessment Method Calculator
BC Act	New South Wales Biodiversity Conservation Act 2016
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	NSW Biodiversity Offset Scheme
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DPE)
DPE	NSW Department of Planning and Environment (now DCCEEW)
DPIE	NSW Department of Planning, Industry and Environment (now DCCEEW)
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)
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ha	Hectares
HTE	High Threat Exotic
km	Kilometres
LGA	Local Government Area
Locality	A 1500m buffer area surrounding the Subject Land
m	metres
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.
NSW	The State of New South Wales
OEH	Office of Environment and Heritage (now DPE)
PCT	NSW Plant Community Type
Proposal	The development, activity or action proposed.
SAII	Serious and Irreversible Impacts
SAII entity	Species and ecological communities that are likely to be the subject of serious and irreversible impacts (SAIIs)
SBDAR	Streamlined Biodiversity Development Assessment Report
SEARs	Secretary's Environmental Assessment Requirements
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.
SSDA	State Significant Development Application
Subject Land	The location of the proposed works within the Taronga Zoo Site
Subject Property	Taronga Zoo Sydney; Bradleys Head Rd, Mosman NSW 2088 (Lot 22/DP843294)

Acronym/ Term	Definition
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016.
TPZ	Tree Protection Zone: A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development
VIS Plot	Vegetation Integrity Survey Plot

Executive Summary

Narla Environmental Pty Ltd (Narla) was engaged by Taronga Conservation Society Australia ('the proponent') to prepare a Streamlined Biodiversity Development Assessment Report (SBDAR). The SBDAR will accompany a detailed State Significant Development Application (SSDA) and address the Secretary's Environmental Assessment Requirements (SEARs) for the proposed redevelopment of the "Sky Safari" at Taronga Zoo at Bradleys Head Rd, Mosman NSW 2088 (Lot 22/DP843294; hereafter referred to as the 'Subject Property').

This SBDAR will assess the biodiversity impacts of the proposed development in accordance with the requirements of the Biodiversity Conservation Act 2016 and Biodiversity Conservation Regulation 2017. The assessment has been completed in accordance with Appendix L of the BAM (DPIE 2020a).

Taronga Zoo is one of Australia's most popular attractions, and together with Taronga Western Plains Zoo hosts more than 2.2 million visitors annually. The Zoo has evolved over time from a Zoo that simply provides the traditional visitor experience of viewing animals in exhibits, to a Zoo that focusses on wildlife conservation, animal welfare and providing a range of visitor learning experiences.

Within Taronga Zoo, the Sky Safari is one of Taronga's most loved experiences and has transported more than 20 million passengers since it was first installed in 1987 and upgraded in 2000. The former Sky Safari was an ageing asset and was formally retired in January 2023. The redevelopment of the existing Sky Safari will allow the Zoo to update the now obsolete infrastructure on site and provide new facilities which provide improved amenities, ease increased demand and assist the public in moving around the Zoo.

Development consent is specifically sought for:

- Site establishment works including removal of the existing Sky Safari;
- Installation of a new 916m Sky Safari cable car system including:
    - Construction of six (6) new pylons and structures within the Zoo ranging in height between 5.9m (P1) to 36.5m (P5)
    - Construction of two new stations at both the upper and lower entrances within the Zoo grounds.
    - Public facilities including accessible queueing areas, ticket booths and public amenities.
    - Associated mechanical plant, servicing and storage areas for ongoing maintenance.
- Landscaping works, including new accessible pathways, planting, shade structures and seating areas, wayfinding signage.
- Taronga has implemented a tree replacement ratio of 2:1 for all trees removed as part of this development.
- Excavation, site preparation works and tree removal/pruning to allow the works to occur.
- Increased hours of operation.

The proposed development includes the operational and the construction footprint (0.39ha), which is collectively referred to as the 'Subject Land'. The proposed development has been positioned to minimise impacts on native vegetation and habitat as much as possible. The majority of the proposed development is located within historically modified land, comprising of existing buildings and hardstand, amongst areas of exotic and remnant native vegetation.

The proposed development is expected to impact one (1) Plant Community Type (PCT) 3594: Sydney Coastal Sandstone Foreshores Forest. This PCT is not associated with any TECs. The following ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development:

- Two (2) ecosystem credits for PCT 3594.

In order to avoid and minimise potential impacts of the proposal on local biodiversity values, a series of mitigation and management measures have been identified, which are to be implemented as part of any Construction Environmental Management Plan (CEMP) produced for the site. This includes assigning an experienced, suitably qualified and licenced wildlife expert to undertake a pre-clearing survey and to supervise the clearing of all vegetation in relation to the proposed development.

1. Introduction

1.1 Project Background

Taronga Zoo is one of Australia's most popular attractions, and together with Taronga Western Plains Zoo hosts more than 1.8 million visitors annually. The Zoo has evolved over time from a Zoo that simply provides the traditional visitor experience of viewing animals in exhibits, to a Zoo that focusses on wildlife conservation, animal welfare and providing a range of visitor learning experiences.

Within Taronga Zoo, the Sky Safari is one of Taronga's most loved experiences and has transported more than 20 million passengers since it was first installed in 1987 and upgraded in 2000. The former Sky Safari was an ageing asset and was formally retired in January 2023. The redevelopment of the existing Sky Safari will allow the Zoo to update the now obsolete infrastructure on site and provide new facilities which improve accessibility, ease increased demand and assist the public in moving around the Zoo.

The SSDA was placed on public exhibition for 28 days between 24 September to 22 October 2024. Since lodgement, the project team have refined the proposal to address comments from public agencies and the public as well as ongoing design development. The proposed refinements include updates to the Top and Lower Stations to improve queuing and visitor experience and the pylon design to reflect inputs from the cable car contractor.

1.1.1 New Route

The reimagined cable car experience introduces 20 - 30 new cable cars that are accessible to visitors with prams and larger wheelchairs, to ensure all visitors to the zoo have a safe and dignified experience in utilising the Sky Safari. The new cable cars are also larger in capacity than existing cable cars to meet current and future visitor demand to visit the Zoo.

The infrastructure associated with the cable cars will incorporate approximately 6 pylon towers ranging in height from 5.9m to 36.5m. The route itself has been carefully located to minimise impact on remnant bushland, existing trees and the archaeological and built heritage as well as scenic values of the Zoo.

Overall, the new route maintains the existing footprint of the Sky Safari, however, will require the cable car corridor to increase from 9m to 12.5m.

1.1.2 Cable Car Stations

A new station is proposed at each end of the new cable car route allowing for visitors to enter and exit at both the top and bottom of the Zoo site.

Top Station is proposed to replace the existing storage facility adjacent to the Main Entrance Plaza. The new station location will provide Zoo guests with direct access to the Sky Safari via the existing Main Entrance plaza. The station provides covered queuing within the heritage building and associated landscaping and shading provided in the plaza space.

Lower Station is proposed to replace the existing lower station near the Taronga Ferry Wharf. The station aims to improve existing queuing on site by incorporating fully equitable queuing areas with shade and amenity in order to enhance the visitor's arrival experience. The Lower Station will have improved accessibility through the new ramping system up to the station which will make the station easily accessible for those in wheelchairs and with prams. In addition, level access into the station when re-queuing to use the cable car to go back to the Top Station, removing the existing stairs. A lift will also be provided to access the platform if required by guests. The station will also be supplemented with toilet amenities and a ticketing booth.

There are six pylons, one located at each station (top and lower) and four within zoo. There are no pylons outside of the Zoo grounds.

- Pylon 1 (5.9m) – located in close proximity to the existing and proposed Lower station;
- Pylon 2 (10.12m) – located by existing Pylon 2;
- Pylon 3 (26.2m) – located by the Food Court;
- Pylon 4 (35.7m) – in front of the Savannah toilet facilities;
- Pylon 5 (36.5m) – located to the north of the Helmore lawns; and
- Pylon 6 (6.5m)– located in close proximity to the existing and proposed Top station.

1.2 Overview

Narla Environmental Pty Ltd (Narla) was engaged by the Taronga Conservation Society Australia ('the proponent') to prepare a SBDAR to accompany a State Significant Development Application (SSDA) as part of the Secretary's Environmental Assessment Requirements (SEARs) for the proposed redevelopment of the existing Sky Safari at Taronga Zoo at Bradleys Head Rd, Mosman NSW 2088 (Lot 22/DP843294; hereafter referred to as the 'Subject Property'; **Figure 1**).

The proposed Taronga Sky Safari redevelopment is a SSD. Part 4, Division 4.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act) establishes the assessment framework for SSD's. The preparation of this SBDAR is in response to the SEARs issued for the EIS by the NSW Department of Planning and Environment.

This SBDAR has been prepared as a 'Streamlined assessment module- small area development that requires consent' as it does not exceed the area clearing threshold for small area developments as outlined in the Biodiversity Assessment Method (BAM; DPIE 2020a; **Table 1**). Narla have produced this report in accordance with the requirements of the Biodiversity Conservation Act 2016 and Biodiversity Conservation Regulation 2017. The assessment has been completed in accordance with Appendix L of the BAM (DPIE 2020a).

Table 1. Area limits for application of small area development threshold on land not shaded on the biodiversity value map. Dark border indicated clearing threshold relevant to this report.

Minimum lot size associated with the property	Maximum area clearing 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	≤5ha
1000ha or more	≤10ha

1.3 The Subject Land and Project Area

The proposed development consists of the footprint of the proposed works, which includes the replacement of the existing pylons, construction of cable car stations and the creation of a new accessway as well as some additional vegetation removal/trimming areas to facilitate development, mostly consisting of overhanging canopy. All aspects of the proposed development will hereafter be referred to as the Subject Land (**Figure 2**).

The Subject Land covers an area of approximately 0.47ha, and encompasses all areas within the Project Area that will be impacted by the proposed development (**Appendix 1**). Areas within the Project Area that are to be retained as part of the works have not been included within the Subject Land. These excluded areas have however been assessed for potential indirect impacts resulting from the proposed works.

The Subject Land is mostly comprised of existing buildings and hardstand, although some areas of remnant native vegetation and exotic vegetation are present. The proposed works have been strategically located in a way that will minimise potential impacts on biodiversity where possible.

1.4 Site Location and Description

The Subject Property is situated within the suburb of Mosman in the Mosman Council Local Government Area (LGA), covering an area of approximately 28ha on land zoned as 'SP1 - Special Activities: Zoological Gardens'. The Subject Property is situated within the northern area of Bradleys Head, and is surrounded by Sydney Harbour National Park on the eastern and southern boundaries, and low density residential to the north (**Figure 3**).

1.5 Sources of Information Used

A thorough literature review was undertaken to gain an insight into the ecology and applicable legislation within the locality and the Mosman LGA. Relevant data and literature reviewed in preparation of this report included:

- Relevant State and Commonwealth Databases & Datasets:
    - NSW BioNet. The website of the Atlas of NSW Wildlife (DCCEEW 2024a);
    - NSW BioNet. Threatened Biodiversity Data Collection (DCCEEW 2024b);
    - NSW BioNet. Vegetation Classification System (DCCEEW 2024c); and
    - NSW Government Spatial Services: Six Maps Clip & Ship (NSW Government Spatial Services 2024)
- Vegetation and Soil Mapping:
    - NSW State Vegetation Type Map (DPE 2022); and
    - Soil Landscapes of the Sydney 1:100 000 Sheet (Chapman and Murphy 2009).
- NSW State Guidelines:
    - Biodiversity Assessment Method (DPIE 2020a);
    - Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE 2019a);
    - Biodiversity Assessment Method Calculator Version 1.4.0.00 (DCCEEW 2024d);
    - Biodiversity Offsets and Agreement Management System (BOAMS);
    - Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPIE 2020b); and
    - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC 2004).
- Council Documents:
    - Mosman Local Environmental Plan (LEP) 2012
    - Mosman Development Control Plan (DCP) 2012
    - Weeds Declared in the Greater Sydney Region (DPI 2024)

Preparation of this BDAR also involved the review of the following accompanying project documents:

- Taronga Zoo Sky Safari – Site Plan – Proposed Site Plan: issue A (NewScape 2024; **Appendix 1**);
- Arboricultural Impact Appraisal and Method Statement: Sky Safari (Naturally Trees 2025).

These sources were used to gain an understanding of the natural environment and ecology of the Subject Land and its surrounds. Searches using NSW Wildlife Atlas (BioNet) were conducted to identify current threatened flora and fauna records within and surrounding the Subject Land. These data were used to assist in establishing the presence or likelihood of any biodiversity values as occurring on, or adjacent to, the Subject Land, and helped inform our Ecologist on what to look for during the site assessment.

Figure 1. Components of the Subject Property.

