BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

GRANNY FLAT ADDITION

LOT 33A DP359416

56 CENTRAL RD, AVALON

Prepared by:

Fraser Ecological
ABN – 797 637 40114

665 The Scenic Road
Macmasters Beach NSW 2251

Mob: 0423238193
Ph: 02 4382 2962
Email: alohafraser@gmail.com

Site Details:	LOT33A DP359416 56 Central Rd, Avalon
Prepared by:	***Alex Fraser B.Sc., G.Cert.EnvMgt&Sus.*** ***BAAS18156 Accredited Assessor*** ***Fraser Ecological Pty Ltd*** **A**BN – 797 637 40114 M: 0423238193 Email: alohafraser@gmail.com
Prepared for:	Rob Raine
Reference No.	BDAR Rev B
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Abbreviations

Abbreviation	Meaning
AOBV	Areas of Outstanding Biodiversity Value
AWTS	Aerated Wastewater Treatment System
APZ	Asset Protection Zone (bushfire protection)
BAM	Biodiversity Assessment Methodology
BAM - C	Biodiversity Assessment Method Calculator
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
DA	Development Application
DCP	Development Control Plan
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DPIE	NSW Department of Planning, Industry and Environment (formerly OEH)
DEE	Department of Environment and Energy
EEC	Endangered Ecological Community
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Ha	Hectare
HTE	High Threat Exotic
LEP	Local Environmental Plan
LGA	Local Government Area
MU	Map Unit
NPWS	NSW National Parks and Wildlife Service
OEH	Office of Environment and Heritage
PCT	Native vegetation classification system approved by NSW Plant Community Type Control Panel
PFC	Projected Foliage Cover
SAII	Serious and Irreversible Impacts
SEPP	State Environmental Planning Policy
TBCD	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community

GLOSSARY

Acronym/ Term	Definition
Accredited Biodiversity Assessor	Individuals accredited by the Department of Planning, Industry and Environment (DPIE) to apply the Biodiversity Assessment Method.
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 subdivision.
Biodiversity values	The composition, structure and function of ecosystems, including threatened species, populations and ecological communities, and their habitats.
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).
Locality	A 1500m buffer area surrounding the Subject Land
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.
Proposal	The development, subdivision, activity or action proposed.
SAII entity	Species and ecological communities that are likely to be the subject of serious and irreversible impacts (SAIIs)
Species credit	The class of biodiversity credit that relate to threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject Land	The footprint of the proposed development.
Subject Properties	56 Central Rd, Avalon LOT B DP DP359416 and Lot 58 DP 10375

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CERTIFICATION

I, Alex Fraser of Fraser Ecological, hereby state that this Biodiversity Development Assessment Report (BDAR) for the proposed development at 56 Central Rd, Avalon, has been prepared in accordance with the Biodiversity Assessment Method (BAM) 2020 established under the NSW *Biodiversity Conservation Act 2016*.

Fieldwork for this project was undertaken by Alex Fraser and Jesse McIvor. Report writing was undertaken by Alex Fraser.

My qualifications are:

Alex Fraser, Principal Ecologist
B.Sc. (Hons)
Certificate 3 Natural Area Restoration
BAM Accredited Assessor (BAAS 18156)
Member of the Ecological Consultants Association of NSW

Conflicts of Interest

The Accredited Assessors have signed an agreement to abide by the Accredited BAM Assessor Code of Conduct. The authors declare in accordance with the Assessors Code of Conduct that no actual, perceived, or potential conflicts of interest exist.

Disclaimer

This document may only be used for the purposes for which it was commissioned. Fraser Ecological accepts no liability or responsibility in respect of any use or reliance upon this report by any third party. Unauthorised use of this report in any form is prohibited.

Alex Fraser
B.A Applied Science (Hons), Cert 3 Natural Area Restoration
BAAS18156 Accredited Assessor
Principal Ecologist, Fraser Ecological

EXECUTIVE SUMMARY

Fraser Ecological has been contracted to prepare a Biodiversity Development Assessment Report (BDAR) for the proposed development ('the Proposal' or 'the Project') at 56 Central Rd, Avalon (LOT 33A DP DP359416), in the Northern Beaches local government area.

This BDAR has been prepared in accordance with the Office of Environment and Heritage (OEH) (2020) Biodiversity Assessment Method (BAM). The Biodiversity Offset Scheme (BOS) applies to the Proposal, as the proposed development occurs on areas mapped on the sensitive biodiversity land values map.

The proposed development consists of a granny flat (60sqm) and attached deck (19sqm). The granny flat has been positioned in a mostly grassed on the property to avoid most trees. Two trees are required to be removed for the construction of the granny flat. This is an endemic tree, *Corymbia gummifera* (Red Bloodwood), marked as Tree 3 & 4 on the Arboricultural Impact Assessment prepared by Bradshaw Consulting Arborists. The report states the trees have a moderate retention value. All of the other trees on site will be retained.

The canopy is dominated by Sydney Red Gum (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*), *Eucalyptus haemastoma* (Broad-leaved Scribbly Gum) and Broad-leaved White Mahogany (*Eucalyptus umbra*) ranging in DBH from 200 - 450mm (Photograph 1).

The understorey is a maintained garden with some native small trees and shrubs and ornamental plants on the perimeter of the property. The groundcover found in the middle of the property is essentially a lawn dominated by Buffalo Grass (*Stenotaphrum secundatum*) interspersed with other introduced species.

Other canopy species recorded on-site that do not typically occur within mapped *Pittwater Spotted Gum Forest*' community included:

- *Syzygium leuhmannii* (Small-Leaved Lilly Pilly) – locally indigenous possibly planted
- *Syzygium smithii* – (Common Lilly Pilly) - locally indigenous possibly planted

Other native species of various planted growth forms were recorded within the BAM plot quadrat including:

- *Callistemon viminalis* (Bottlebrush)
- *Viola hederacea* (Ivy-leaved Violet)

Introduced environment weed species were recorded on-site including:

- *Stenotaphrum secundatum* (Buffalo Grass) – dominant

- *Hypochaeris radicata* (Catsear)
- *Crassula multicava* (Fairy Crassula)
- *Ehretia acuminata* (Puna
- *Stellaria media* (Chickweed)
- *Chlorophytum comosum* (Spider Plant)

The remnant vegetation community is consistent with a highly degraded form of PCT 1214/3234 – '*Pittwater Spotted Gum Forest*'.

The PCT formation is Wet Sclerophyll Forests (Grassy sub-formation).

The PCT class is Southern Lowland Wet Sclerophyll Forests

It is associated with the Threatened Ecological Community (TEC) '*Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion*'. The vegetation type occurring on site is listed as a Threatened Ecological Community under the NSW *Biodiversity Conservation Act 2016.*

Vegetation Integrity Scores

PCT	Vegetation Zone	Composition Condition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score
PCT 3234	Vegetation Zone 1 (0.02ha)	9.3	39.6	7.5	14

Vegetation Zones Requiring an Offset

Vegetation Zone	PCT	Area Impacted	Current Vegetation Integrity Score	Future Vegetation Integrity Score	Number of Ecosystem Credits Required
1	PCT 1214/3234	0.02ha	14	0	0

Threatened Species Requiring an Offset

Species	Area of Impacted Habitat	Number of Species Credits Required
Nil	Nil	Nil

1 INTRODUCTION

Fraser Ecological has been engaged by Rob Raine (DA applicant), to provide a Biodiversity Development Assessment Report (BDAR) for the proposed residential development at 56 Central Rd, Avalon located (Lot 33A, DP359416) the Northern Beaches Council LGA.

See Figure 1 and 2 for the location & aerial maps showing property boundaries.

The subject site itself is on the NSW DPE's Sensitive Biodiversity Values Map (https://www.environment.nsw.gov.au/biodiversity/biodiversity-values-map.htm) and is trigger this requirement for this assessment (Figure 4).

BAM plot/ quadrat and targeted surveys were undertaken in June 2023.

1.1 Description of the site and proposal

The total property size is 872 sqm (0.0872 ha).

Fraser Ecological Consulting has been contracted by Rob Raine to prepare an impact assessment of the proposed four lot subdivision works on the terrestrial ecology located at 56 Central Rd, Avalon (Lot 33A, DP359416) in the Northern Beaches Council LGA (Figures 1-3).

An existing dwelling occurs to the front (South) of the property about 20m from Central Rd. The development proposal will not alter the existing dwelling or driveway. A small building and deck are located to the rear (north) of the property, these will be removed for the proposed development.

The proposed development consists of a granny flat (60sqm) and attached deck (19sqm). The granny flat has been positioned in a mostly grassed on the property to avoid most trees. Two trees are required to be removed for the construction of the granny flat. This is a locally indigenous tree species, *Corymbia gummifera* (Red Bloodwood), marked as Tree 3 & 4 on the Arboricultural Impact Assessment prepared by Bradshaw Consulting Arborists. The report states the trees have a moderate retention value. All of the other trees on site will be retained.

This BDAR will be prepared as a site-based '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 BAM (DPIE 2020a; Table 1).

1.2 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 subdivision 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 subdivision.

Figure 1:The site in location to boundaries of the Northern Beaches LGA (Source: SIX Maps)

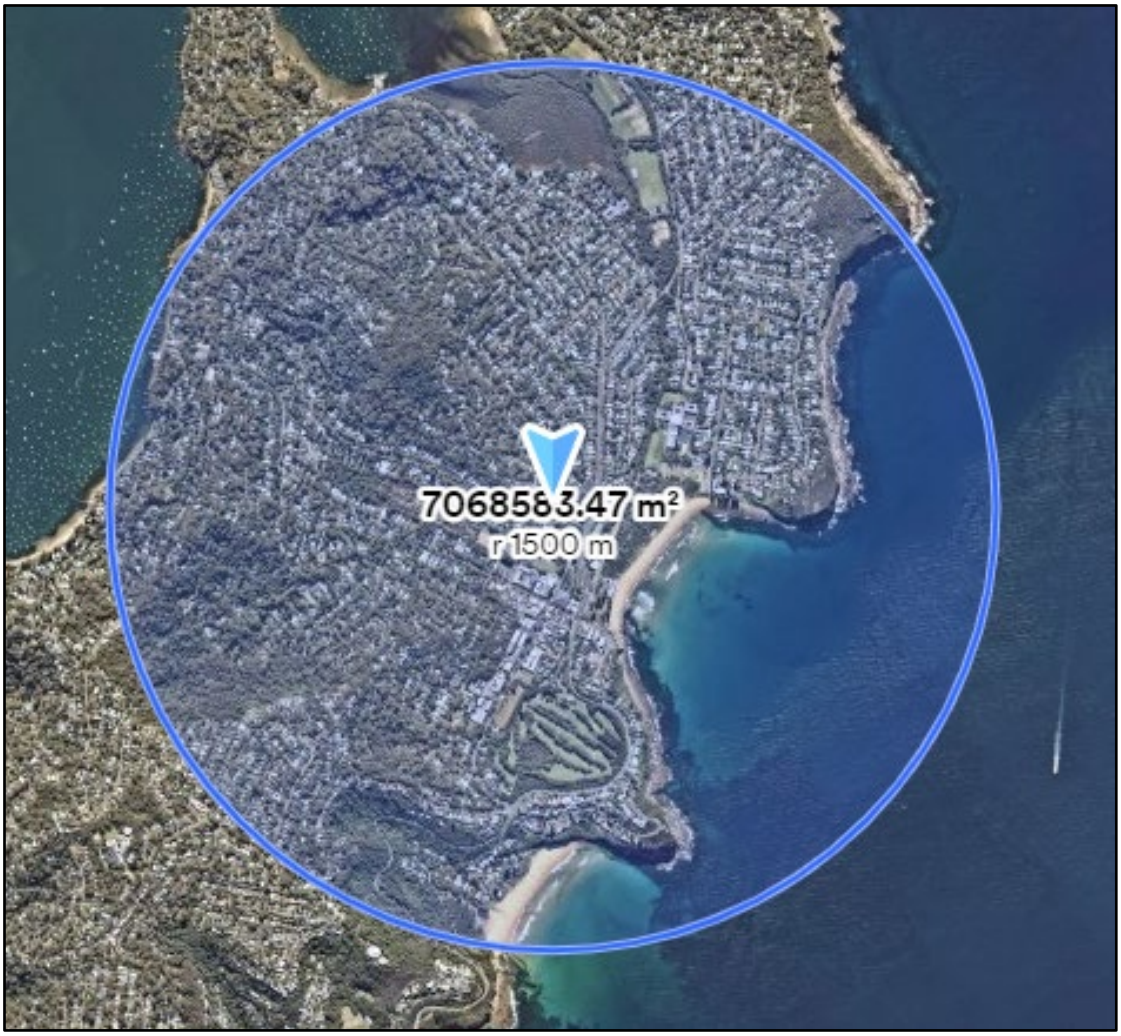

Figure 2: The project locality showing the native vegetation cover % within a 1500m radius of the site (Source:Nearmap)

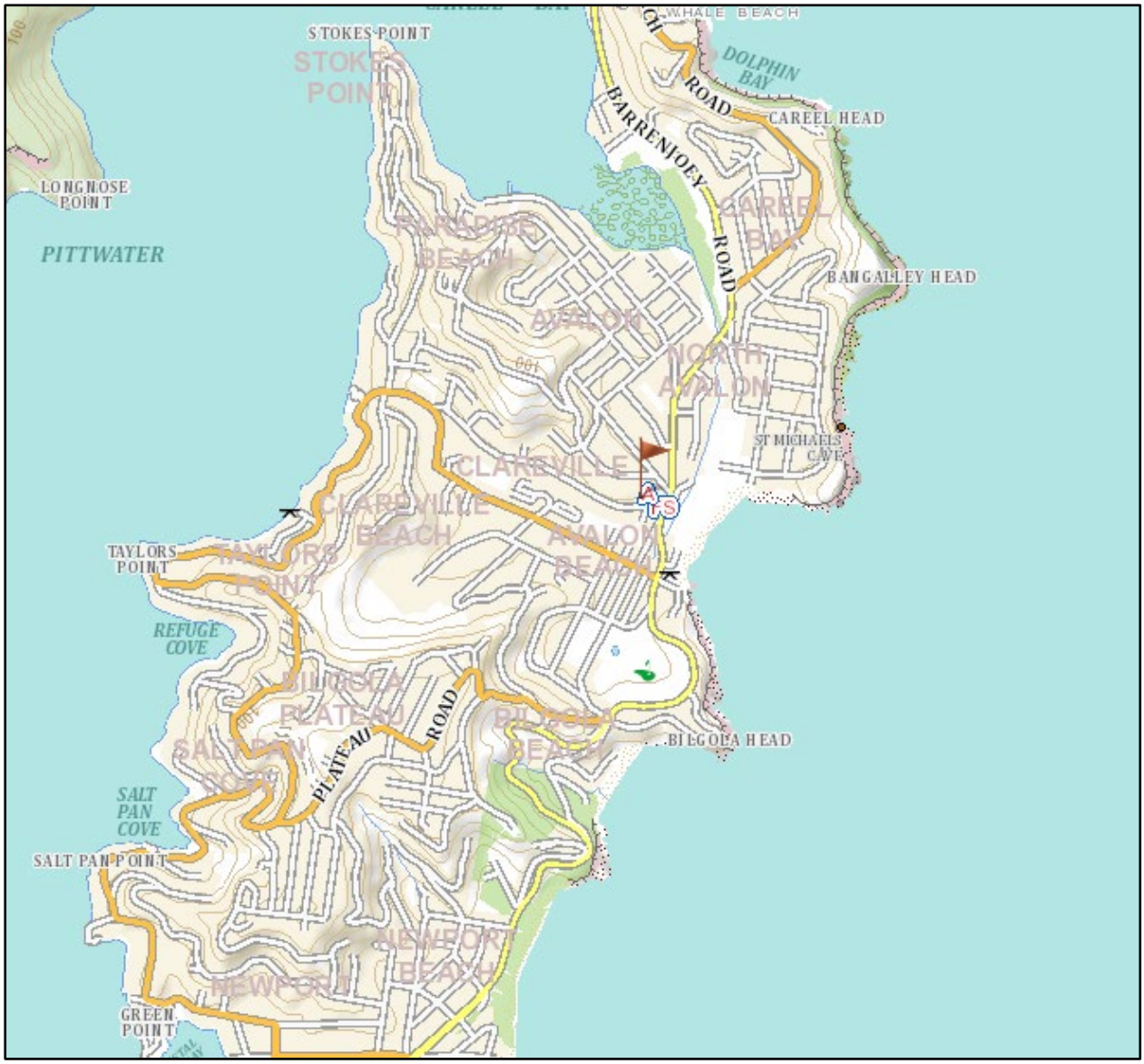

Figure 3: The site locality (Source: SIX Maps)

Figure 4: The property boundaries (red outline) (Source: SIX Maps)

Figure 5: Close up aerial of the site (Source: Nearmap aerial image dated 1st May 2023)

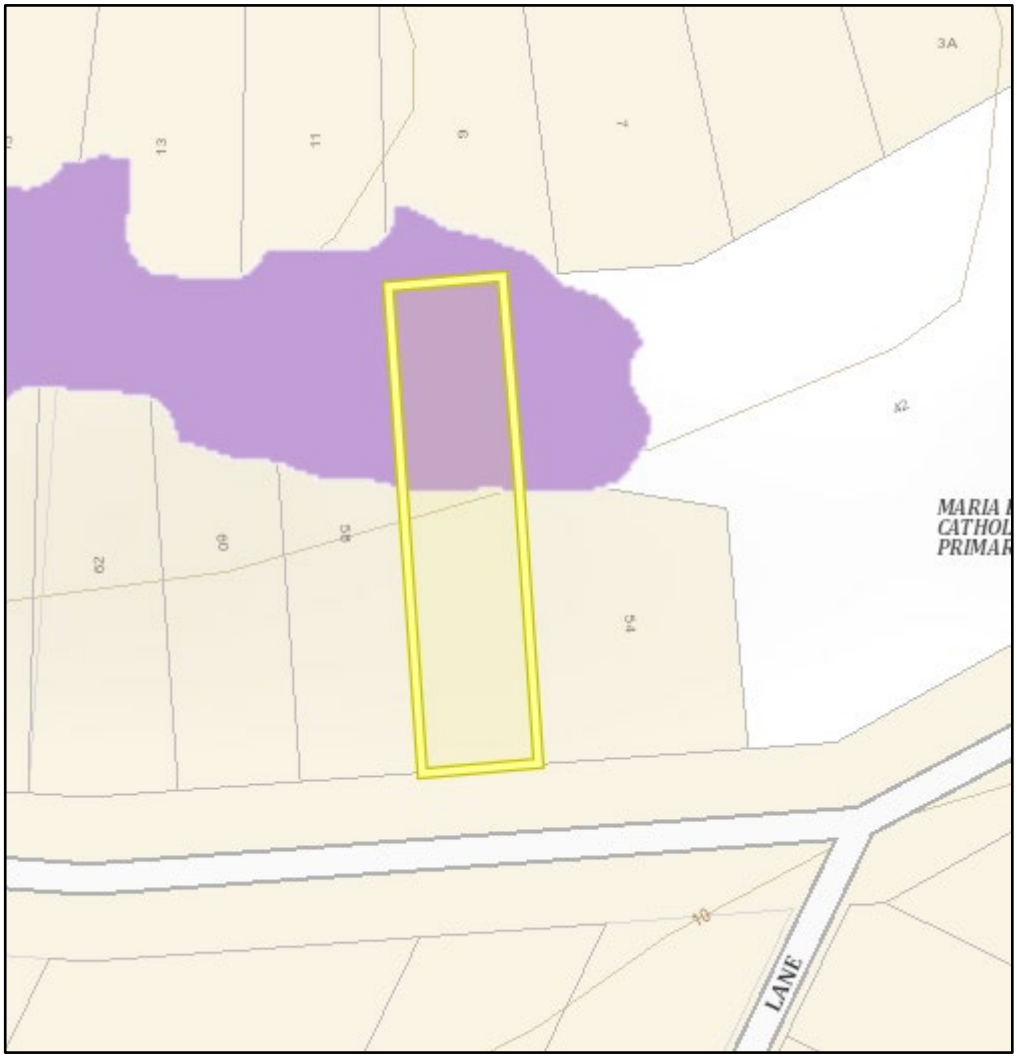

Figure 6: DPIE Sensitive Biodiversity Values Map of the site (accessed 6th June 2023)