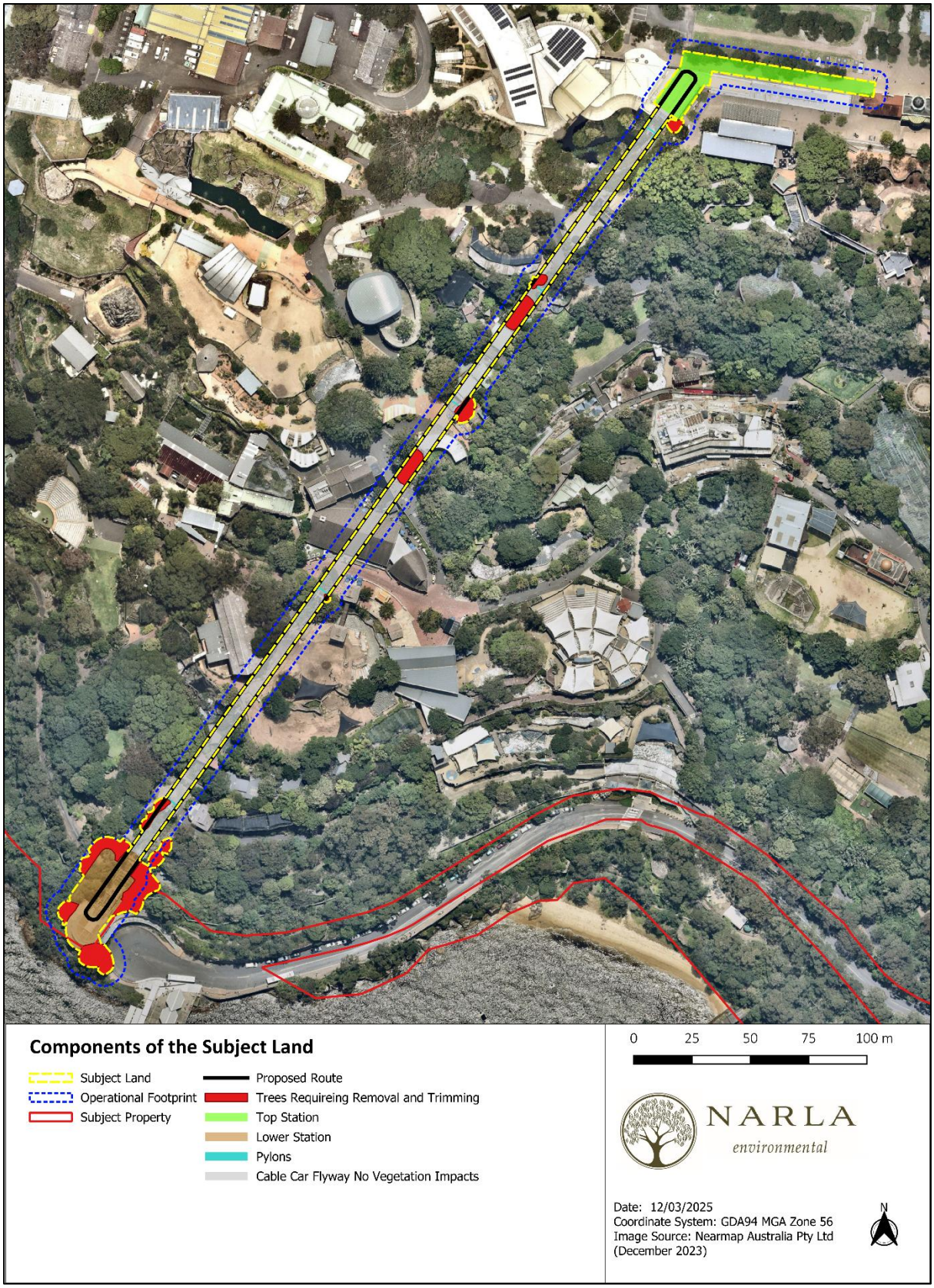

Figure 2. Components of the Subject Land.

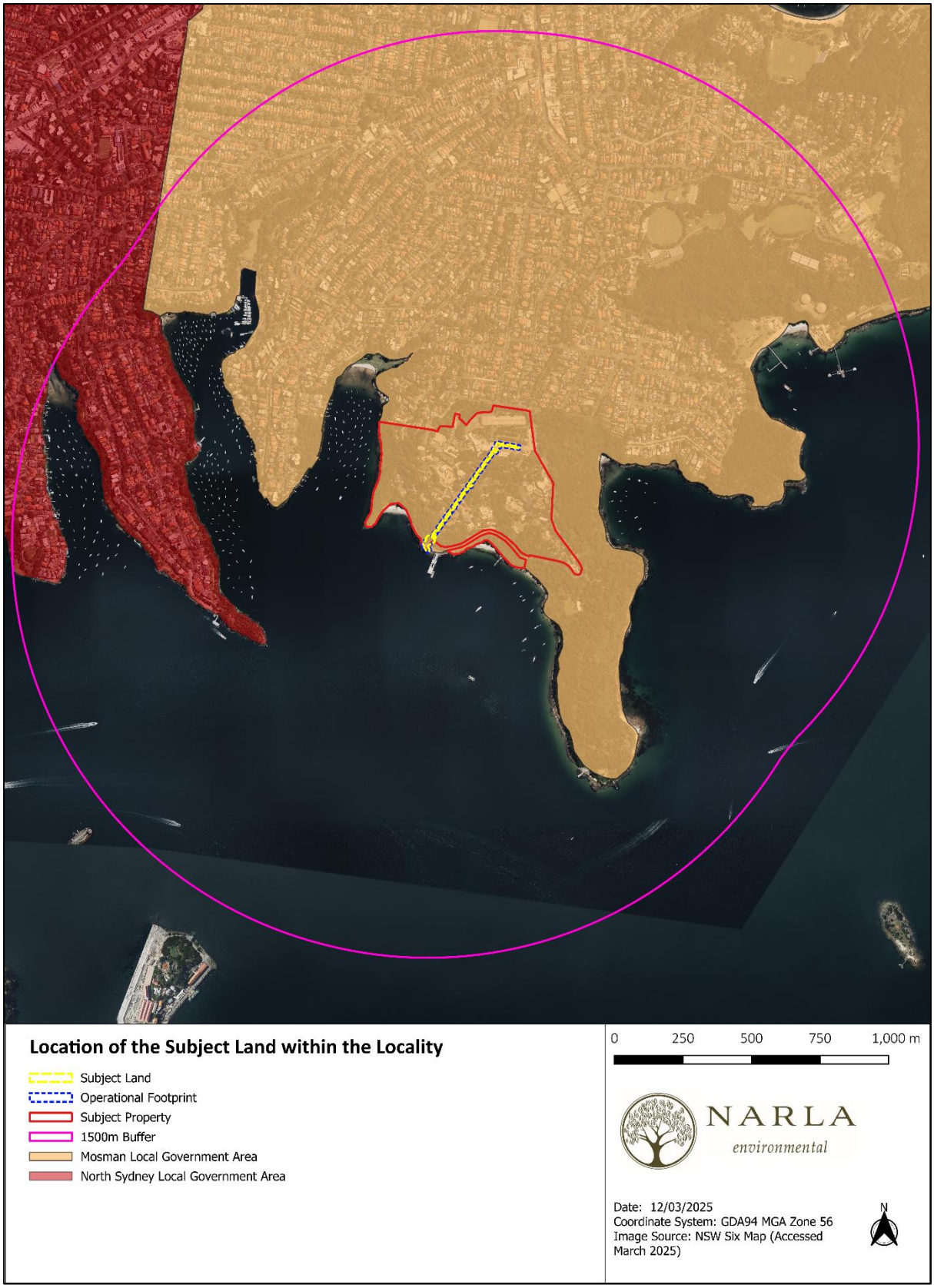

Figure 3. The location of the Subject Land within the locality.

1.6 Aim and Approach

This report has been prepared in accordance with the BAM (DPIE 2020a) and aims to:

- Describe the biodiversity values present within the Subject Land, including the extent of native vegetation, vegetation integrity and the presence of Threatened Ecological Communities (TECs);
- Determine the habitat suitability within the Subject Land for candidate threatened species;
- Prepare an impact assessment in regard to potential impacts of the proposed development on biodiversity values, including potential prescribed impacts and SAIIs within the Subject Land;
- Discuss and recommend efforts to avoid and minimise impacts on biodiversity values; and
- Calculate the biodiversity credits (i.e., ecosystem credits and species credits) that measure potential impacts of the development on biodiversity values. This calculation will inform the decision maker as to the number and class of offset credits required to be purchased and retired as a result of the proposed development.

2. Landscape Context

2.1 IBRA Bioregion and Subregion

The Subject Land occurs within the 'Pittwater' Interim Biogeographic Regionalisation for Australia 7 (IBRA7) Subregion, which is part of the 'Sydney Basin' IBRA7 Bioregion (**Figure 4**).

2.2 Mitchell Landscapes

Mitchell Landscapes (2002) groups ecosystems into meso-ecosystems representing larger natural entities based on topography and geology. The naming of ecosystems and meso-ecosystems was standardised so that each name provided location information and a meaningful descriptive landscape term.

The Subject Land occurs within the 'Belrose Coastal Slopes' Mitchell Landscape Ecosystem (**Figure 5**). The Belrose Coastal Slopes landscape is characterised by 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 (*Eucalyptus haemastoma*), Red Bloodwood (*Corymbia gummifera*), Yellow-top Ash *(Eucalyptus luehmanniana*), 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*).

2.3 Topography, Geology and Soils

The Subject Land is situated on a relatively steep terrain with an elevation ranging between 13m and 72m above sea level (Google Earth 2024). The Subject Land is mapped as occurring across the Gymea, Lambert and Hawksbury Soil Landscapes as per the soil landscapes of Sydney 1:100,000 map Sheet (OEH, 2013).

The Gymea Landscape is typically characterised by undulating to rolling crests and slopes on Hawkesbury Sandstone. Local relief 20–80 m; slopes 10–25%. Broad convex crests, moderately inclined side slopes with wide benches, rock outcrop on low broken scarps. Extensively cleared open-forest and woodland.

Similarly, the Lambert Soil Landscape is typically characterised by undulating to rolling low hills on Hawkesbury Sandstone. Local relief 20–120 m; slopes <20%. Rock outcrop >50%. Broad ridges, gently to moderately inclined slopes, wide rock benches with low broken scarps, small hanging valleys and areas of poor drainage. Open- and closed-heathland, scrub and eucalypt open-woodland.

The Hawksbury Landscape is typically characterised by rugged, rolling to very steep hills on Hawkesbury Sandstone. Local relief 40 – 200 m. Slopes >25%. Rock outcrop >50%. Narrow crests and ridges, narrow incised valleys, steep side slopes with rocky benches, broken scarps and boulders. Mostly uncleared eucalypt open-woodland and tall open-forest.

2.4 Areas of Geological Significance and Soil Hazards

The Subject Land did not contain any areas of geological significance, such as karsts, caves, cliffs however small areas of bush rock and sandstone rock ledging were present immediately adjacent to the Subject Land. The Subject Land was not mapped as occurring on Acid Sulfate Soils nor mapped as having risk/probability of exhibiting occurrence of acid sulfate soils.

2.5 Hydrology

No mapped watercourses are located within the Subject Land. Several 1st order watercourses occur within the broader locality (1500m buffer; **Figure 6**). The Subject Property occurs on the northern shore of the harbour with approximately half the locality occurring within the harbour.

2.6 State Environmental Planning Policy (Resilience and Hazards) 2021: Chapter 2 - Coastal Management

The Subject Land and the immediate surrounds (within the 1500m buffer) do not contain any areas of native vegetation identified as 'Coastal Wetlands' as per chapter 2 of the SEPP. However, areas mapped as containing Coastal Use Area and Coastal Environmental Area as per the SEPP were mapped within the Subject Land, with areas of Littoral Rainforest and Proximity to Littoral Rainforest occurring within the broader landscape (**Figure 7**).

2.7 Native Vegetation Cover and Connectivity

Native vegetation cover and connectivity have been assessed in accordance with Section 3.2 of the BAM (DPIE 2020a). The native vegetation cover will be used to assess the habitat suitability of the Subject Land for threatened species. Areas of connectivity will determine the extent of habitat that may facilitate the movement of threatened species across their range. A 1500m buffer around the boundary of the Subject Land was calculated to determine the extent of native vegetation and habitat connectivity. Native vegetation covered approximately 125ha within the buffer circle (total land area = 857ha) and was assigned to the >10–30% class.

Areas of connectivity will determine the extent of habitat that may facilitate the movement of threatened species across their range. Areas of connectivity that may facilitate the movement of threatened species were evident within the 1500m surrounding the Subject Land (**Figure 8**; **Figure 9**) with the most significant areas being located to the south and east along the Sydney Harbour foreshore.

2.8 Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value occur on the Subject Land or surrounding area.

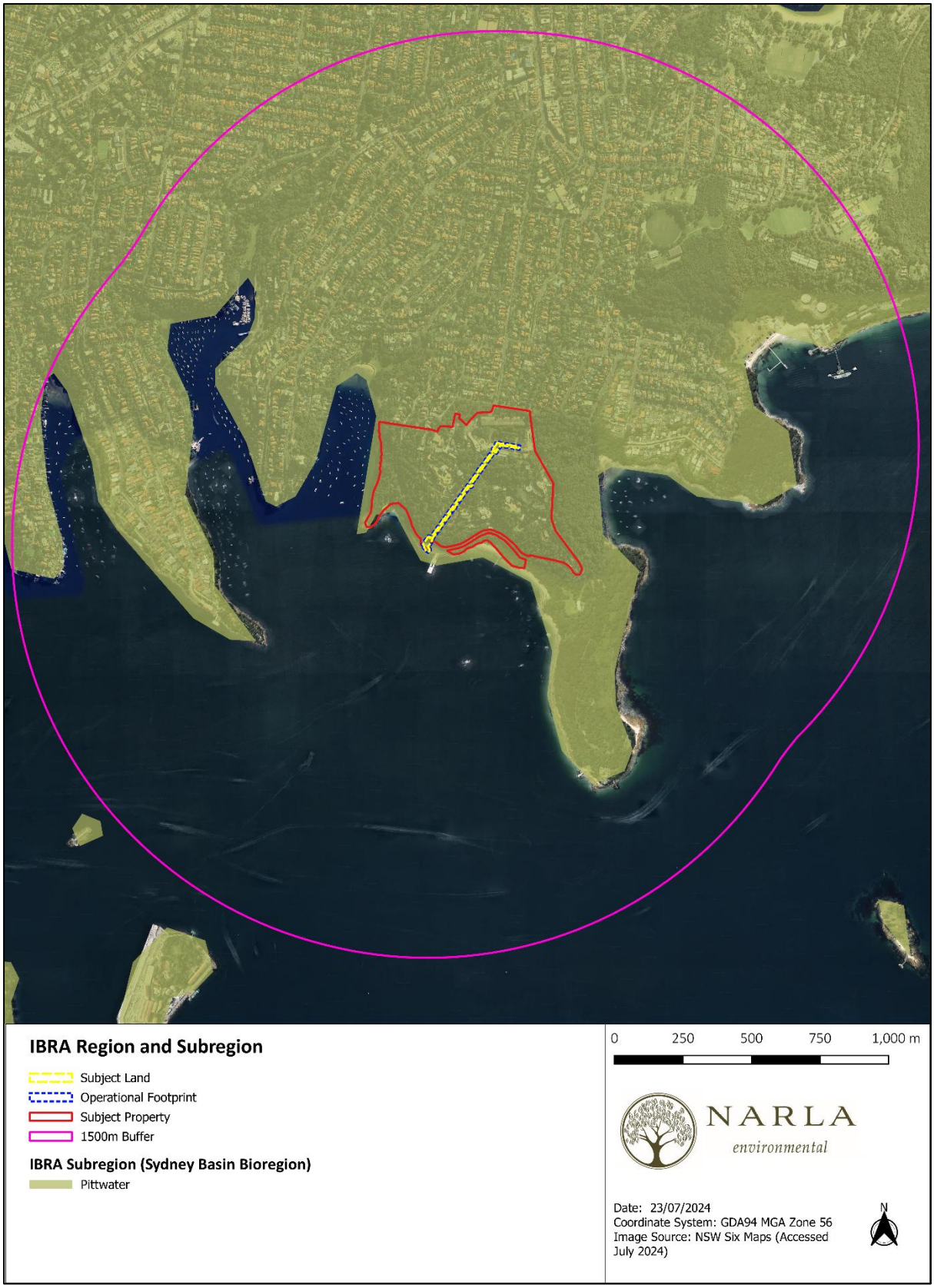

Figure 4. IBRA Bioregion and Subregion of the Subject Land, and within a 1500m buffer.

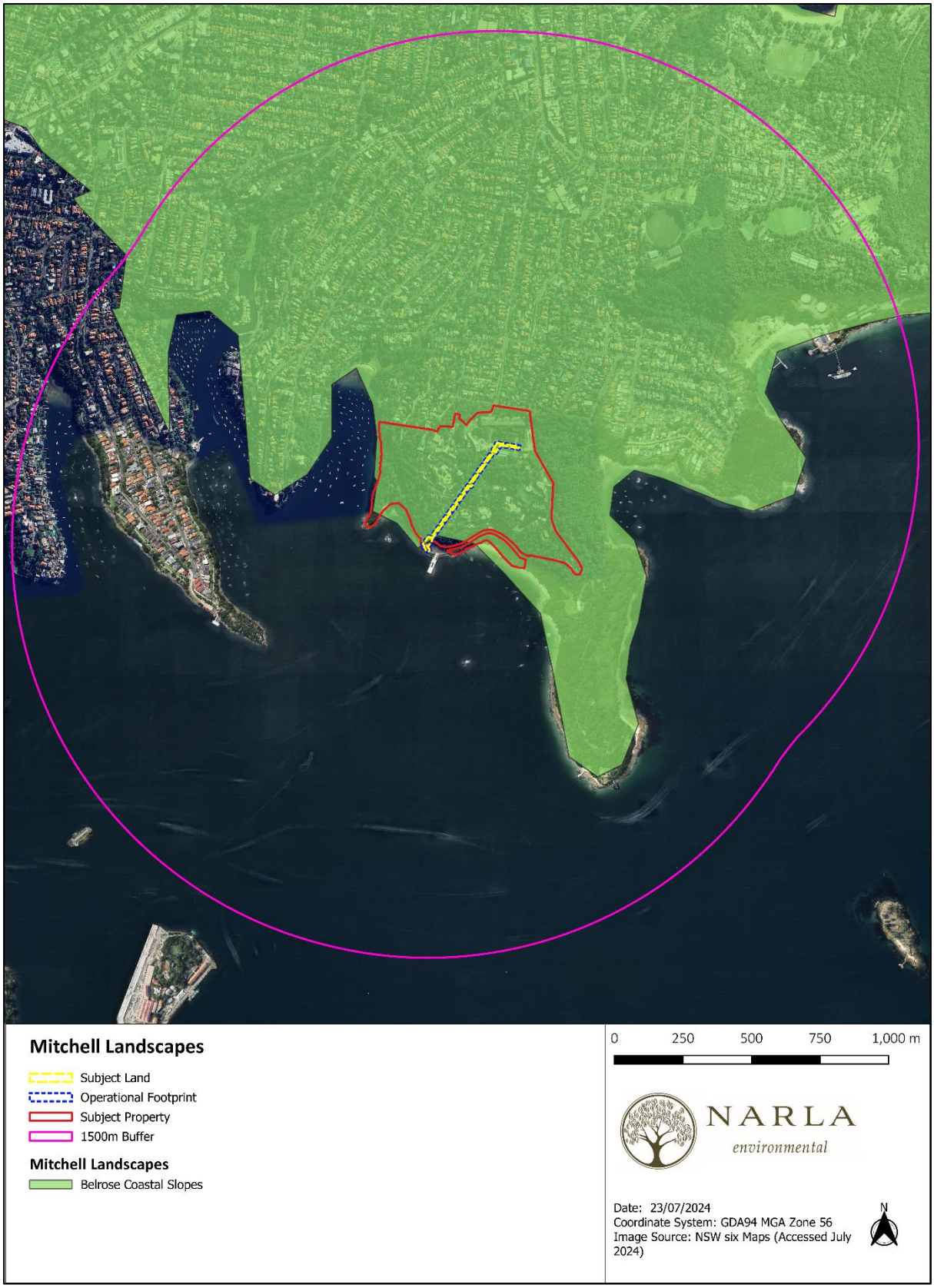

Figure 5. Mitchell Landscapes of the Subject Property and Subject Land, and within a 1500m buffer.

Figure 6. Rivers and streams (with associated riparian buffers) occurring within the 1500m buffer.

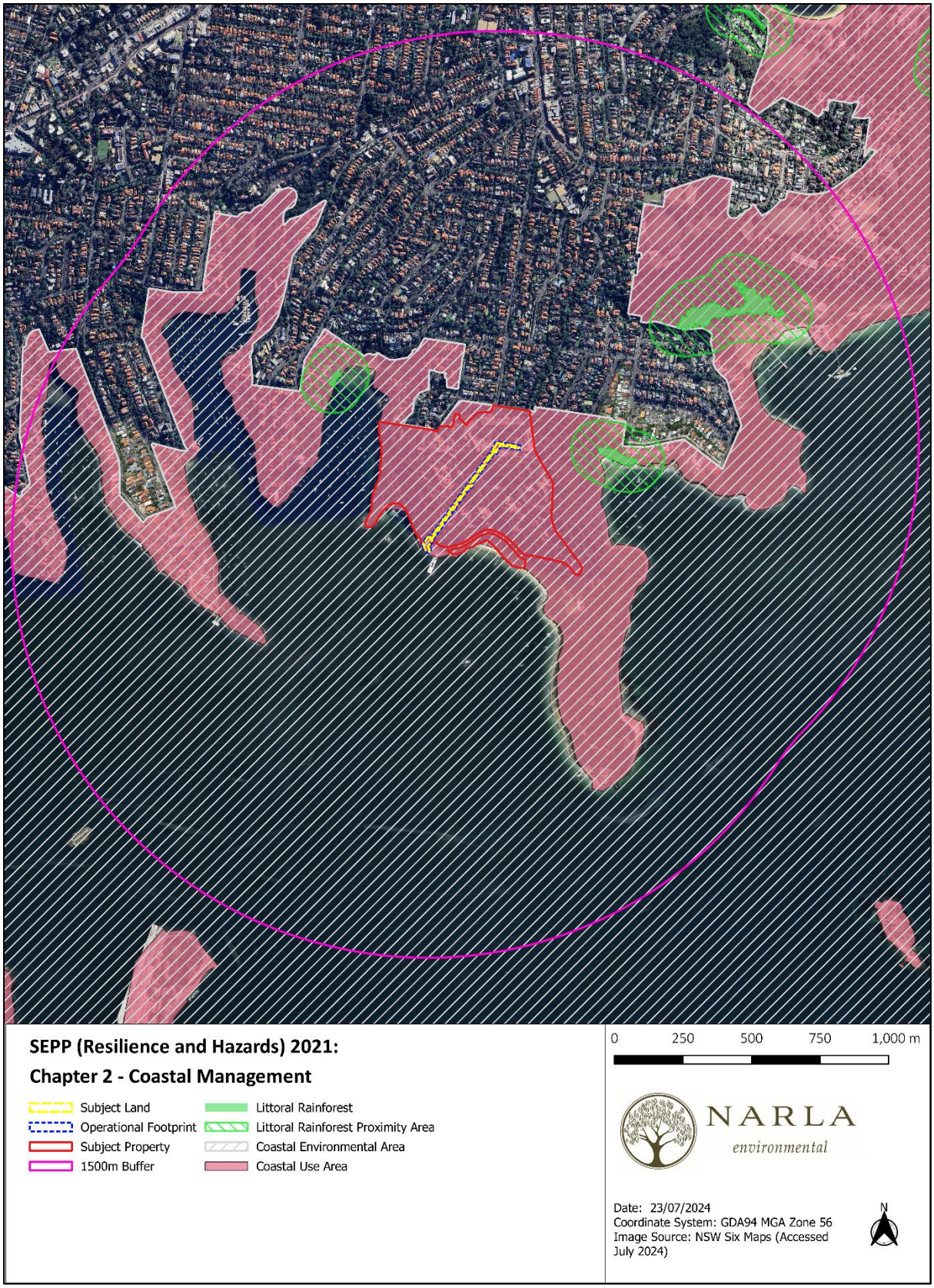

Figure 7. Areas mapped under Chapter 2 of the Resilience and Hazards SEPP in relation to the Subject Land and general locality.

Figure 8. The extent of native vegetation and habitat connectivity within the 1500m buffer.

Figure 9. The extent of native vegetation and habitat connectivity within the Subject Land.

3. Native Vegetation

3.1 Plant Community Types (PCTs) Identified within the Subject Land

3.1.1 Historically Mapped Vegetation

The NSW State Vegetation Type Map (DPE 2022) identifies the vegetation within the Subject Land as comprising as "Not Classified". One PCT however is identified in close proximity to the Subject Land:

- PCT 3594 – Sydney Coastal Sandstone Foreshores Forest.

3.1.2 Plant Community Type Selection Process

Field surveys conducted by experienced Narla ecologist Jonathon Coy and Chris Moore confirmed that one (1) native vegetation community occurred within the Subject Land. Plant Community Type selection for this vegetation community was undertaken using information and databases provided in the BioNet Vegetation Classification System (DCCEEW 2024d). The following selection criteria were used in the PCT Filter Tool to develop the PCT shortlist:

- IBRA Bioregion: Sydney Basin
- IBRA Subregion: Pittwater
- Dominant Species: *Eucalyptus robusta*, *Eucalyptus botryoides*, *Pittosporum undulatum*, *Lophostemon confertus* and *Ficus rubiginosa*.