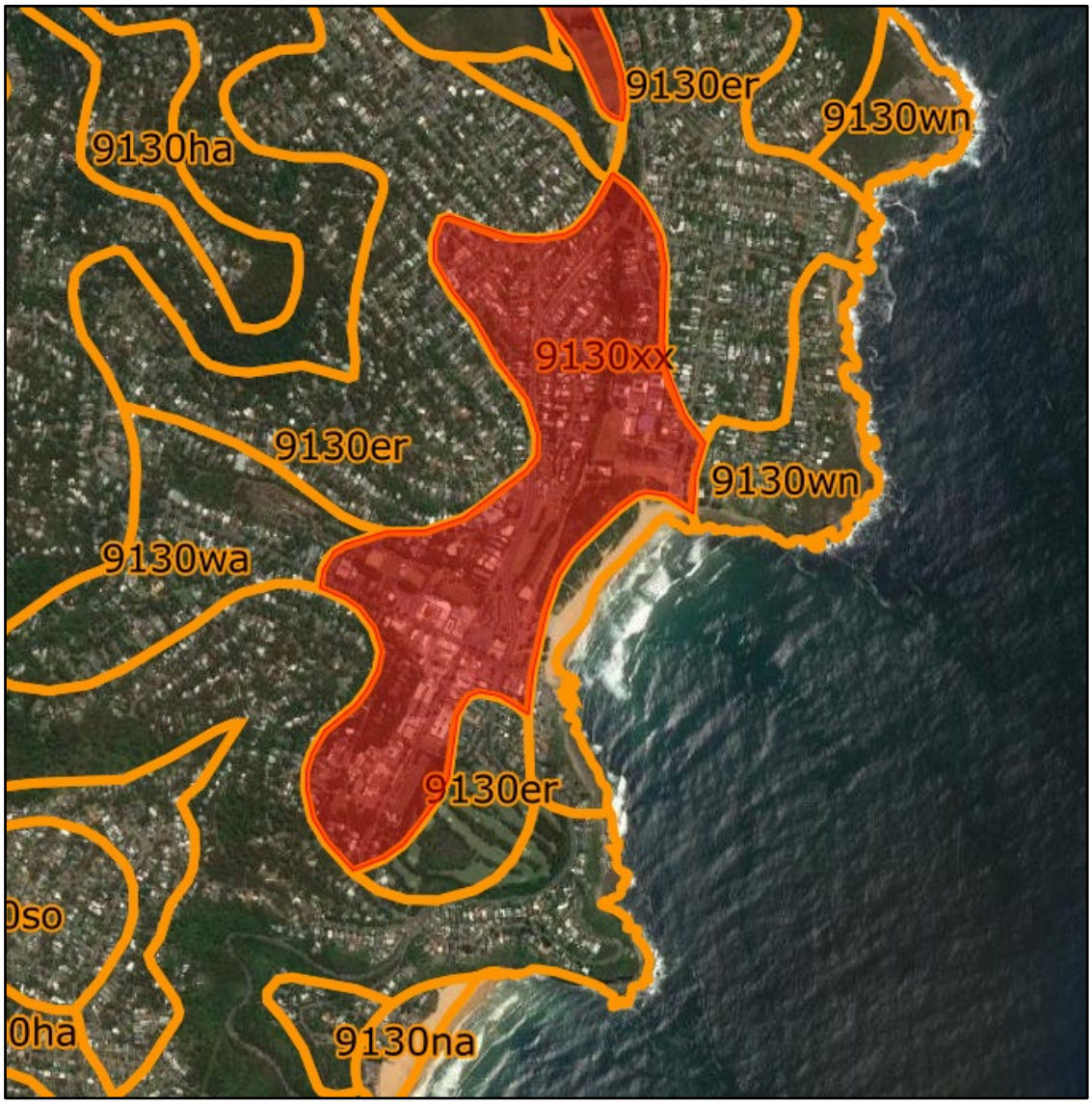

Figure 7: Soil Landscape (Soil Conservation Service of NSW) undertaken by Chapman and Murphy (1994) accessed via eSPADE V.2.2

1.2.1 Database Searches

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species predicted to occur in the area:

- Review of threatened fauna and flora records within a 10 km radius of the site, contained in the OEH Atlas of NSW Wildlife (NSW BioNet).
- Review of the MNES records within a 10 km radius of the site, using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool.

1.2.2 Vegetation Mapping

Southeast NSW Native Vegetation Classification and Mapping (NSW OEH 2011 update)- SCIVI. VIS_ID 2230

Classification and descriptions of native vegetation types of southeast NSW (including the South Coast and parts of the eastern tablelands), and map of extant distribution of these veg types at 1:100 000 interpretation scale. Based on the South Coast - Illawarra Vegetation Integration (SCIVI) Project, which aimed to integrate many previous vegetation classification and mapping works to produce a single regional classification and map plus information on regional conservation status of vegetation types, to inform the South Coast and Illawarra Regional Strategies. Vegetation classification based on a compilation of ~ 8,500 full-floristic field survey sites from previous studies. Classified vegetation types referred to previous studies. Distribution of veg types was mapped by spatial interpolation (modelling) from classified sites, using a hybrid decision-tree/expert system. Final model was cut to \'extant\' boundaries using a compiled coverage of aerial photograph interpretation (API) of woody and wetland vegetation boundaries. A total of 189 vegetation types were identified, and types related to Endangered Ecological Communities are highlighted.; VIS_ID 2230.

NSW State Vegetation Type Map (Department of Planning and Environment 2022)

The State Vegetation Type Map (SVTM) is a regional-scale map of NSW Plant Community Types. This map represents the current extent of each Plant Community Type, Vegetation Class and Vegetation Formation, across all tenures in NSW. Further, a SVTM map of pre-clearing is also available separately here. This map is updated periodically as part of the Integrated BioNet Vegetation Data program to improve quality and alignment to the NSW vegetation classification hierarchy.

It is accessed via the following link:

https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map

This release represents the first state-wide vegetation coverage using the NSW vegetation classification hierarchy, including the revised eastern NSW PCT classification C1.1. The “M1” in the version release number (C1.1.M1), represents the first map release against PCT master list version C1.1 This coverage supersedes pre-release versions

(v1.1 and v1.1.1) and 7 individual prior regional coverages including: Sydney Metropolitan Area Mapping, SVTM Border Rivers Gwydir – Namoi, SVTM Central West – Lachlan, SVTM Riverina – Murray, SVTM Western, SVTM Central Tablelands, and SVTM Upper Hunter.

This mapping data may be used as a guide to the occurrence and distribution of Plant Community Types, Vegetation Classes, and Vegetation Formations, before and after clearing.

Users of these maps should note the following issues which will be address in future SVTM versions:

- PCT attribution errors – corrected as better information becomes available Spatial errors or omissions (eg, gaps and slithers or mapping linework inaccuracies)
- Eastern NSW PCT classification topologies differ from central and western NSW classification topologies
- Some PCTs mapped as part of earlier regional coverages have since been discontinued
- Some PCTs approved in BioNet have not been mapped due to technical issues
- Spatial and data gaps and discontinuities may occur at the edges of former regional coverages.
- Pre-clearing coverage for central NSW is not currently available

Map data may be downloaded, viewed within the SEED Map Viewer, or accessed via the underlying ArcGIS REST Services or WMS for integration in GIS or business applications.

1.2.3 Literature Review

Information sources reviewed included, but were not necessarily limited to:

- Aerial Photograph Interpretation (API);
- Relevant guidelines, including:
  - OEH *Biodiversity Assessment Method*, 2017 No 469
  - *NSW Guide to Surveying Threatened Plants* (OEH, 2016)
  - *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (OEH, 2018)
  - *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation (DEC), 2004)
- OEH Threatened Species, Populations and Ecological Communities website
- Commonwealth DEE Species, Profile and Threats Database;

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- Commonwealth DEE Species, Profile and Threats Database;
- Threatened species survey and assessment guidelines: field survey methods for fauna: Amphibians (DEC 2009);
- NSW Guideline to Surveying Threatened Plants (OEH 2016b);
- Operational Manual for BioMetric 3.1. (DECCW 2011);
- Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2010a);
- Survey guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999(Commonwealth of Australia 2010b);
- Survey guidelines for Australia's threatened frogs. Guidelines for detecting frogs listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2010c);
- Survey guidelines for Australia's threatened mammals. Guidelines for detecting
- mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2011);
- Survey guidelines for Australia's threatened orchids.
- Guidelines for detecting bats listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999(Commonwealth of Australia 2013).

It was not possible to determine with certainty all the fauna that utilise habitats in the subject site. This is because of the likely seasonal occurrences of some fauna species, the occasional occurrence of vagrant species, and because some species are difficult to detect because of their timid or cryptic behaviour. Therefore, in addition to targeted fauna surveys, investigations comprised an assessment of fauna habitats present on site and an indication of their potential to support native wildlife populations and, in particular, threatened species.

Section 4.2 outlines the reasoning behind why no targeted fauna surveys were considered necessary for the proposed development. This mainly because no candidate 'species credit' species will be affected by the proposal as potential habitat is absent.

1.2.4 Other sources and consultant reports

A desktop survey was performed to ensure all relevant documentation is considered when preparing the plan. Documents and other information resources utilised include:

- Aerial photographs (Google Maps, NearMaps & DPI Land Information)
- NSW Land and Property Information SIX Maps Viewer (https://maps.six.nsw.gov.au/)
- The Southeast NSW Native Vegetation Classification and Mapping (NSW OEH 2010) mapped using QGIS software overlaid with cadastral boundaries obtained from the NSW Planning Portal database collection
- NSW State Vegetation Type Map (Department of Planning, Industry and Environment 2022
- Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy 1989) using the eSPADE Version 2.2 managed by the NSW Office of Environment and Heritage accessed 6th June 2023
- Proposed development plans (Architectural Drawings) prepared by Granny Flat Solutions dated 11th May 2023)
- Arboricultural Impact Assessment Report prepared by Bradshaw Consulting Arborists dated 14th December 2022.

2 LANDSCAPE FEATURES

2.1 IBRA Bioregions and Subregions

Dominant landscape forms have been used to divide Australia into bioregions. The site is within the **NSW Sydney Basin IBRA bioregion** and **Pittwater IBRA Subregion** (Figure 8).

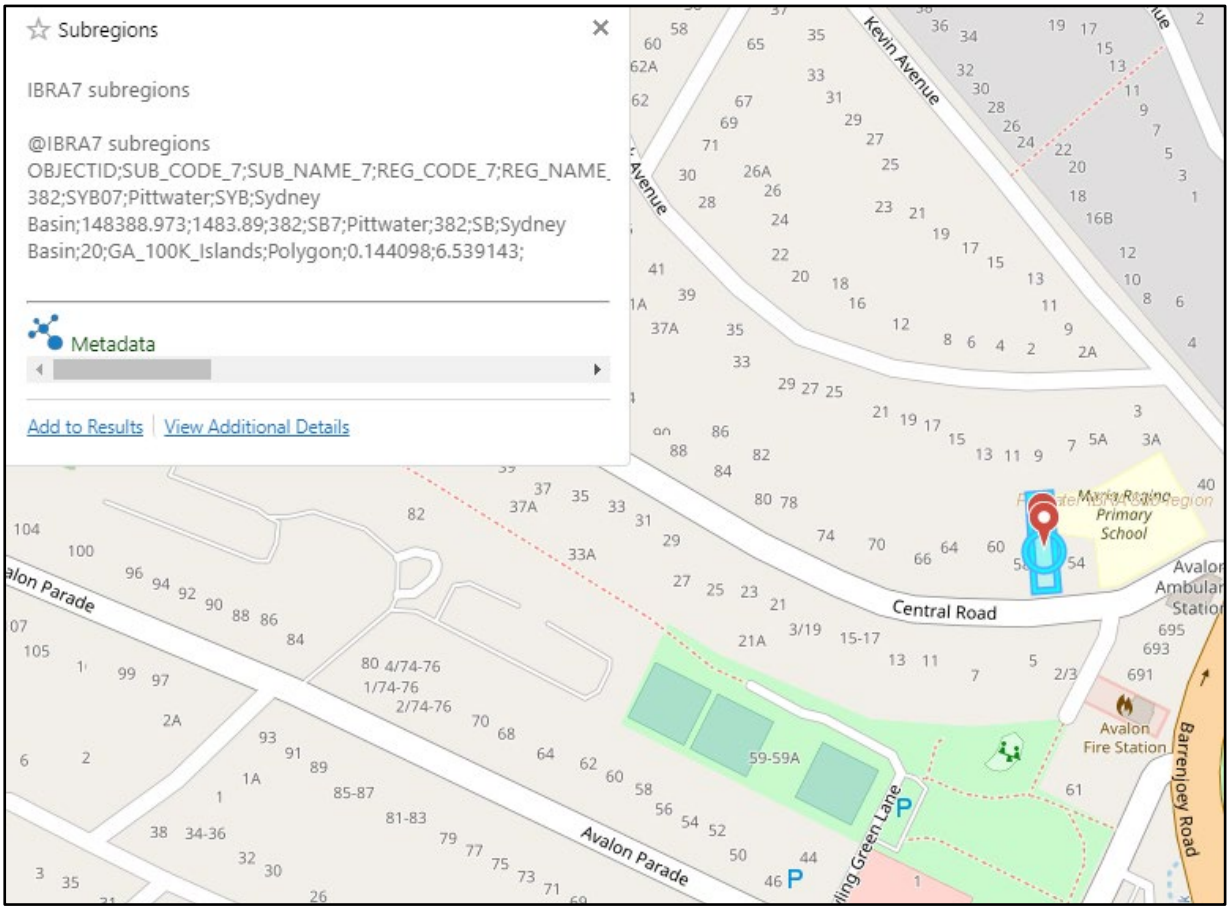


Figure 8: Location of site within the Pittwater IBRA Subregion (red arrow)

2.2 NSW Landscape Regions (Mitchell Landscapes)

Mitchell Landscapes are used to describe areas in NSW in a broad sense and group together areas with relatively homogenous geomorphology, soils and broad vegetation types and are mapped at a scale of 1:250000.