This process delivered a selection of six (6) PCT's that occur within the Pittwater IBRA Subregion (and Sydney Basin Bioregion) that had all of the 4 out of 5 of the dominant species (i.e., the highest potential of occurring within the Subject Land). The geographical distribution and landscape position of each shortlisted PCT was then compared against the location and landscape of the Subject Land, confirming the two (2) candidate PCTs (**Table 2**). The steps taken to justify the presence/absence of the candidate PCTs within the Subject Land are detailed in **Table 3**.

Table 2. Output from the PCT Filter Tool (DCCEEW 2024d) and subsequent shortlisting of candidate PCTs. Green shading indicates the PCTs from the output that occur within the distribution and landscape position of the Subject Land.

Plant Community Type (PCT)	Subject Land within known distribution/landscape position?	No. of Floristic Matches	*Eucalyptus robusta*	*Eucalyptus botryoides*	*Pittosporum undulatum*	*Lophostemon confertus*	*Ficus rubiginosa*
PCT 3176: Sydney Enriched Sandstone Moist Forest	No. This community is found in enriched sandstone gullies of the Sydney coastal sandstone plateaus and distributed within the low elevation gullies that incise the shale rich landscapes of the north shore of Sydney. The Subject Land doesn't occur within a gully.	4	✓	×	✓	✓	✓
PCT 3234: Hunter Coast Lowland Spotted Gum Moist Forest	No. This community is found on sheltered Permo-Triassic sandstone escarpments and hills along the coastal lowlands between Pittwater and the Karuah River, central and lower north coast. The Subject Land occurs south of Pittwater.	4	✓	✓	✓	×	✓
PCT 3242: Lower North Ranges Turpentine Moist Forest	No. This is found on the sheltered slopes of coastal hills and ranges between Gosford and Taree, Hunter and lower north coasts. The Subject Land doesn't occur within this distribution.	4	×	✓	✓	✓	✓

Plant Community Type (PCT)	Subject Land within known distribution/landscape position?	No. of Floristic Matches	*Eucalyptus robusta*	*Eucalyptus botryoides*	*Pittosporum undulatum*	*Lophostemon confertus*	*Ficus rubiginosa*
PCT 3546: Coastal Sands Littoral Scrub-Forest	No. This Community is found in the littoral zone on coastal dunes and rarely headlands south from Forster on the lower north coast to the Victorian border. The Subject Land occurs on a Headland.	4	✓	✓	✓	✖	✓
PCT 3556: Umina Coastal Sand Woodland	No. This Community is very restricted tall dry shrubby sclerophyll open forest mainly found on low-lying marine sands at Umina, Central Coast. The Subject Land is not on Low-lying marine sands within the Central Coast.	4	✓	✓	✓	✖	✓
PCT 3592: Sydney Coastal Enriched Sandstone Forest	Yes. This community is found on slightly enriched Hawkesbury Sandstone soils on sheltered slopes and occasionally crests on the Sydney coastal sandstone plateaus. The Subject Land occurs on Hawksbury Sandstone and on a coastal plateau.	4	✓	✓	✓	✖	✓

Plant Community Type (PCT)	Subject Land within known distribution/landscape position?	No. of Floristic Matches	*Eucalyptus robusta*	*Eucalyptus botryoides*	*Pittosporum undulatum*	*Lophostemon confertus*	*Ficus rubiginosa*
PCT 3594: Sydney Coastal Sandstone Foreshores Forest	Yes. This community is found along the foreshores of major waterways and coastal escarpments of Sydney. This PCT is mainly distributed between the Hacking River and Pittwater. The Subject Land occurs within the known landscape and distribution of this community.	5	✓	✓	✓	✓	✓

Table 3. PCT Selection Criteria. Green indicates the selected PCT.

Candidate PCT	PCT Description (DPE 2022c)	Justification
PCT 3592: Sydney Coastal Enriched Sandstone Forest	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. 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. 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. 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*. 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.	Narla have **not** assigned this PCT to the vegetation within the Subject Land. Whilst it does fit within the landscape profile and comprises a number of diagnostic species. It was determined PCT 3594 was a better fit for the Subject Land as it is matches the description and historical vegetation mapping.

Candidate PCT	PCT Description (DPE 2022c)	Justification
PCT 3594: Sydney Coastal Sandstone Foreshores Forest	A tall, occasionally very tall, sclerophyll open forest with a mixed understorey of dry shrubs and mesic small trees found along the foreshores of major waterways and coastal escarpments of Sydney. The tree canopy is very frequently dominated by *Angophora costata* with occasional local stands of *Eucalyptus botryoides* or rarely other eucalypt species. A sparse taller layer in the mid-stratum commonly includes *Banksia integrifolia* or *Allocasuarina littoralis* and occasionally *Ficus rubiginosa*. A combination of hardy mesic small trees including *Pittosporum undulatum*, *Glochidion ferdinandi* and *Elaeocarpus reticulatus* are almost always present with *Notelaea longifolia* also common. In the suburban environment, the proliferation of these mesic species in the understorey at long unburnt sites has generated considerable debate, particularly as there appears to be strong correlation between time since fire and their density. Our data suggests these species are also more common in these littoral zones than other sheltered sandstone forests situated further away from the coast. Sclerophyll shrubs are less frequent however include *Acacia longifolia*, *Acacia suaveolens*, *Breynia oblongifolia* and *Monotoca elliptica*. The ground layer is characterised by a mid-dense cover of ferns, graminoids, climbers and grasses. The low elevations adjoining major waterways expose the vegetation to a maritime influence brought by salt laden southerly winds. This PCT is mainly distributed between the Hacking River and Pittwater. With increased elevation and distance from waterways this community typically grades into PCT 3592.	Narla have assigned this PCT to the vegetation within the Subject Land as it is the best fit within the landscape profile and comprises a number of diagnostic species. The Subject Land is situated on sheltered sandstone slopes along the foreshores of Sydney's major waterways (Sydney Harbour) and coastal escarpments. The underlying geology is Hawksbury Sandstone. This PCT has been historically mapped as immediately adjacent to the Subject Land and within the Proposal Area.

3.1.3 Final PCT and Vegetation Zone Selection

Field surveys conducted by Narla confirmed that one (1) PCT was identified within the Subject Land as well as areas of Exotic Landscaped Vegetation:

- PCT 3594: Sydney Coastal Sandstone Foreshores Forest.

One (1) vegetation zone was identified within the Subject Land:

- Zone 1: PCT 3594 – Moderate Condition (Mixed Remnant).

This vegetation zone is detailed in **Table 4**, and displayed in **Figure 10**.

As per section 4.1.2 of the BAM the community identified as Exotic Landscaped Vegetation has not been assigned to a vegetation zone. This vegetation is detailed in **Table 5**.

Table 4. PCT 3594: Sydney Coastal Sandstone Foreshores Forest identified within the Subject Land.

Zone 1: PCT 3594 - Moderate Condition (Mixed Remnant)	
Vegetation class	Sydney Coastal Dry Sclerophyll Forests
Total area within Subject Land	0.1ha
Condition Class	**Moderate Condition (Plate 1)**
Field survey effort	A site assessment was conducted by experienced Narla Principal Ecologist Chris Moore and Ecologist Jonathon Cox on the 24th of January 2024. Due to the highly modified landscape and urbanised nature of the Zoo. One (1) VIS plot was established outside of the Subject Land within vegetation considered to be representative of the impact area.
Description of vegetation within the Subject Land	
Vegetation within this zone was in moderate condition, consisting of a mixture of natural occurring remnant vegetation of all strata levels as well as exotic and landscaped vegetation. Native canopy species located within BAM plot included *Lophostemon confertus*, *Eucalyptus punctata*, *Ficus rubiginosa*, *Glochidion ferdinandi* and *Banksia integrifolia.* The shrub layer was predominantly located within managed landscaped gardens with native species consisting of *Pittosporum undulatum, Breynia oblongifolia, Homolanthus populifolius* and *Hakea dactyloides.* The Ground cover was similarly restricted to managed gardens with native species such as *Lomandra longifolia, Pteridium esculentum,* and *Commelina cyanea.* Several commonly planted exotic landscape species and environmental weeds were spread throughout the structural layers such as *Strelitzia nicolai, Chlorophytum comosum, Ehrharta erecta, Paspalum dilatatum, Ligustrum lucidum, Ipomea indica* and *Cardiospermum grandiflorum.*	
Description in the VIS (DCCEEW 2024d)	
A tall, occasionally very tall, sclerophyll open forest with a mixed understorey of dry shrubs and mesic small trees found along the foreshores of major waterways and coastal escarpments of Sydney. The tree canopy is very frequently dominated by *Angophora costata* with occasional local stands of *Eucalyptus botryoides* or rarely other eucalypt species. A sparse taller layer in the mid-stratum commonly includes *Banksia integrifolia* or *Allocasuarina littoralis* and occasionally *Ficus rubiginosa*. A combination of hardy mesic small trees including *Pittosporum undulatum*, *Glochidion ferdinandi* and *Elaeocarpus reticulatus* are almost always present with *Notelaea longifolia* also common. In the suburban environment, the proliferation of these mesic species in the understorey at long unburnt sites has generated considerable debate, particularly as there appears to be	

Zone 1: PCT 3594 - Moderate Condition (Mixed Remnant)	
strong correlation between time since fire and their density. Our data suggests these species are also more common in these littoral zones than other sheltered sandstone forests situated further away from the coast. Sclerophyll shrubs are less frequent however include *Acacia longifolia*, *Acacia suaveolens*, *Breynia oblongifolia* and *Monotoca elliptica*. The ground layer is characterised by a mid-dense cover of ferns, graminoids, climbers and grasses. The low elevations adjoining major waterways expose the vegetation to a maritime influence brought by salt laden southerly winds. This PCT is mainly distributed between the Hacking River and Pittwater. With increased elevation and distance from waterways this community typically grades into PCT 3592.	
Structure of vegetation	All stratum (canopy, shrub and groundcover) were present across the zone and within the broader Project Area. Native vegetation within the BAM plot comprised of trees (13.6%), shrubs (9.2% cover), grasses (2.1%), forbs (0.3%) and Ferns (1%). A high litter cover of 73% was present, as well as 53m of fallen logs. The vegetation zone contained trees in all stem size classes, including regenerating trees and five large trees (>50cm). Three (3) hollow bearing trees were recorded within the zone.
TEC Status (BC Act 2016	Not listed
Associated TEC (EPBC Act 1999)	Not listed
Scientific Reference from VIS (DPIE 2022c)	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

Table 5. Exotic Landscaped Vegetation within the Subject Land.

Urban Native/Exotic	
Vegetation class	N/a
Total area within Subject Land	0.02ha
Field survey effort	Owing to the exotic nature of this zone no VIS plots were established.
Description of vegetation within the Subject Land	
The vegetation assigned to this community consists entirely of the proposed removal and trimming of exotic weedy canopy and landscaped gardens species such as *Olea spp, Ficus maclellandii, Flindersia schottiana,* and *Commersonia bartramia.*	
TEC Status (BC Act 2016	Not listed
Associated TEC (EPBC Act 1999)	Not listed

Plate 1. Representative photo of Vegetation Zone 1: PCT 3594 - Moderate Condition.

Figure 10. Narla field validated vegetation mapping and location of BAM plot within the Subject Land.

3.2 Assessing Patch Size

As defined by the BAM, a patch is an area of native vegetation that occurs on the Subject Land and includes native vegetation that has a gap of less than 100m from the next area of native vegetation (or ≤ 30 m 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
- ≥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.

As areas outside of the Subject Property were not assessed as part of the scope of this assessment, the vegetation zones identified within the Subject Land were separated into the following categories to allow for aerial mapping of patch size within the broader area (**Figure 11**):

- Woody Ecosystems:
    - Zone 1: PCT 3594.

Table 6. Patch size classes of each PCT and associated vegetation zones.

Plant Community Type	Category	Vegetation Zone	Patch Size Class
PCT 3594	Woody Ecosystems	Zone 1	≥100ha

Figure 11. The patch size of Vegetation Zone 1 occurring within the 1500m buffer. The patch does however extend further than the buffer boundary.

3.3 Vegetation Integrity Survey (VIS) Plots

One (1) BAM VIS Plot was established within the Project Area. Plot data gathered for each attribute used to assess the function of the Subject Land vegetation is detailed in **Appendix 2**. Vegetation Integrity (VI) Scores represented by existing vegetation within the vegetation zone are detailed in **Table 7**.

3.3.1 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 BAMC (DCCEEW 2024a).

The Subject Land will be exposed to full clearing as a result of the proposed development (**Figure 12**):

- Vegetation Zone 1: PCT 3594:
    - Management Zone 1: Total Impact – this area is defined by the construction and operational footprints.

All areas outside of the above management zone consist of either existing buildings, hardstand or Exotic Vegetation and have therefore not been assigned to a management zone.

Table 7. Vegetation integrity scores for each identified zone.

Vegetation Zone	Management Zone	Area (ha)	Survey Effort	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Future VI Score	Change in VI Score	Total VI Loss	Hollow bearing trees
PCT 3594: Sydney Coastal Enriched Sandstone Forest											
PCT 3594: Sydney Coastal Enriched Sandstone Forest	Management Zone 1: Complete Removal	0.1	1 x 1000m^2 (20m x 50m) VIS Plot	31.1	8.4	100	29.6	0	-29.6	-29.6	Present

Table 8. Management Zones within the Subject Land, and relevant vegetation attributes (composition, structure and function) affecting future VI scores.

Vegetation Zone	Management Zone	Changes in Current Vegetation Attributes	Vegetation Attributes Not Changed	Future Vegetation Scores and Justification
Zone 1: PCT 3594 – Moderate Condition	1 – Complete Removal	All vegetation strata and function to be removed within this zone.	NA	▪ All vegetation within this zone requires removal to facilitate the proposed subdivision. for the proposed subdivision. Future composition, structure and function score is 0.

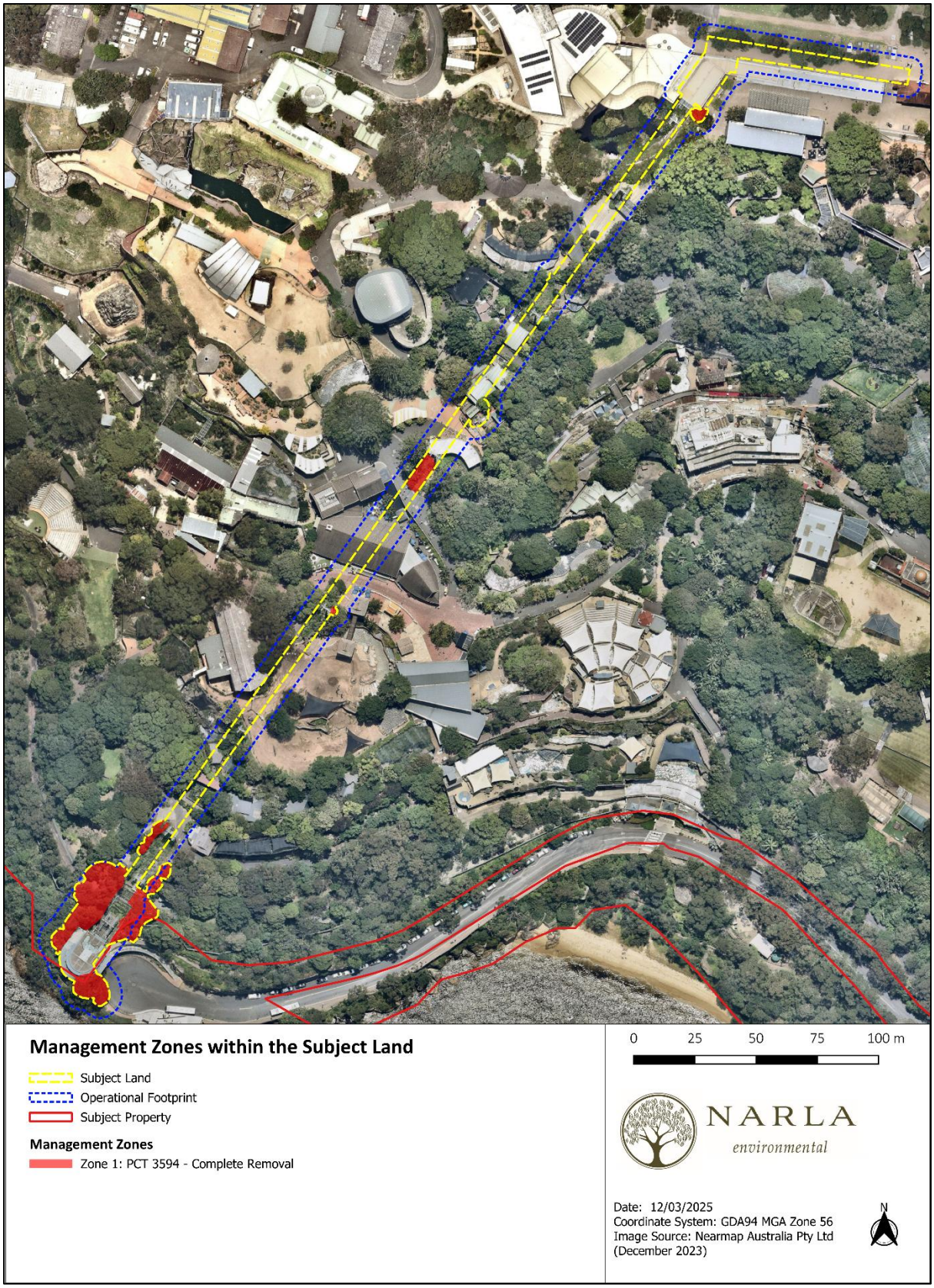

Figure 12. Management zones within the Subject Land.

4. Threatened Species

4.1 Candidate Ecosystem Credit Species

Ecosystem credit species associated with the Subject Land are listed below in **Table 9.** No species predicted by the BAM calculator as potential ecosystem credits were excluded from the assessment due to habitat constraints.

Table 9. Candidate ecosystem credits predicted to occur within the Subject Land.

Scientific Name	BC Act Status	EPBC Act Status	Reason for Exclusion from Assessment
Artamus cyanopterus cyanopterus Dusky Woodswallow	Vulnerable	Not listed	-
Callocephalon fimbriatum Gang-gang Cockatoo (Foraging)	Endangered	Endangered	-
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo (Foraging)	Vulnerable	Vulnerable	-
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Vulnerable	Vulnerable	-
Daphoenositta chrysoptera Varied Sittella	Vulnerable	Not listed	-
Dasyurus maculatus Spotted-tailed Quoll	Vulnerable	Endangered	-
Glossopsitta pusilla Little Lorikeet	Vulnerable	Not listed	-
Haliaeetus leucogaster White-bellied Sea-Eagle (Foraging)	Vulnerable	Not listed	-
Hieraaetus morphnoides Little Eagle (Foraging)	Vulnerable	Not listed	-
Hirundapus caudacutus White-throated Needletail	Vulnerable	Vulnerable	-
Ixobrychus flavicollis Black Bittern	Vulnerable	Not listed	-
Lathamus discolour Swift Parrot (Foraging)	Endangered	Critically Endangered	-
Lophoictinia isura Square-tailed Kite (Foraging)	Vulnerable	Not listed	-
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not listed	-
Miniopterus australis Little Bent-winged Bat (Foraging)	Vulnerable	Not listed	-
Miniopterus orianae oceanensis Large Bent-winged bat (Foraging)	Vulnerable	Not listed	-
Neophema pulchella Turquoise Parrot	Vulnerable	Not listed	-
Pandion cristatus Eastern Osprey (Foraging)	Vulnerable	Not listed	-
Petroica boodang Scarlet Robin	Vulnerable	Not listed	-

Scientific Name	BC Act Status	EPBC Act Status	Reason for Exclusion from Assessment
Petroica phoenicea Flame Robin	Vulnerable	Not listed	-
Pteropus poliocephalus Grey-headed Flying-fox (Foraging)	Vulnerable	Vulnerable	-
Ptilinopus superbus Superb Fruit-Dove	Vulnerable	Not listed	-
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Vulnerable	Not listed	-
Varanus rosenbergi Rosenberg's Goanna	Vulnerable	Not listed	-

4.2 Historically Recorded Threatened Species

The following threatened species credit species have been historically recorded within the broader Subject Property. With the exception of Large Bent-winged Bat, all were recorded outside the Subject Land (**Figure 13**):

- *Acacia terminalis* subsp. Eastern Sydney (Sunshine Wattle);
- *Dasyurus maculatus* (Spotted-tailed Quoll);
- *Glossopsitta pusilla* (Little Lorikeet);
- *Lathamus discolor* (Swift Parrot);
- *Miniopterus australis* (Little Bent-winged Bat);
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat);
- *Myotis macropus* (Southern Myotis);
- *Petaurus norfolcensis* (Squirrel Glider);
- *Phascolarctos cinereus* (Koala);
- *Pteropus poliocephalus* (Grey-headed Flying Fox); and
- *Syzygium paniculatum* (Magenta Lilly Pilly).

Each species is therefore required to have their specific habitat requirements assessed in this assessment regardless of whether or not the species is considered an SAII. If suitable habitat is identified within the Subject Land, these species are required to be assumed present or be surveyed to rule out their presence in accordance with section 5.2 of the BAM (DPIE 2020a).

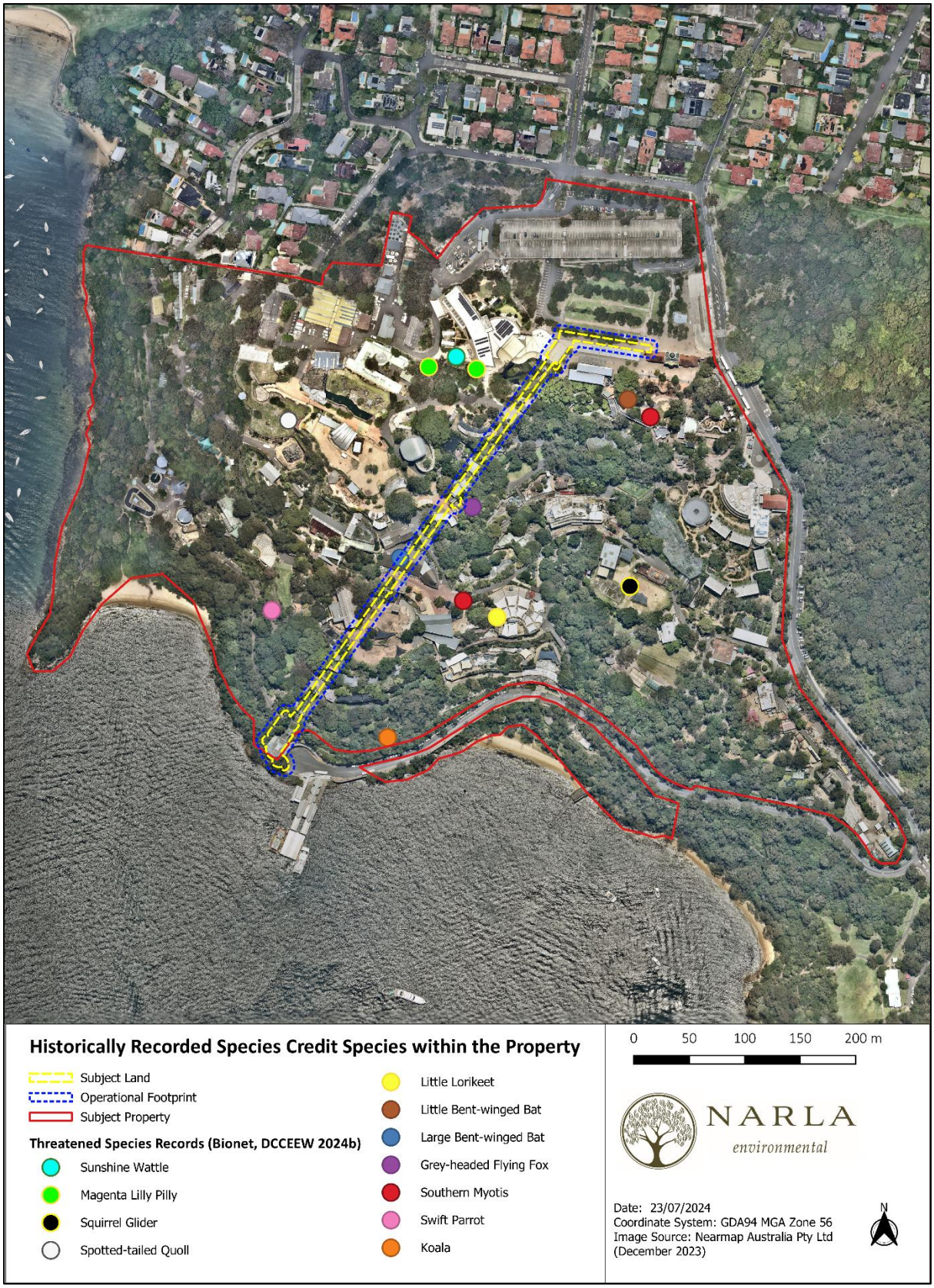

Figure 13. Historically recorded species credit species within the Subject Property.