The subject site is within the Sydney – Newcastle Barriers and Beaches Landscape (Figure 9). This landscape region has an estimated cleared fraction of 0.5 and has 'over-cleared' land status.

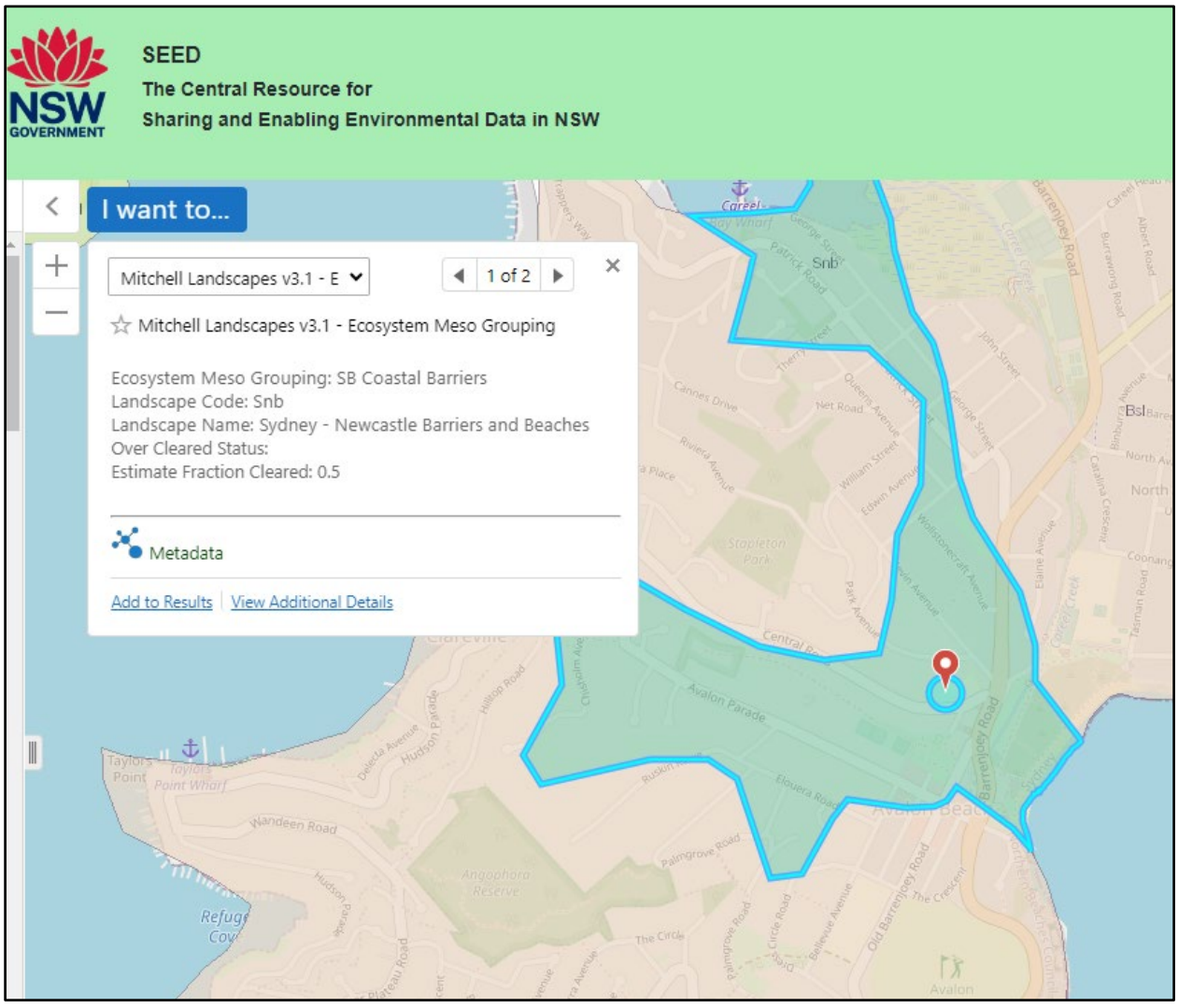


Figure 9: Location of site within the Sydney – Newcastle Barriers and Beaches Landscape.

Native Vegetation Extent

All areas of native vegetation cover, within the site and within a 1,500 m buffer area surrounding the site, have been mapped; see Figure 10. It is estimated, from this mapping, that the native vegetation cover would be approximately 40% (30-70% category) provided within the BDAR manual and this was used in the BAM Offsets calculator (Section 6).

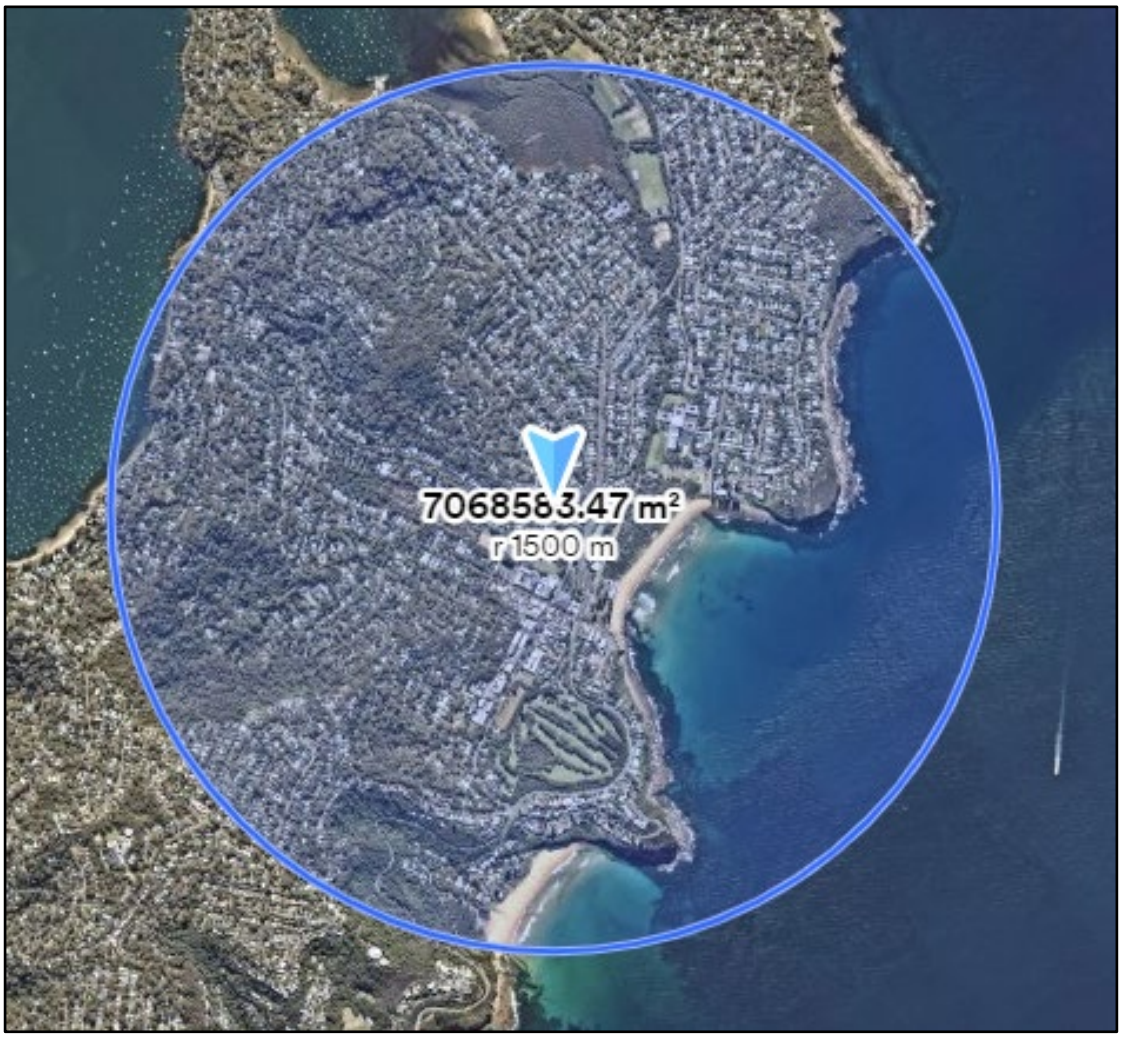


Figure 10: 1500m buffer area of the site

2.2 Wetland, Rivers, Streams and Estuaries

No significant wetlands, rivers, streams and estuaries are present within the subject land.

2.3 Connectivity Features

The biodiversity value of corridor networks is well known. Landscapes that retain more connections between patches of otherwise isolated areas of vegetation are more likely to maintain more numerous and more diverse populations of various plant and animal species (Lindenmayer and Fischer, 2006). Conversely, a lack of landscape connectivity can have a range of negative impacts on species populations (Lindenmayer and Fischer, 2006). It is thought that if existing remnants are left to persist without sufficient immigration to maintain genetic diversity, continued losses of biodiversity are certain (Parker *et al.* 2008).

The proposed development will not fragment bushland or significantly impact upon the corridor function of bushland on site as trees will be retained around the development site.

2.4 Areas of Geological Significance and Soil Hazard Features

Not present.

2.5 Areas of Outstanding Biodiversity Value

Under the BC Act, the Minister for the Environment may declare Areas of Outstanding Biodiversity Value (AOBV). These are special areas that contain irreplaceable biodiversity values that are considered important to NSW, Australia or globally.

No listed AOBV occur within the site or within a 1,500 m buffer around the site.

2.6 Important areas mapping

The site does not for part of an Important Areas Habitat mapped area (Figure 11).