4.3 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 BAMC (DCCEEW 2024a). A summary of the targeted survey effort applied to each species is provided along with the results of the survey effort, specifically whether or not the species credit needs to be offset through retiring of Biodiversity Offset Credits (Table 10; Table 11).

As per Appendix C of the BAM (DPIE 2020a), the Streamlined Assessment Module only requires surveying for SAII species or those threatened species incidentally located where suitable habitat was present.

Table 10. Candidate fauna 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?
Chalinolobus dwyeri Large-eared Pied Bat	This species is known to occur within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels. Such geological features were not observed within or adjacent to the Subject Land. Potential foraging habitat occurs within the Subject Land, however, as impacts to foraging habitat is not considered an SAII it has not been assessed in this SBDAR.	No	NA	Very High - 3	No
Lathamus discolor Swift Parrot (Breeding)	Three (3) historic records of the species are located within the broader Taronga Zoo. However, as the Subject Land does not intersect Important Habitat map for the species, the species has been excluded in the assessment.	No	NA	High - 2	No
Miniopterus australis Little Bent-winged Bat (Breeding)	This species is known to breed in caves, tunnels, mines and culverts. As such habitat constraints are not present within the Subject Land, this species was excluded from the assessment.	No	NA	High -2	No
Miniopterus orianae oceanensis Large Bent-winged Bat (Breeding)	This species is known to breed in caves, tunnels, mines and culverts. This species has been historically recorded within the broader Taronga Zoo, however as there is no breeding habitat (caves, tunnels, mines	No	NA	High - 2	No

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
	and culverts) present within the Subject Land, this species was excluded from the assessment.				
Myotis macropus Southern Myotis	This species has been historically recorded with the broader Taronga Zoo (Narla 2020). This record was within a wetland habitat which has since been removed. As the Subject Land is no longer located within 200m of known habitat for this species, this species has been excluded from the assessment.	No	NA	High - 2	No
Petaurus norfolcensis Squirrel Glider	One (1) historic record of the species is located within the broader Taronga Zoo, however outside the Subject Land. This species prefers vegetation with large old trees with hollows (DCCEEW 2024c). No hollows were present within the Subject Land. Therefore, this species has been excluded from the assessment.	No	NA	High - 2	No
Phascolarctos cinereus Koala	One (1) historic record of the species is located within the broader Taronga Zoo, however outside the Subject Land. The historical record is located along the southern boundary of the Subject Property. No Koala Use Trees are proposed to be removed within southern portion of the site. Therefore, impacts are considered negligible and the species was excluded from the assessment.	No	NA	High - 2	No
Pteropus poliocephalus Grey-headed Flying-fox (Breeding)	One (1) historic records of this species occur in the broader Taronga Zoo however, no camps were present within the Subject Land. Therefore, this species has been excluded from the assessment.	NA	NA	High - 2	No

Table 11. 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?
Acacia terminalis subsp. Eastern Sydney Sunshine wattle	This species has been historically recorded with the broader Taronga Zoo. However, the individual is likely to have been planted and is situated outside of the Subject Land and will not be impacted by the proposed works. Areas of exotic vegetation within the subject land did not contain *Acacia terminalis.* Given the experience of Narla ecologists who previously identified the *Acacia terminalis* in the Subject Property. It was concluded that no individuals occur within the Subject Land and therefore no offsets are required.	No	NA	High - 2	No
Allocasuarina portuensis Nielsen Park She-oak	As the Subject Land is located to the east of Gladesville and within 5km of the Sydney Harbour foreshore it is within the geographic distribution for this species. Therefore, the species was included in the assessment.	Yes	No	Very High – 3	No
Diuris bracteata	The species is considered to be extinct, though the listing status under the Biodiversity Conservation Act 2016 does not yet reflect this status (TBDC; DCCEEW 2024c)	No	NA	Very High – 3	No

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Syzygium paniculatum Magenta Lilly Pilly	This species has been historically recorded with the broader Taronga Zoo. However, the individual is likely to have been planted and is situated outside of the Subject Land and will not be impacted by the proposed works. Areas of exotic vegetation within the subject land did not contain *Syzygium paniculatum.* Given the experience of Narla ecologists who previously identified the *Syzygium paniculatum* in the Subject Property. It was concluded that no individuals occur within the Subject Land and therefore no offsets are required.	No	NA	High - 2	No

4.4 Targeted Species Credit Surveys

Targeted surveys were undertaken for species credit species considered likely to have suitable habitat within the Subject Land. These surveys were implemented in accordance with Section 6.5 of the BAM and all relevant DPE threatened species survey guidelines.

Targeted surveys were undertaken on 24th January 2023. Weather conditions taken from the nearest weather station (Sydney - Observatory Hill station no. 066214) in the lead up and during the field survey are outlined in **Table 12.**

Pre-survey weather conditions were generally conducive for identifying threatened species should they occur within the Subject Land. Low rainfall in the week prior to the targeted survey may not have provided ideal conditions for the flowering and/or emergence of the targeted flora species.

Table 12. Weather conditions taken from the nearest weather stations (Station number 067021) in the lead up and during the field survey (BOM 2024). Survey date is in bold.

Timing/activities	Date	Day	Temperature		Rainfall (mm)
			Min	Max	
Lead up to the survey	17/01/2023	Monday	18	2	0
	18/01/2023	Tuesday	17	24	2.0
	19/01/2023	Wednesday	18	28	0.2
	20/01/2023	Thursday	19	28	0
	21/01/2023	Friday	21	33	0
	22/01/2023	Saturday	21	25	0
	23/01/2023	Sunday	21	31	0.2
Site Assessment	**24/01/2023**	**Monday**	**24**	**31**	**0**

4.4.1 Fauna Species Credit Survey

A total of nine (9) threatened fauna species were identified within the BAMC (DCCEEW 2024a) as having the potential to occur within the Subject Land.

All nine (9) species were excluded from assessment due to the following:

- Species are considered unlikely to occur and no further assessment is required for that species if it is determined that no habitat constraints are present on the entire Subject Land for the threatened species (as per Section 5.2.2 of the BAM, DPIE 2020a); or
- As per Appendix C of the BAM (DPIE 2020a), the Streamlined Assessment Module only requires surveying for SAII species. Therefore, all non-SAII species were excluded from the assessment.

4.4.2 Flora Species Credit Survey

A total of four (4) threatened flora species was identified as having the potential to occur within the Subject Land. One (1) of these species; *Diuris bracteata* was not surveyed for due to the following:

- Species are considered unlikely to occur and no further assessment is required for that species if it is determined that no habitat constraints are present on the entire Subject Land for the threatened species (as per Section 5.2.2 of the BAM, DPIE 2020a);
- As per Appendix C of the BAM (DPIE 2020a), the Streamlined Assessment Module only requires surveying for SAII species. Therefore, all non-SAII species were excluded from the assessment.

The remaining three (3) species were surveyed for within the Subject Land. The targeted surveys were undertaken for these species in accordance with the 'Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method' (DPIE 2020e; **Figure 14**). These species were not located within the Subject Land. The *Syzygium paniculatum* and *Acacia terminalis* previously recorded within the Subject Property were identified by the Narla Ecologists who conducted this site assessment. Targeted searches were undertaken for these species within the Subject Land and it was determined they did not occur.

Table 13. Species credit flora species requiring targeted surveys.

Candidate Fauna Species	Survey Period (BAMC)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Allocasuarina portuensis Nielsen Park She-oak	✓											
Acacia terminalis subsp. Eastern Sydney Sunshine wattle	✓											
Syzygium paniculatum Magenta Lilly Pilly	✓											
Key	✓ = Surveyed					= Optimum Survey Period						

4.5 Species Polygons

No species polygon was created for *Lathamus discolor* as Subject Land does not intersect the Important Habitat Map within the Subject Property (**Figure 15**).

No species polygons were created for *Acacia terminalis subsp.* Eastern Sydney or *Syzygium paniculatum* as these individuals are considered to not be naturally occurring and are located outside of the Subject Land and are not expected to be impacted by the proposed development.

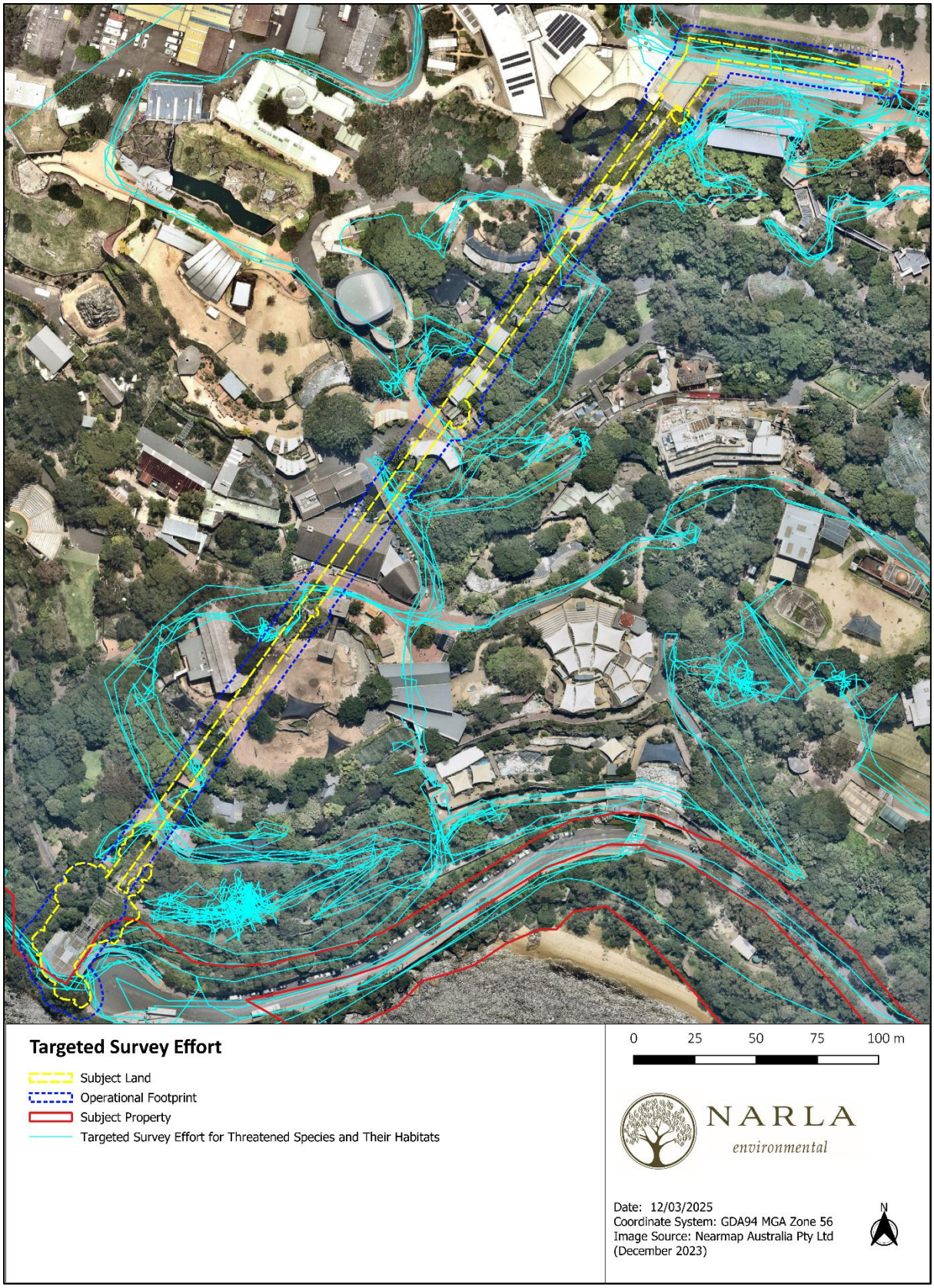

Figure 14. Targeted survey effort for species credit species within the Subject Land.

Figure 15. Swift Parrot Important Areas Map.

5. 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 subdivision on the habitat of threatened species or ecological communities. This is discussed in **Table 14**.

Table 14. Prescribed and uncertain impacts associated with the proposed development.

Will there be impacts on any of the following?	Yes/No	If Yes, Address all of the assessment questions from section 6 of the BAM
Habitat of threatened entities including: ▪ karst, caves, crevices, cliffs, rocks and other geological features of significance, or ▪ human-made structures, or ▪ non-native vegetation	Yes	There are no karsts, caves, crevices, cliffs, rocks and other features of geological significance on or near the Subject Land. Bush rock and rock ledges was identified adjacent to the Subject Land however this will not be impacted by the proposed development. The Subject Land contains existing buildings, that will be demolished as part of the development. A number of threatened microbat species may utilise the roof space for roosting and breeding, including: ▪ *Falsistrellus tasmaniensis* (Eastern False Pipistrelle); ▪ *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat); ▪ *Myotis macropus* (Southern Myotis); ▪ *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat); and ▪ *Scoteanax rueppellii* (Greater Broad-nosed Bat). Non-native vegetation was present within the Subject Land; however, the removal of this vegetation is not expected to impact any threatened species.

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 areas connecting threatened species habitat, such as movement corridors	No	It is unlikely the proposed development will interrupt connectivity for any threatened species, as areas of habitat connectivity will continue to exist in vegetated areas surrounding the Subject Land. As the project is intended to replace the existing cable car it is also not expected to result in an increased impact on the fly way of any threatened species.
That affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)	No	It is not expected that the removal of vegetation within the Subject Land will impact upon any groundwater processes or hydrological processes within the surrounding landscape, particularly as most of the vegetation has been historically planted and largely altered.
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 potential to support threatened species. However, due to the nature of the proposed development, it is highly unlikely that vehicle strikes will be an issue given the slow speed requirements of vehicles within the property.

6. Avoid and Minimise Impacts

6.1 Impact Mitigation and Minimisation Measures

This section details the measures to be implemented before, during and post construction to avoid and minimise the impacts of the project (**Table 15**).

Table 15. Mitigation and minimisation of impacts associated with the proposed development.

Action	Outcome	Timing	Responsibility
Avoid and Minimise Impact - Project Location and Design	The proposed development has been strategically positioned to minimise impacts on native vegetation and habitat as much as possible. The proponent has located the proposed works within historically modified areas, mostly situated within the footprint of existing buildings and hardstand areas. Only minor impacts to areas of existing vegetation is anticipated to provide a clear flyway, with efforts made to retain as many high value trees as possible. Areas of important bush rock and sandstone rock ledges have also been deliberately avoided and retained. Any temporary structures required for construction works should be located within hardstand and cleared areas that have minimal biodiversity values. This will avoid unnecessary impacts on native vegetation and habitat elsewhere within the Subject Property.	Pre-construction phase	Proponent
Preparation of a Construction Management Plan (CMP)	A CMP will be required for the construction phase of the project, and will be prepared as part of the SSDA. The CMP is to include measures for the management of soil erosion and sedimentation; hazardous materials; noise, vibration and dust; and rubbish removal. The proposed mitigation measures would include environmental safeguards for protection of neighbouring properties and nearby waterways 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 CMP for the site.	Pre-construction phase	Proponent Construction Contractor

Action	Outcome	Timing	Responsibility
Tree Protections	Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) 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 SRZ. A Minor Encroachment is considered acceptable by AS-4970 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. Tree protection fencing is to be installed around all trees proposed to be retained prior to the commencement of any construction works.	Pre-construction phase	Proponent Arborist
Assigning a Project Ecologist for vegetation clearing	Prior to construction, the applicant should commission the services of a qualified and experienced Ecologist Consultant (minimum 3 years' experience) with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management. 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 may be commissioned to: ▪ Undertake an extensive pre-clearing survey, delineating habitat-bearing trees and shrubs to be retained/removed; and ▪ Supervise the clearance of trees and shrubs (native and exotic) in order to capture, treat and/or relocate any displaced fauna.	Prior to and during vegetation clearance works	Proponent Project Ecologist
Relocation of woody debris	Any woody debris (fallen trees and logs) within the Subject Land are to be relocated to areas of native vegetation elsewhere with the Zoo.	Construction phase	Project Ecologist Proponent

Action	Outcome	Timing	Responsibility
			Bush regeneration contractor
Erosion and Sedimentation	Appropriate erosion and sediment control must be erected and maintained at all times 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).	Construction phase	Proponent Construction Contractor
Erection of temporary fencing	Temporary fencing should be erected around retained native vegetation that may incur indirect impacts on biodiversity values due to the construction works.	Construction phase	Proponent Construction Contractor
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	Construction Contractors
Stormwater	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.	Post-construction phase	Proponent Construction Contractors/ Architect

7. Assessment of Impacts

7.1 Direct Impacts

The proposed development will result in impacts to the following vegetation:

- 0.1ha of vegetation representative of PCT 3594.

The redevelopment has been strategically positioned within an existing footprint to minimise impacts on native vegetation and habitat as much as possible. The proponent has located the proposed works within historically modified areas, with the majority comprising of existing buildings and hardstand areas.

7.2 Prescribed Impacts

As there is potential for the Subject Land to contain habitat for a number of threatened microbat species in the form of human-made structures, an assessment of this prescribed impact must be undertaken in accordance with Section 8.3 of the BAM (DPIE 2020a). This is discussed in Table 16.

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

Prescribed Impact	Nature, Extent and Duration	Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts on Threatened Entities
Habitat of threatened entities: ▪ human-made structures.	There is the potential that threatened microbat species use human-made structures (in particular, roof cavities) within the Subject Land for roosting and potentially breeding. The demolition of these structures has the potential to temporarily displace any occurring individuals. These species are highly mobile and there is ample suitable roosting/breeding habitat nearby. It is therefore likely that this prescribed impact will have a low impact of short duration To manage these impacts works should be conducted during warmer months (not winter), with a pre-clearing survey conducted for microbats in the roof space of the building prior to demolition. If any individuals are found to be present, they are to be captured the morning of demolition works, and released at night time into surrounding bushland following demolition works.	▪ *Falsistrellus tasmaniensis* (Eastern False Pipistrelle); ▪ *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat); ▪ *Myotis macropus* (Southern Myotis); ▪ *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat); and ▪ *Scoteanax rueppellii* (Greater Broad-nosed Bat).	While the demolition of potential roost/breeding sites may temporarily displace local populations of threatened microbats, these species are highly mobile with large areas of habitat continuing to exist in the broader locality, which would provide alternative roost/ breeding sites. As such, any impacts would be considered minor and temporary.

7.3 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. 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 of this proposed development are outlined in **Table 17.**

Table 17. Indirect impacts associated with the proposed development.

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
(a) inadvertent impacts on adjacent habitat or vegetation	There is the potential for minor impacts to vegetation directly adjacent to the Subject Land as a result of the proposed development. However, the vegetation adjacent to the Subject Land is already highly modified and subject to considerable, ongoing human disturbance. It is therefore likely that the proposed works will result in negligible/low inadvertent impacts during or post construction.	One PCT (PCT 3594 - not a TEC) occurs adjacent to the Subject Land. *Lathamus discolor* (Swift Parrot) Mapped as occurring within the Subject Property. Foraging habitat for threatened species may be inadvertently impacted.	While changes to vegetation condition may have a low and localised impact to PCT 3594, threatened species and their habitats, this is not expected to impact on their bioregional persistence. In addition, exclusion fencing, pre-clearing surveys and clearing supervision has been proposed to reduce the risk of indirect impacts to any native vegetation and potentially occurring threatened species adjacent to the Subject Land.

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
(b) reduced viability of adjacent habitat due to edge effects	Due to the highly modified nature of the vegetation adjacent to the Subject Land, as well as the already existing presence of exotic vegetation, it is unlikely that the proposed development will result in a reduction in the viability of adjacent habitat due to edge effects.	One PCT (PCT 3594 - not a TEC) occurs adjacent to the Subject Land. *Lathamus discolor* (Swift Parrot) Mapped as occurring within the Subject Property. There is also potential that threatened species use habitat adjacent to the Subject Land. Such species may be impacted by edge effect leading to a reduced viability in habitat.	While edge effects may have a localised impact to PCT 3594 and threatened species, this is not expected to impact on their bioregional persistence, considering the areas of habitat connectivity surrounding the Subject Land.
(c) reduced viability of adjacent habitat due to noise, dust or light spill	An increase in noise is to be expected during construction, which may impact on species roosting or foraging in habitat adjacent to the site. It is not expected that construction would occur throughout the night, and as such would not impact on nocturnal species that may utilise adjacent habitat, or diurnal species that roost in adjacent habitat. Post-construction it is expected that noise levels will return to current levels, as the site will be used in a similar manner (i.e., as a zoological park).	*Lathamus discolor* (Swift Parrot) Mapped as occurring within the Subject Property. There is potential that threatened species use habitat adjacent to the Subject Land. These species may be impacted	While the proposed development may have a localised impact to threatened species, this is not expected to impact on their bioregional persistence, considering large areas of habitat connectivity allowing their movement away from impacted areas.

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
	The construction may increase dust in adjacent habitat. Dust can impact on a plants ability to photosynthesise and may increase plant mortality in the adjacent vegetation. It is however not expected that this would have such an impact to decrease the viability of adjacent habitat. It is expected that the construction would occur during normal working hours, and as such light spill is not expected to affect adjacent habitat.	by an increase in noise within the Subject Land.	
(d) transport of weeds and pathogens from the site to adjacent vegetation	As previously discussed, the proposed construction may lead to an increase in weed infiltration into adjacent habitat due to enhanced edge effects. It is however not expected that weeds will be transported via human or vehicular traffic into surrounding areas during construction. Temporary fencing will be erected around retained native vegetation to avoid such indirect impacts occurring during construction.	One PCT (PCT 3594) was identified adjacent to the Subject Land. There is also potential that threatened species use habitat adjacent to the Subject Land. The PCT and threatened species may be impacted by weed and pathogen transportation leading to a reduced viability in habitat.	While weeds and pathogens may have a localised impact to PCTs and threatened species, this is not expected to impact on their bioregional persistence, considering the large habitat connectivity within the surrounding areas.

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
(e) 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 as a result of the proposed development given the small area of vegetation being removed. No habitat is to be removed beyond the Subject Land, although disturbances from other indirect impacts may deem such habitats unsuitable for certain species. However, due to the areas of habitat connectivity adjoining the Subject Land, it is unlikely that this localised impact will be significant as such habitats will continue to provide food resources and shelter for fauna species.	N/A	N/A
(f) 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 works would result in a loss of breeding habitats.	N/A	N/A
(g) trampling of threatened flora species	Although no threatened flora species were recorded within the Subject Land. In order to prevent any impacts to these threatened flora species, retained native vegetation areas will be delineated with temporary fencing to avoid such impacts occurring during construction.	N/A	N/A

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
(h) inhibition of nitrogen fixation and increased soil salinity	It is unlikely that the inhibition of nitrogen fixation will affect vegetation adjacent to the Subject Land. Increased soil salinity may result due to clearing of vegetation leading to the rising of the water table. However, clearing will be limited to the Subject Land and as such is not expected to affect vegetation directly adjacent to the Subject Land.	N/A	N/A
(i) fertiliser drift	This issue is not likely to affect the vegetation surrounding the Subject Land. Although fertiliser may be used in landscaped vegetation, no fertiliser drift is expected to impact on adjacent vegetation.	N/A	N/A
(j) rubbish dumping	Large scale rubbish dumping is not considered to be an issue in vegetation adjacent to the Subject Land as it is regularly maintained by Zoo staff. The minor dumping/littering of food resources may provide a food source for fauna, including threatened species. However, this may also encourage invasive species into such habitats.	*Lathamus discolor* (Swift Parrot) Mapped as occurring within the Subject Property. There is potential that threatened fauna species use habitat adjacent to the Subject Land. Such species may be impacted by the dumping of rubbish, particularly food resources. This may result in both positive (food source) and	This impact is expected to be localised and will not have an overall impact on the bioregional persistence of the threatened species.

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
		negative impacts (increase in predators) to such species.	
(k) wood collection	Wood collection is not considered to be an issue within the vegetation adjacent to the Subject Land. No wood collection is associated with the proposed development.	N/A	N/A
(l) bush rock removal and disturbance	No bush rock is proposed for removal within the vegetation adjacent to the Subject Land as a result of the proposed development.	N/A	N/A
(m) increase in predatory species populations	It is unlikely that introduced predators have access to the Subject Land as the proposed development is situated within Taronga Zoo Sydney which is surrounded by fencing. The Zoo is also known to conduct predatory species trapping and monitoring through the use of wildlife cameras.	N/A	N/A
(n) increase in pest animal populations	There is potential that pest animal populations already inhabit areas surrounding the Subject Land (particularly smaller	N/A	N/A

Indirect Impact	Nature, extent and duration	TEC's/PCTs and/or Threatened Species and their habitat likely to be impacted	Consequences of the impacts for the bioregional persistence of the native vegetation, threatened species, threatened ecological communities and their habitats.
	species which may fit through the chain-link fence). The proposed development is not likely to increase this potential risk.		
(o) increased risk of fire	The vegetation immediately adjacent to the Subject Land is not identified by Mosman Council as occurring within bushfire prone land. It is not expected that the proposed development will alter the bushfire risk of vegetation surrounding the Subject Land.	N/A	N/A
(p) disturbance to specialist breeding and foraging habitat, e.g., beach nesting for shorebirds.	No specialist breeding and foraging habitat was identified adjacent to the Subject Land. It is therefore not expected that the proposed development will disturb any specialist breeding and foraging habitat.	N/A	N/A

8. Thresholds for Assessing and Offsetting

8.1 Impacts on Native Vegetation

The following native vegetation within the Subject Land is proposed to be impacted as a result of the proposed development:

- 0.1ha representative of PCT 3594.