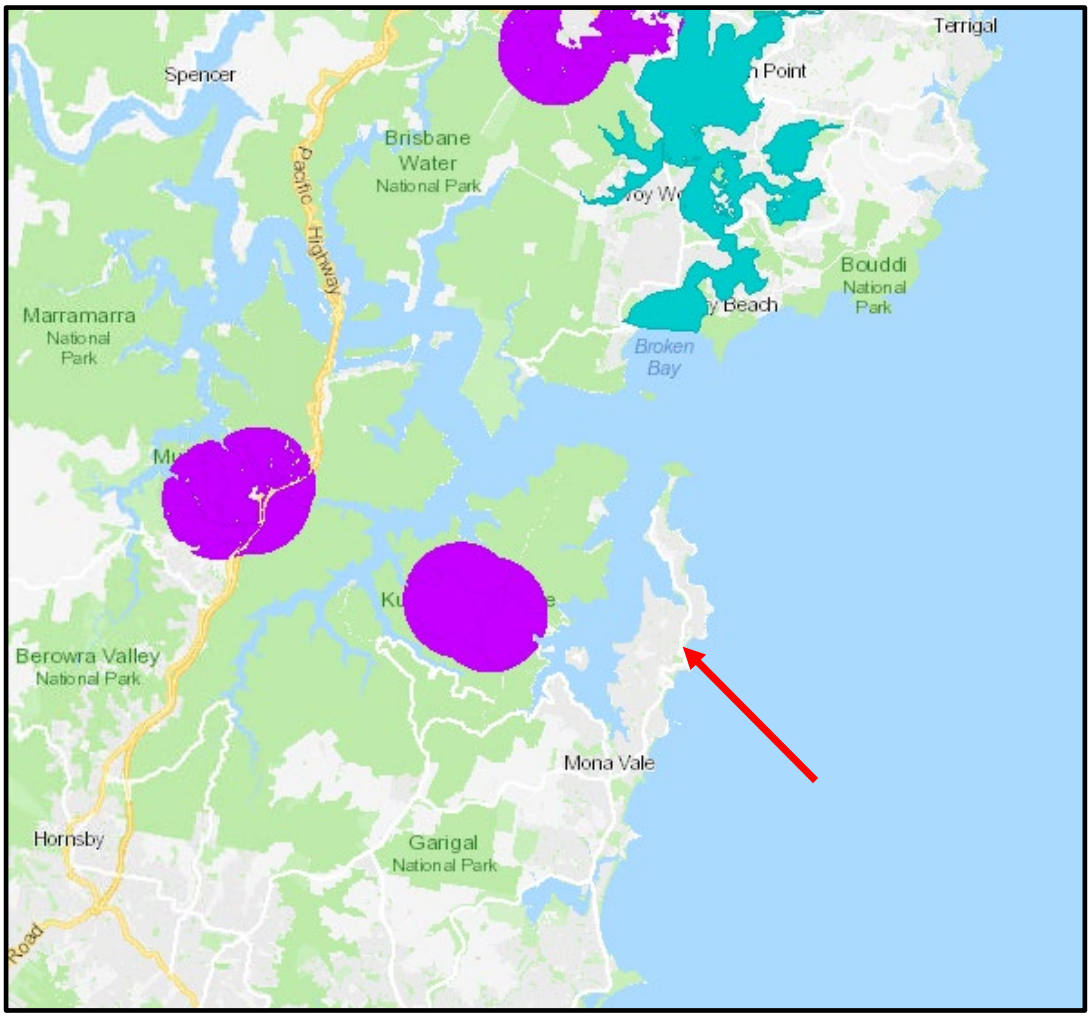


Figure 11: Important Habitat Mapping in relation to the subject site (red arrow) shown as the purple circles (Source: NSW DPIE)

2.6 Site Context

2.6.1 Native Vegetation Cover

Native vegetation cover is calculated as a percentage cover on the subject land and the surrounding 1,500 m buffer area. Cover estimates are based on the cover of native woody and non-woody vegetation relative to the approximate benchmarks for the PCT, considering vegetation condition and extent.

The native vegetation cover is estimated at approximately 30%.

2.6.2 Patch Size

Patch size is used to describe an area of intact native vegetation, that includes native vegetation with a gap of less than 100 m from the next area of moderate to good condition native vegetation. This gap is less than or equal to 30 m for non-woody ecosystems.

The patch size for the vegetation on-site is approximately over 20 hectares.

3 NATIVE VEGETATION

3.1 Native Vegetation Extent Within the Site

The total area of native vegetation occurring within the subject site is 0.01 ha for the BAM calculator.

3.2 Plant Community Types

3.2.1 Native plant species recorded on site

The native vegetation is in poor condition containing a low structural formation of the remnant vegetation community (refer to condition classes criteria in Table 2 – Section 3.5).

The canopy is dominated by Sydney Red Gum (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*), *Eucalyptus haemastoma* (Broad-leaved Scribbly Gum) and Broad-leaved White Mahogany (*Eucalyptus umbra*) ranging in DBH from 200 - 450mm (Photograph 1).

The understorey is a maintained garden with some native small trees and shrubs and ornamental plants on the perimeter of the property. The groundcover found in the middle of the property is essentially a lawn dominated by Buffalo Grass (*Stenotaphrum secundatum*) interspersed with other introduced species.

Other canopy species recorded on-site that do not typically occur within mapped *Pittwater Spotted Gum Forest*' community included:

- *Syzygium leuhmannii* (Small-Leaved Lilly Pilly) – locally indigenous possibly planted
- *Syzygium smithii* – (Common Lilly Pilly) - locally indigenous possibly planted

Other native species of various planted growth forms were recorded within the BAM plot quadrat including:

- *Callistemon viminalis* (Bottlebrush)
- *Viola hederacea* (Ivy-leaved Violet)

Introduced environment weed species were recorded on-site including:

- *Stenotaphrum secundatum* (Buffalo Grass) – dominant

- *Hypochaeris radicata* (Catsear)
- *Crassula multicava* (Fairy Crassula)
- *Ehretia acuminata* (Puna
- *Stellaria media* (Chickweed)
- *Chlorophytum comosum* (Spider Plant)

The remnant vegetation community is consistent with a highly degraded form of PCT 1214/3234 – '*Pittwater Spotted Gum Forest*'.

The PCT formation is Wet Sclerophyll Forests (Grassy sub-formation).

The PCT class is Southern Lowland Wet Sclerophyll Forests

The Community Profile Report for 1214 - Pittwater Spotted Gum Forest is provided on the following pages.

It is associated with the Threatened Ecological Community (TEC) '*Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion*'. The vegetation type occurring on site is listed as a Threatened Ecological Community under the NSW *Biodiversity Conservation Act 2016.*

Please refer to Figure 12 and 13 for vegetation mapping.

The typical characteristics of PCT 1214/3234 – '*Pittwater Spotted Gum Forest*' form the BIONET TBDC are as follows:

- *The general structural form is open-forest but may now exist as woodland or remnant trees. The tree canopy layer is characterised by Spotted Gum Corymbia maculata and Grey Ironbark Eucalyptus paniculata and is associated with Smooth-barked Apple Angophora costata, Red Bloodwood Corymbia maculata, Broad-leaved White Mahogany E. umbra, Grey Gum E. punctata, Turpentine Syncarpia glomulifera, Bangalay E. botryoides, and Rough-barked Apple Angophora floribunda.*
- *It occurs entirely within the Pittwater Local Government Area, on the Barrenjoey Peninsula and Western Pittwater Foreshores. Remnants are typically small and on private property, however there are a few remnants in Council reserves and one remnant within Ku-ring-gai Chase NP.*
- *It occurs in association with shale derived soils with high rainfall on lower hillslopes on the Narrabeen Group - Newport Formations on the Barrenjoey Peninsula and western Pittwater Foreshores.*
- *Assemblage diversity must take into account species likely to be present in the soil seedbank. Structural form is typically open-forest but may now exist as woodland or remnant trees. The floristic composition and structural diversity influenced by the remnant size, disturbance history and fire severity and frequency.*

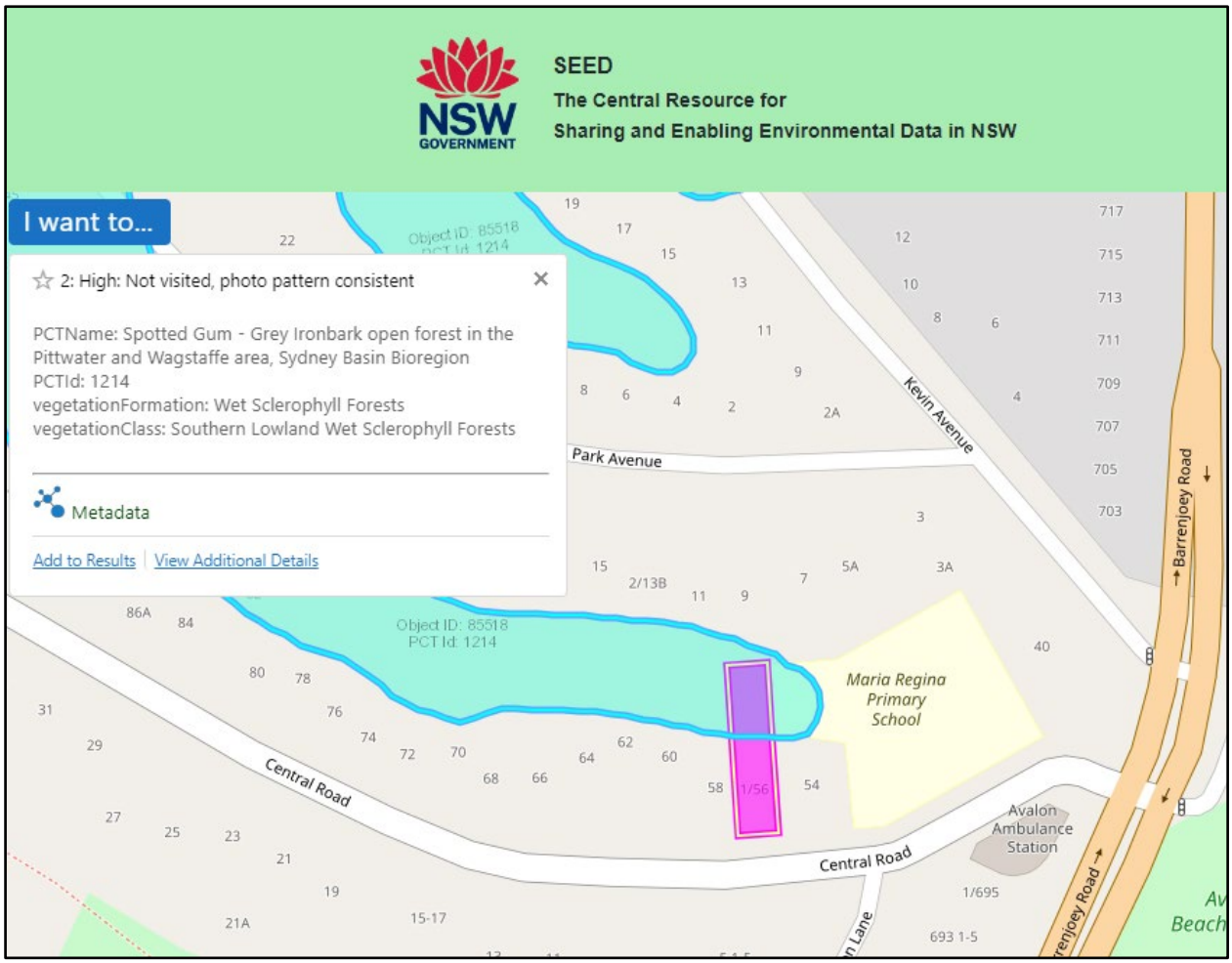


Figure 12: Sydney Metro vegetation mapping identifying the site under the former classification system as PCT 1214

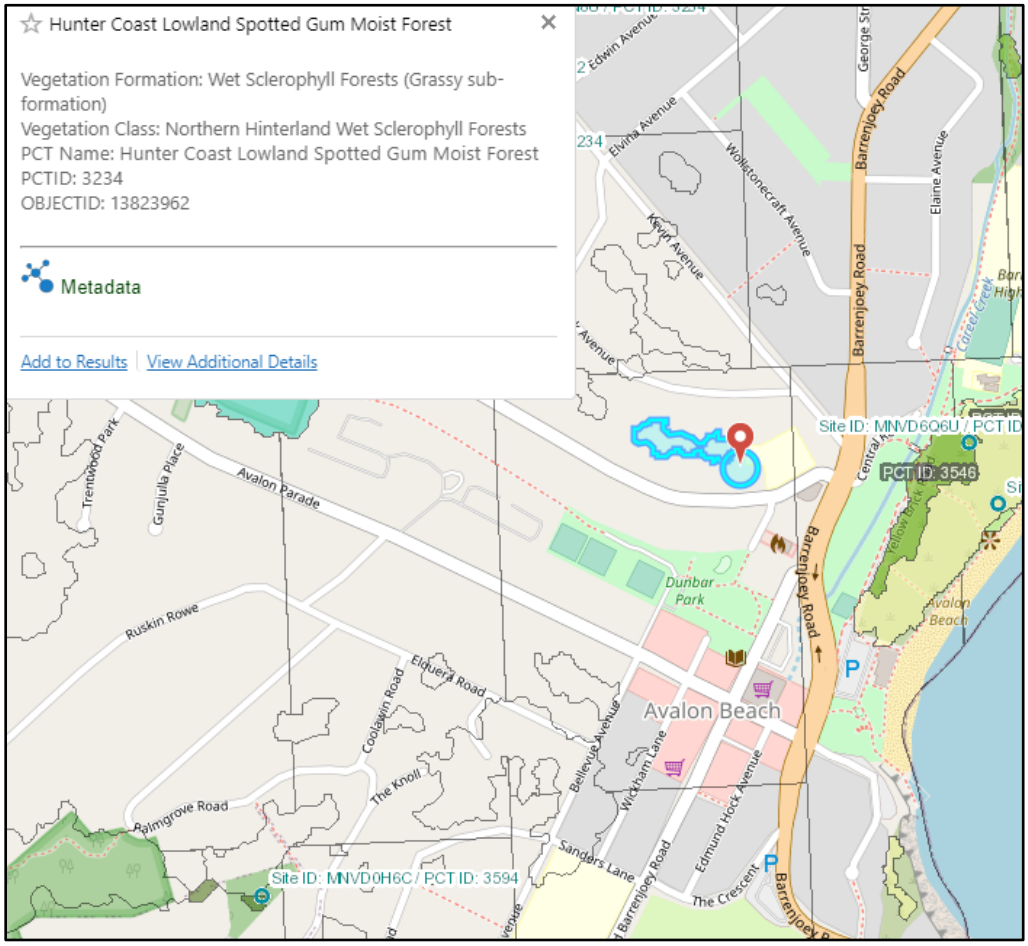


Figure 13: Recent statewide PCT mapping identifying the site as PCT 3234

3.2.2 Plot-based Floristic Vegetation Surveys

Plot-based floristic vegetation surveys were conducted, in accordance with s.5.2.1.9 of the BAM, by Jesse McIvor on the 1st June 2023.

One 20 m x 20 m plot were sampled for the presence of flora species. The plot was carefully examined to identify all flora species present. Searches continued until it was confident that all flora species within a plot were detected. Data collected for each species included:

- Stratum and layers in which each species occurs
- Growth form for each species
- Scientific and common name for each species
- Percentage foliage cover (PFC) across the plot, of each species rooted in or overhanging the plot

- Abundance rating for each species

Plant Community Types (PCTs) on the site were identified according to the NSW PCT classification described in the BioNet Vegetation Classification.

One PCT (No.1214/3234) was identified on the site and is described below.

A map showing the distribution of PCTs has not been provided as essentially the vegetation mapping provided within Figure 12 and 13 shows the PCT distribution.

Plot data is provided in Appendix B.

The location of the BAM plot is provided within Figure 14 (below).

Figure 14: Location of BAM Plot (red) and 400sqm quadrat (purple).

Photograph 1: BAM Plot midline (view north)

Photograph 2: BAM Plot midline (view south)

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID): 1214

PCT Name: Pittwater Spotted Gum forest

Classification Confidence Level: 2-High

Vegetation Description: Stands of spotted gum (Corymbia maculata) mark this distinctive forest on the foreshores and escarpments of the Pittwater peninsula. These trees form a tall open forest that may also include grey ironbark (Eucalyptus paniculata) and broad-leaved white mahogany (Eucalyptus umbra). At the lower heights of the eucalypt stratum it is common to find an open cover of forest oak (Allocasuarina torulosa). The midstorey usually comprises a mixed layer of mesic and dry shrub species and occasional palms. Shrub species include blueberry ash (Elaeocarpus reticulatus), scentless rosewood (Synoum glandulosum subsp. glandulosum), narrow-leaved geebung (Persoonia linearis) and mountain holly (Podolobium ilicifolium). Like many spotted gum forests along coastal New South Wales burrawang (Macrozamia communis) can assume a prominent component of the ground layer above a scatter of grasses, ferns and small vines. At times the ground layer appears very grassy, with an abundance of blady grass (Imperata cylindrica var. major) notable where there is a history of frequent fire. Pittwater Spotted Gum Forest has recently been subject to review by Bell and Stables (2012). These authors concluded that this forest has a close association with Narrabeen sediments exposed on rises, escarpments and footslopes throughout northern Pittwater LGA and Wagstaff peninsula in the Gosford LGA. The forest spans a number of aspects and topographic positions but is rarely found above 100 metres above sea level. It receives between 1150 and 1300 millimetres of mean annual rainfall. It is estimated that 75 per cent of its pre-European distribution has been cleared in the Pittwater and Gosford urban areas (Bell and Stables 2012) with some remaining stands impacted by the encroachment of urban weeds.

Variation and Natural Disturbance:

Vegetation Formation: Wet Sclerophyll Forests (Grassy sub-formation);

Vegetation Class: Southern Lowland Wet Sclerophyll Forests;

IBRA Bioregion(s): Sydney Basin;

IBRA Sub-region(s): Pittwater;

LGA: PITTWATER; GOSFORD;

Lithology: Not Assessed

Landform Pattern: Not Assessed

Landform Element: Not Assessed

Emergent species: None

Upper Stratum Species: Corymbia maculata; Allocasuarina torulosa; Elaeocarpus reticulatus; Eucalyptus paniculata; Eucalyptus umbra; Glochidion ferdinandii; Corymbia gummifera; Eucalyptus botryoides;

Mid Stratum Species: Podolobium ilicifolium; Macrozamia communis; Notelaea longifolia; Synoum glandulosum subsp. glandulosum;

Ground Stratum Species: Billardiera scandens; Dianella caerulea; Entolasia stricta; Lomandra longifolia; Xanthorrhoea macronema; Microlaena stipoides var. stipoides; Schelhammera undulata; Themeda australis;

Diagnostic Species: Not Assessed

Fire Regime:

TEC Assessed: Has associated TEC

TEC List: Listed BC Act,E: Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (Equivalent);

Associated TEC Comments:

PCT Percent Cleared: 71.00

PCT Definition Status: Decommissioned

4 FAUNA HABITAT AND SPECIES

The remnant trees below the site function as a habitat corridor for mobile species including microchiropteran bats, flying foxes, variety of bird species and arboreal marsupials (possums).

The remnant forest surrounding the subject site contains the following fauna habitat characteristics:

- Nectar sources from trees
- Groundcover layer
- No hollow bearing trees were identified on-site.

Each of the above habitat elements have been described in detail below:

4.1 Groundcover layer

The accumulation of leaf litter which is likely to provide refuge and foraging habitat for herpetofauna and small mammals outside the proposed development impact area.

4.2 Nectar sources from trees

The Myrtataceace group of trees occurring downslope of the site provide nectar through flowering blossoms and direct extraction from the trunk for a variety of fauna including Grey-headed Flying Fox, birds and gliders.

There are a variety of nectar feeding species that utilise flowering blossoms are transient through the site and generally rely upon the flowering times.

The vegetation surrounding the site provides foraging and sheltering habitat for woodland bird species and generalist birds of agricultural habitats, although the smaller size of the remnants and general lack of connectivity may influence the suite of species.

Common birds found in these woodland habitats include Buff-rumped and Yellow Thornbill *(Acanthiza reguloides* and *Acanthiza nana*), Striated Pardalote (*Pardalotus striatus*), Grey Shrike-thrush (*Colluricincla harmonica*), Willy Wagtail (*Rhipidura leucophrys*), Yellow-faced Honeyeater (*Lichenostomus chrysops*), White-naped Honeyeater (*Melithreptus lunatus*), Crimson Rosella (*Platycercus elegans*), Magpie Lark (*Grallina cyanoleuca*) and Australian Magpie (*Gymnorhina tibicen*).

4.3 Other habitat features

Other structural habitat features that occurred on site included:

- Inter-connecting upper strata of canopy provides temporary roosting habitat in the forest
- Microchiropteran bats may temporarily forage in the locality

The site contains suitable foraging habitat for the following threatened fauna species (Table 2):

- *Pteropus poliocephalus* Grey-Headed Flying-fox (foraging only)
- Large Forest Owls (*Ninox connivens* and *Ninox strenua*) (foraging only)

However, important habitat critical for the breeding component of threatened species is absent.

No hollow-bearing trees were recorded on-site.