The purchase and retirement of Biodiversity Offset Credits will be required for the following native vegetation within the Subject Land (**Figure 16**):

- 0.1ha within Zone 1, representative of PCT 3594.

8.2 Impacts on Threatened Species

No threatened species credits are required to be purchase a result of the proposed development.

8.3 Serious and Irreversible Impacts (SAII's)

No entities at risk of an SAII in the Threatened Biodiversity Data Collective (DCCEEW 2024c) have been identified as impacted as a result of the proposed development.

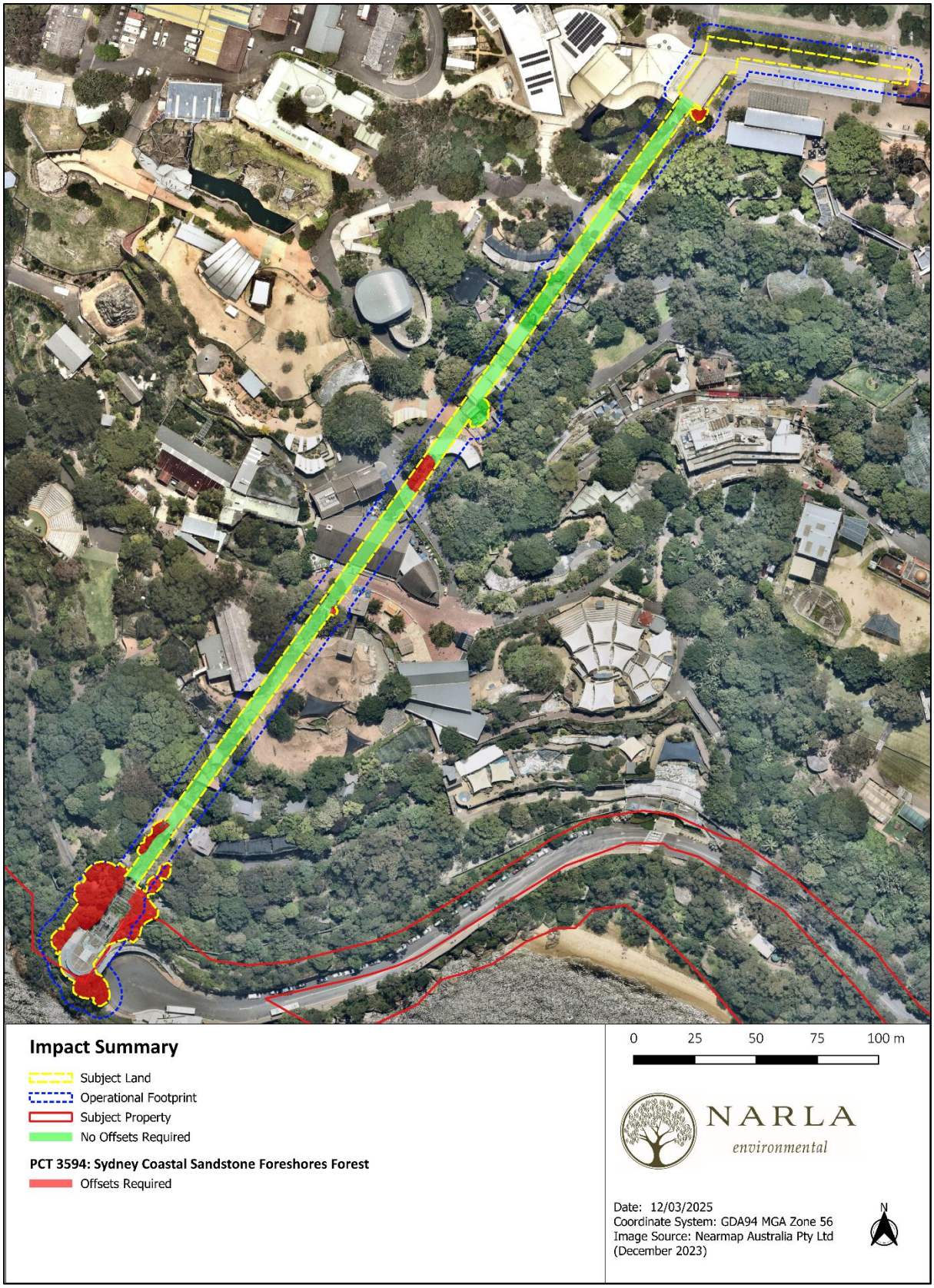

Figure 16. Impacts on native vegetation and offset requirements.

9. Biodiversity Offset Credit Requirements

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 calculator. If such credits are unavailable, credits would be sourced in accordance with the 'variation report' generated by the BAMC.

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.

9.1 Offset Requirement for Ecosystem Credits

A total of two (2) ecosystem credit is required to offset the biodiversity impacts of the proposed development (**Table 18**).

Table 18. Ecosystem credits required to offset the proposed development.

PCT	BC Act Status	Zone	Total Area (ha)	Ecosystem Credits Required
PCT 3594: Sydney Coastal Sandstone Foreshores Forest	NA	Zone 1	0.1	2
			Total Ecosystem Credits	**2**

9.2 Offset Requirement for Species Credits

No candidate species credit species will require offsetting through the retiring of biodiversity offset species credits under the BOS as a result of the proposed development.

10. Other Relevant Legislation and Planning Policies

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

This Policy 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 of the SEPP applies to LGAs that are listed in Schedule 2 'Local government areas' of the SEPP. As Mosman LGA is not included in Schedule 1, this SEPP does not apply to the Subject Land.

10.2 State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 2 Coastal Management

Chapter 2 of the SEPP 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 located within the SEPP's 'Coastal Environment Area' and 'Coastal Use Area'. Therefore, The SEPP does apply to the proposed development.

10.2.1 Division 3 - Development on Land within the Coastal Environment Area

Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following—

- the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment;
- coastal environmental values and natural coastal processes;
- the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1;
- marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms;
- existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability;
- Aboriginal cultural heritage, practices and places; and
- the use of the surf zone.

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

- the development is designed, sited and will be managed to avoid an adverse impact referred to in subsection (1); or
- if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact; or
- if that impact cannot be minimised—the development will be managed to mitigate that impact.

In addition to the controls and provisions above the following general conditions apply to the proposed development.

10.2.2 Division 4 - Development provisions associated with works in a Coastal Use Area

As such, development consent must not be granted to development on land that is within the coastal use area unless the consent authority:

- has considered whether the proposed development is likely to cause an adverse impact on the following
    - existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability;
    - overshadowing, wind funnelling and the loss of views from public places to foreshores;
    - the visual amenity and scenic qualities of the coast, including coastal headlands;
    - Aboriginal cultural heritage, practices and places;
    - cultural and built environment heritage; and
- is satisfied that:
    - the development is designed, sited and will be managed to avoid an adverse impact referred to in the above paragraph, or
    - if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
    - if that impact cannot be minimised—the development will be managed to mitigate that impact, and

has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.

10.2.3 Division 5 - General

Development in coastal zone generally—development not to increase risk of coastal hazards

- Development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land.

Development in coastal zone generally—coastal management programs to be considered

- Development consent must not be granted to development on land within the coastal zone unless the consent authority has taken into consideration the relevant provisions of any certified coastal management program that applies to the land.

Other development controls not affected

- Subject to section 2.5, for the avoidance of doubt, nothing in this Part—
    - permits the carrying out of development that is prohibited development under another environmental planning instrument; or
    - permits the carrying out of development without development consent where another environmental planning instrument provides that the development may be carried out only with development consent.

Hierarchy of development controls if overlapping

- If a single parcel of land is identified by this Chapter as being within more than one coastal management area and the development controls of those coastal management areas are inconsistent, the development controls of the highest of the following coastal management areas (set out highest to lowest) prevail to the extent of the inconsistency—
    - the coastal wetlands and littoral rainforests area;
    - the coastal vulnerability area;
    - the coastal environment area; and
    - the coastal use area.

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12. Appendices

Appendix 1. Taronga Zoo Sky Safari– Proposed Site Plan – issue A (NewScape 2024).

Appendix 2. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

Appendix 3. BAMC Generated Biodiversity Credit Report.

Appendix 1. Taronga Zoo Sky Safari– Proposed Site Plan – issue A (NewScape 2024).

Appendix 2. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

BAM Site – Field Survey Form					
Date:	29.01.2024	**Plot ID:**	plot 1	**Photo #:**	**Plate 1**
Zone:	56	**Plot Dimensions:**	20 x 50	**Easting:**	337182.71
Datum:	GDA94	**Middle bearing from 0m:**	264	**Northing:**	6253595.03
PCT:	Sydney Coastal Sandstone Foreshore Forest				

Growth Form	Scientific Name	Cover	Abundance
Shrub (SG)	*Pittosporum undulatum*	8	15
Tree (TG)	*Lophostemon confertus*	5	4
Fern (EG)	*Pteridium esculentum*	1	100
Grass & grasslike (GG)	*Lomandra longifolia*	2	100
HTE	*Ehrharta erecta*	15	400
HTE	*Paspalum dilatatum*	0.1	10
HTE	*Ochna serrulata*	0.5	25
Exotic	*Strelitzia nicolai*	1	3
HTE	*Asparagus aethiopicus*	0.1	10
HTE	*Ligustrum lucidum*	1	5
Forb (FG)	*Commelina cyanea*	0.1	25
Exotic	*Solanum nigrum*	0.1	10
Shrub (SG)	*Breynia oblongifolia*	0.5	10
HTE	*Cestrum parqui*	0.5	15
Grass & grasslike (GG)	*Oplismenus aemulus*	0.1	15
HTE	*Cardiospermum grandiflorum*	0.5	50
Forb (FG)	*Sigesbeckia orientalis subsp. orientalis*	0.1	25
Exotic	*Trifolium repens*	0.1	5
Tree (TG)	*Ficus rubiginosa*	5	2
HTE	*Olea europaea*	0.1	5
Tree (TG)	*Eucalyptus punctata*	1	1
Tree (TG)	*Eucalyptus acmenoides*	2	1
Exotic	*Morus alba*	0.1	2
Other (OG)	*Eustrephus latifolius*	0.5	50
HTE	*Ipomoea indica*	0.1	15
Other (OG)	*Livistona australis*	1	5
HTE	*Lantana camara*	0.1	10
HTE	*Chlorophytum comosum*	1	50
Exotix	*Sida rhombifolia*	0.1	10
Shrub (SG)	*Homalanthus populifolius*	0.1	2
Other (OG)	*Stephania japonica*	0.1	25
Exotic	*Parietaria judaica*	0.5	5
Shrub (SG)	*Hakea dactyloides*	0.5	15

Shrub (SG)	*Melaleuca spp.*	0.1	1
Tree (TG)	*Banksia integrifolia*	0.1	2
Exotic	*Verbena bonariensis*	0.1	1
HTE	*Anredera cordifolia*	0.5	50
Forb (FG)	*Dianella caerulea*	0.1	10
Tree (TG)	*Glochidion ferdinandi*	0.5	2
Exotic	*Cyperus albostriatus*	0.1	5
HTE	*Cyperus eragrostis*	0.1	10
Exotic	*Cirsium vulgare*	0.1	1
Other (OG)	*Pandorea pandorana*	0.1	1

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	2	3
50-79cm	3	0
30-49cm	4	0
20-29cm	6	0
10-19cm	p	0
5-9cm	p	0
<5cm	p	0

Length of Logs (m)	53

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	100
2 (15m)	60
3 (25m)	30
4 (35m)	80
5 (45m)	95
Average	73

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	6	13.6
Shrub	5	9.2
Grass	2	2.1
Forb	3	0.3
Fern	1	1
Other	4	1.7
High Threat Exotics	13	19.6

Appendix 3. BAMC Generated Biodiversity Credit Report.

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id 00049837/BAAS23028/24/00049854	Proposal Name Taronga Zoo Sky Safari	BAM data last updated * 28/10/2024
Assessor Name Luke Johnson	Assessor Number BAAS23028	BAM Data version * Current classification (live - default) (80)
Proponent Names Rebecca White	Report Created 12/03/2025	BAM Case Status Finalised
Assessment Revision 1	BOS entry trigger BOS Threshold: Biodiversity Values Map and area clearing threshold	Assessment Type Part 4 Developments (Small Area)
Date Finalised 12/03/2025	* 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		
Nil		

BAM Biodiversity Credit Report (Like for like)

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3594-Sydney Coastal Sandstone Foreshores Forest	Not a TEC	0.1	2	0	2

BAM Biodiversity Credit Report (Like for like)

3594-Sydney Coastal Sandstone Foreshores Forest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 3594	Sydney Coastal Dry Sclerophyll Forests >=90%	3594_Moderate	Yes	2	Pittwater, Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

NARLA

environmental

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