Table 2: Fauna habitat assessment

TOPOGRAPHY				
Flat	Gentle	Moderate ✓	Steep	Drop-offs
VEGETATION STRUCTURE				
Closed Forest	Open Forest ✓	Woodland	Heath	Grassland
DISTURBANCE HISTORY				
Fire	Under-scrubbing ✓	Cut and fill works - Drainage culvert		
Tree clearing ✓	Grazing			
SOIL LANDSCAPE				
DEPTH:	Deep	Moderate ✓	Shallow	Skeletal
TYPE:	Clay ✓	Loam ✓	Sand ✓	Organic
VALUE:	Surface foraging	Sub-surface foraging	Denning/burrowing	
WATER RETENTION:	Well Drained ✓	Damp / Moist	Water logged	Swamp / Soak
ROCK HABITAT				
CAVES:	Large	Small	Deep	Shallow
CREVICES:	Large	Small ✓	Deep	Shallow
ESCARPMENTS:	Winter / late sunny aspects		Shaded winter / late aspects	
OUTCROPS:	High Surface Area Hides	Med. Surface Area Hides	Low Surface Area Hides	
SCATTERED / ISOLATED:	High Surface Area Hides	Med. Surface Area Hides	Low Surface Area Hides	
FEED RESOURCES				
FLOWERING TREES:	Eucalypts ✓	Corymbias ✓	Melaleucas ✓	
	Banksias	Acacias		
SEEDING TREES:	Allocasuarinas	Conifers		
WINTER FLOWERING EUCALYPTS:	*C. maculata*	*E. crebra*	*E. globoidea*	*E. sideroxylon*
	E. squamosa	*E. grandis*	*E. multicaulis*	*E. scias*
	E. robusta	*E. tereticornis*	*E. agglomerata*	*E. siderophloia*
FLOWERING PERIODS:	Autumn	Winter	Spring	Summer
OTHER:	Mistletoe	Figs / Fruit	Sap / Manna	Termites
FOLIAGE PROTECTION				
UPPER STRATA:	Dense	Moderate ✓	Sparse	
MID STRATA:	Dense	Moderate	Sparse ✓	
PLANT / SHRUB LAYER:	Dense	Moderate	Sparse ✓	
GROUNDCOVERS:	Dense	Moderate ✓	Sparse	
HOLLOWS / LOGS				
TREE HOLLOWS:	Large	Medium	Small	
TREE HOLLOW TYPES	Spouts / branch	Trunk	Broken Trunk	Basal Cavities	Stags
GROUND HOLLOWS:	Large	Medium	Small	
VEGETATION DEBRIS				
FALLEN TREES:	Large	Medium	Small	
FALLEN BRANCHES:	Large	Medium	Small	
LITTER:	Deep	Moderate ✓	Shallow	
HUMUS:	Deep	Moderate ✓	Shallow	
DRAINAGE CATCHMENT				
WATER BODIES	Wetland(s)	Soak(s)	Dam(s)	Drainage line(s)	Creek(s)	River(s)
RATE OF FLOW:	Still	Slow	Rapid	
CONSISTENCY:	Permanent	Perennial	Ephemeral	
RUNOFF SOURCE:	Urban / Industrial	Parkland	Grazing	Natural ✓
RIPARIAN HABITAT:	High quality	Moderate quality	Low quality	Poor quality
ARTIFICIAL HABITAT				
STRUCTURES:	Sheds	Infrastructure	Equipment	

SUB-SURFACE	Pipe / culvert(s)	Tunnel(s)	Shaft(s)
FOREIGN MATERIALS:	Sheet	Pile / refuse	

4.4 Vegetation Integrity Assessment

4.4.1 Vegetation Zones

For the purposes of the BAM, a vegetation zone is an area of native vegetation on the site that is the same PCT and has a similar broad condition state. The assigned vegetation zone for the PCT occurring on the site are described below.

4.4.2 Patch Sizes

A patch size area has been assigned to each vegetation zone, as a class. Patch size classes are provided in Table 3-1.

Table 3-1: Patch Size Classes

PCT	Vegetation Zone	Patch Size Class
PCT 1214/3234	Vegetation Zone 1	100ha

4.4.3 Vegetation Integrity Scores

Each vegetation zone identified on the site has been surveyed to obtain a quantitative measure for each zone, of the composition, structure and function attributes listed in Table 3 of the BAM. These attributes are listed below:

- Growth form groups used to assess composition and structure:
  - Tree
  - Shrub
  - Grass and grass like
  - Forb
  - Fern
  - Other
- Attributes used to assess function:
  - Number of large trees
  - Tree regeneration
  - Tree stem size class
  - Total length of fallen logs

- Litter cover
- High threat exotic vegetation cover
- Hollow-bearing trees

Plot-base surveys were conducted, in accordance with s.5.3.4 of the BAM, by an ecologist (Alex Fraser). Survey plots were established around a central 50 m transect and included:

- One 400 m² (20 m x 20 m) plot to assess the composition and structure attributes listed above.
- One 1000 m² (20 m x 50 m) plot to assess the function attributes: number of large trees, stem size class, tree regeneration and length of logs.
- Five 1 m² sub-plots to assess average litter cover (and other optional groundcover components).

See previous Figure 10 for plot location. Plot data is provided in Appendix B. Table 3-2 details the vegetation integrity scores for each vegetation zone.

Table 3-2: Vegetation Integrity Scores

PCT	Vegetation Zone	Composition Condition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score
PCT 3234	Vegetation Zone 1 (0.02ha)	9.3	39.6	7.5	14

5 THREATENED SPECIES

5.1 Ecosystem Credit Species

Ecosystem credit species are those where the likelihood of occurrence of the species or elements of the species' habitat, can be predicted by vegetation surrogates and landscape features, or for which targeted survey has a low probability of detection. The Threatened Biodiversity Data Collection (TBCD) has identified several ecosystem credit species as requiring assessment as shown on the following page.

5.2 Species Credit Species (Candidate Species)

Species credit species (or candidate species) are those where the likelihood of occurrence of the species or elements of suitable habitat for the species, cannot be confidently predicted by vegetation surrogates and landscape features and can be reliably detected by survey. The TBDC has identified several candidate species as requiring assessment as provided on the following page.

In accordance with S.6.5.1.1. a species survey must be undertaken for all species credit species identified as likely to occur on the site based upon the application of Steps 1-3 in Section 6.4. Due timing constraints, based upon habitat surveys and database records (including those done for the previous flora and fauna assessment) we have determined the likelihood of threatened fauna occurring on site in the absence of surveys and assumed presence where appropriate.

The candidate species assessment provided in Table 4.2 considered that based upon previous BIONET records, and the predicted BAM -C tables outputted via the offsets calculator that suitable habitat for most fauna species were absent and therefore targeted surveys were not required.

No threatened species were recorded on-site.

Table 4.2 Candidate species assessment

Common name	Scientific name	Included in assessment (includes profile information from the Threatened Biodiversity Data Collection – TBDC)	Targeted survey conducted?	Present within subject land?	Biodiversity risk weighting	Biodiversity Offset Credits required?
Large Bent-winged Bat (breeding)	*Miniopterus orianae oceanensis*	*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*	Not required – potential habitat absent	No	Very High -3	No
Large-eared Pied Bat	*Chalinolobus dwyeri*	*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. Whilst hilly terrain was observed within the surrounding locality of the Subject Land, aerial imagery revealed no such geological features (caves, overhangs escarpment etc.) within or adjacent to the Subject Land. Habitat features would occur within the area surrounding the Subject Land. As such, this species was assumed to be present.*	Not required - potential habitat absent	No	Very High -3	No
Little Bent-winged Bat (breeding)	*Miniopterus australis*	*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.*	Not required - potential habitat absent	No	Very High -3	No
Regent Honeyeater	*Anthochaera phrygia*	*No, the region subject land is not within the important areas mapped for this species*	Not required - potential habitat absent	No	Very High -3	No
Swift Parrot	*Lathamus discolor*	*No, the subject land is not within the important areas mapped for this species*	Not required - potential habitat absent	No	Very High -3	No
Bauer's Midge Orchid	*Genoplesium baueri*	*Grows in dry sclerophyll forest and moss gardens over sandstone. Flowers February to March.*	Yes	No	Very High -3	No
Diuris bracteata	*Diuris bracteata*	*Dry sclerophyll woodland and forest with a predominantly grassy understorey.*	Yes	No	Very High -3	No
Hygrocybe aurantipes	*Hygrocybe aurantipes*	*Occurs in gallery warm temperate forests dominated by Lilly Pilly (Acmena smithii), Grey Myrtle (Backhousia myrtifolia), Cheese Tree (Glochidion ferdinandi) and Sweet Pittosporum (Pittosporum undulatum). Associated*	Yes	No	Very High -3	No

Common name	Scientific name	Included in assessment (includes profile information from the Threatened Biodiversity Data Collection – TBDC)	Targeted survey conducted?	Present within subject land?	Biodiversity risk weighting	Biodiversity Offset Credits required?
		with alluvial sandy soils of the Hawkesbury Soil Landscapes with naturally low fertility and erodible. Occur as individuals or in groups, terrestrial rarely on wood and only if extremely rotten; substrates include soil, humus, or moss. Does not produce above ground fruiting bodies (fungus) all year round. Fruiting bodies begin appearing mid May to mid July sometimes to August.				
Scrub Turpentine	*Rhodamnia rubescens*	*Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.*	Yes	No	Very High -3	No

5.3 Description of Impacts

The Arborist Report prepared by Bradshaw Consulting Arborists dated 14th December 2022 identifies that one tree is required to be removed for the construction of the granny flat.

The report recommends the retention of all other trees on the site to be retained.

Therefore, the proposed development would require the modification of approximately <100 m² (0.01ha) of native vegetation that is predominantly canopy trees with a modified understorey. **However as a precautionary measure, we have increased the area of impact to 0.02ha.**

The vegetation is considered to be in moderate condition.

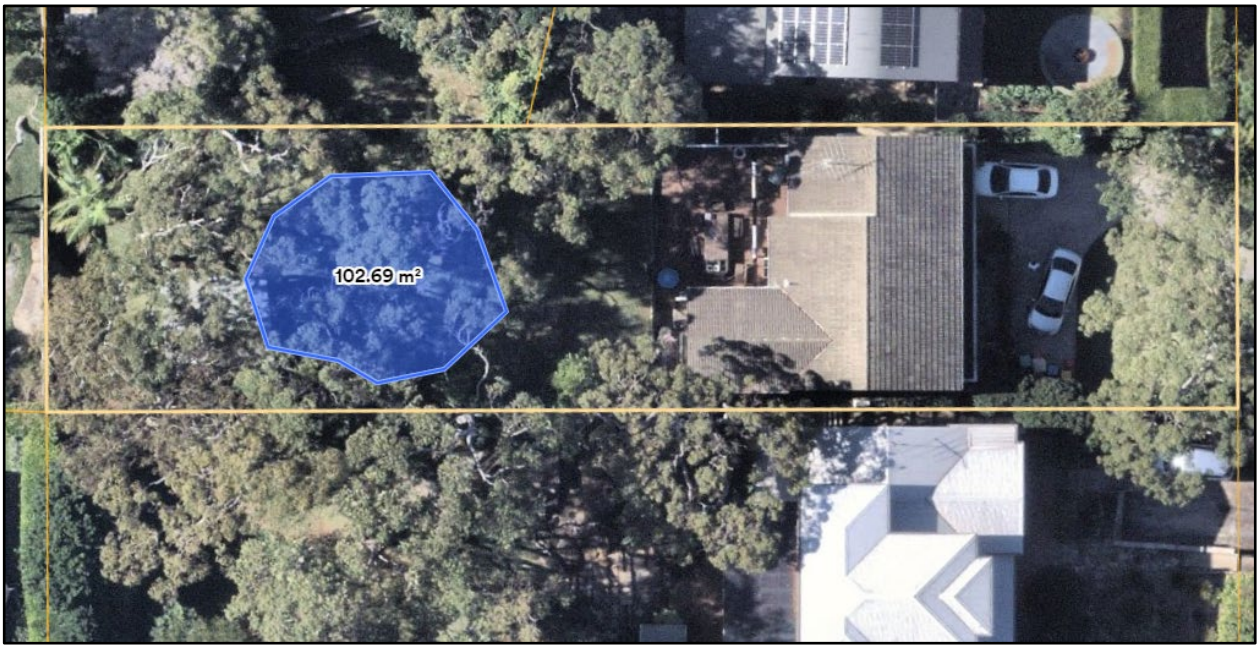


Figure 15: The area of total vegetation impact was 0.01ha entered into the BAM calculator

5.3.1 Serious and irreversible impacts

Species and ecological communities with a 'very high' biodiversity risk weighting will be a potential serious and irreversible impact (SAII). These 'potential SAII entities' are identified within the BAM calculator (OEH 2018b).

The determination of serious and irreversible impacts on biodiversity values is to be made by the consent authority in accordance with the principles set out in the BC Regulation.

To assist the consent authority, the guidance document Guidance to assist a decision-maker to determine a serious and irreversible impact includes criteria that enable the application of the four principles set out in clause 6.7 of the BC Regulation to identify the species and ecological communities that are likely to be the subject of serious and irreversible impacts.

SAII Entities considered in this assessment included:

- Pittwater Spotted Gum Forest (PSGF) EEC

Please refer to Section 5.5 for the detailed SAII assessment.

5.3.2 Potential Direct Impacts

Vegetation and habitat removal

The majority of trees on the subject site are endemic. Fourteen established locally indigenous trees were identified. Two trees - *Corymbia gummifera* (Red Bloodwood) numbered 3 & 4 is flagged for removal for the construction of the granny flat.

The majority of the dwelling will be constructed on already cleared ground which covered with a Buffalo Grass lawn.

The vegetation was considered to be in poor condition. It is highly unlikely that the native soil seed bank will regenerate to a remnant form of this vegetation community.

Risk of runoff, erosion and sedimentation, during construction

Surface water quality may be affected during construction activities. Construction activities could potentially encourage soil erosion and increase the sediment loads in downstream areas. Further, accidental leaks/spills of oil, fuel, cement or other substances entering watercourses could pollute surface waters.

The Construction Environment Management Plan (CEMP) can be provided with the application addresses these issues es (prior to the release of the Construction Certificate).

Temporary noise, dust, light and vibration disturbance, during construction work

Impacts of noise, dust, light and vibration upon fauna are difficult to predict. Potential impacts may include effects on predator-prey interactions and changes to mating and nesting behaviour.

The Construction Environment Management Plan (CEMP) can be provided with the application addresses these issues (prior to the release of the Construction Certificate).

5.3.3 Potential Indirect Impacts

Potential indirect impacts to flora and fauna include:

Minor hydrological changes

Hard surfaces created as a result of construction typically cause some hydrological changes; however, in this case, hydrological changes are expected to be very minor.

5.3.4 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 Site. 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 (Table 5.1.2 below).

Table 5.1.2 Indirect impacts, extent and duration and consequences

Indirect Impact	Extent and duration	Threatened species, threatened ecological communities and their habitats likely to be affected.	Consequences of the impacts for the bioregional persistence of the threatened species, threatened ecological communities and their habitats.
(a) inadvertent impacts on adjacent habitat or vegetation	The proposed development may lead to enhanced weed infiltration into adjacent habitat by enhanced edge effects. This impact is likely to be restricted the immediate area surrounding the dwelling to a couple of metres.	Nil	Edge effects will not be created and increase weed intensity and reduce vegetation integrity.
(b) reduced viability of adjacent habitat due to edge effects	The proposed development may lead to enhanced weed infiltration into adjacent habitat by enhanced edge effects. This impact is likely to be restricted the immediate area surrounding the dwelling to a couple of metres.	Nil	Edge effects will not be created and increase weed intensity and reduce vegetation integrity. As much native groundcover vegetation including low lying shrubs will be retained where possible.
(c) reduced viability of adjacent habitat due to noise, dust or light spill	The proposed works are unlikely to significantly exacerbate any of these issues which are all currently in effect within surrounding lots, or otherwise unlikely to occur within the Subject Site.	Nil	Nil
(d) transport of weeds and pathogens from the site to adjacent vegetation	The proposed development may lead to enhanced weed infiltration into adjacent habitat by enhanced edge effects. This impact is likely to be restricted the	Nil	Edge effects will not be created and increase weed intensity and reduce vegetation integrity.

Indirect Impact	Extent and duration	Threatened species, threatened ecological communities and their habitats likely to be affected.	Consequences of the impacts for the bioregional persistence of the threatened species, threatened ecological communities and their habitats.
	immediate area surrounding the dwelling to a couple of metres. Active weed control efforts will be undertaken prior to and post construction.		
(e) increased risk of starvation, exposure and loss of shade or shelter	This issue is unlikely to occur on the Subject Site. It is unlikely that any threatened fauna relies on habitat within the Subject Site, such that the proposed impacts will lead to increased risks from starvation, exposure, shade and shelter. All habitat resources removed will be replaced through implementation of the recommendations outlined in this report.	Nil	Nil
(f) loss of breeding habitats	Only one tree with hollow spouts are proposed for removal. No caves will be impacted by the proposal.	Nil	The implementation of the actions prescribed in this report should see an increase in the availability of potential habitat for these threatened species within the Subject Site.
(g) trampling of threatened flora species	This issue is not likely to affect the Subject Site. No threatened flora species were identified within the Subject Site.		

Indirect Impact	Extent and duration	Threatened species, threatened ecological communities and their habitats likely to be affected.	Consequences of the impacts for the bioregional persistence of the threatened species, threatened ecological communities and their habitats.
(h) inhibition of nitrogen fixation and increased soil salinity	This issue is not likely to affect the Subject Site.	Nil	Nil
(i) fertiliser drift	This issue is not likely to affect the Subject Site.	Nil	Nil
(j) rubbish dumping	This issue is not likely to affect the Subject Site.	Nil	Nil
(k) wood collection	This issue is not likely to significantly affect the Subject Site.	Nil	Nil
(l) bush rock removal and disturbance	No bush rock occurs on-site.	Nil	Nil
(m) increase in predatory species populations	It is unlikely that the proposed works will influence or alter predatory species populations.	Nil	Nil
(n) increase in pest animal populations	It is unlikely that the proposed works will influence or alter pest species populations.	Nil	Nil
(o) increased risk of fire	This has been addressed separately in the bushfire assessment report.	Nil	Nil
(p)disturbancetospecialist breeding and foraging habitat, e.g. beach nesting for shorebirds.	There is no specialist breeding or foraging habitat on the Subject Site. The site contains a stand of mixed, nectar producing canopy trees which can provide intermittent nectar resources for several threatened fauna species.	Nil	Nil

5.3.5 Prescribed and Uncertain Impacts

This list of impacts includes all of those impacts on biodiversity values not caused by direct vegetation clearing or development that have been prescribed by the Biodiversity Conservation Regulation 2017 (Table 5.1.3).

Table 5.1.3 Potential Prescribed or Uncertain Impacts of the Proposed Action

Will there be impacts on any of the following	Yes/No	If Yes, must address all of the assessment questions from section 9.2.1 of the BAM
Species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance	No	n/a
Habitat of threatened species or ecological communities associated with rocks	No	n/a
Habitat of threatened species or ecological communities associated with human made structures	No	n/a
Habitat of threatened species or ecological communities associated with non-native vegetation	No	n/a
Connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	Yes	Habitat connectivity continues to exist across the site. It is unlikely that the small area of impact will interrupt connectivity for any threatened fauna or flora species.
Movement of threatened species that maintains their life cycle	Yes	Habitat connectivity continues to exist across the site. It is unlikely that the small area of impact will interrupt movement of any threatened fauna or
Water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including subsidence or upsidence resulting from underground mining or other development)	No	n/a

Will there be impacts on any of the following	Yes/No	If Yes, must address all of the assessment questions from section 9.2.1 of the BAM
Wind turbine strikes on protected animals	No	n/a
Vehicle strikes on threatened species of animals or on animals that are part of a TEC	No	n/a

5.4 Avoidance of Impacts

The area for construction of the granny flat has been positioned on already cleared land covered by Buffalo grass. Two ocally indigenous trees (Red Bloodwood - *C. gummifera*) no. 3 & 4 are required to be removed for the development.

Therefore, the proposed development would realistically require the modification of <100 m² (0.01ha) of native vegetation. A total of 0.02ha of was entered in to the BAM calculator as a precautious measure.

5.5 Minimisation of Impacts

Several mitigation measures are proposed to minimise potential impacts; these are summarised in Table 4-5. These include measures to be implemented in the pre-construction, construction and post-construction phases. It is considered that these measures would serve to minimise any potential direct or indirect impacts.

Table 4.5 Mitigation measures proposed to minimise potential impacts

Action	Outcome/measure	Risk/ consequence of residual impacts	Timing	Responsibility
Project location	The location of the proposed development has been positioned in order to avoid and minimise the potential resulting impacts on biodiversity values within the Subject Site, where possible.	Risk = low Consequence = Harm to native vegetation and native fauna	Pre-construction phase	Proponent

Action	Outcome/measure	Risk/ consequence of residual impacts	Timing	Responsibility
Project design	The proposed development has been designed to avoid and minimise impacts on native vegetation and habitat where possible within the Subject Site. Where this is not possible, mitigation measures have been designed and recommended to reduce potential ecological impact. While there will be some impact on native vegetation, this falls above the Biodiversity Offset Scheme threshold. The design of the proposed development includes the retention of a significant area of existing bushland without disturbance. This area of retained bushland will allow for the implementation of mitigation measures that will aim to reduce any ecological impact resulting from the proposed development.	Risk = low Consequence = Harm to native vegetation and native fauna	Pre-construction phase	Proponent
Threatened plant protection	N/a	Risk = high Consequence = Harm to threatened plant species	Pre-construction phase	Project ecologist
Tree protection	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 development 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..	Risk = low Consequence = Harm to native vegetation and native fauna. Proliferation of weeds.	Pre-construction phase	

Action	Outcome/measure	Risk/ consequence of residual impacts	Timing	Responsibility
Avoidance of hollow-bearing trees	One hollow bearing tree was recorded within the development footprint. It was not used by fire during the time of surveys. It is highly unlikely to provide critical breeding habitat for any protected or threatened species. Due to its location in the middle of the proposed footprint there are no options to avoid removal.	Risk = low Consequence = Loss of fauna habitat. Loss of native vegetation.	Construction phase	Proponent
Avoidance of woody debris	Woody debris within the development footprint will have to be transported to a dedicated green waste facility	Risk = low Consequence = Loss of fauna habitat.	Construction phase	Proponent
Erosion and sedimentation	Appropriate erosion and sediment control must be erected and maintained at all times during construction. As minimum such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004).	Risk = low Consequence = Degradation of vegetation,	Construction phase	Construction Contractor
Erosion protection fencing	Temporary fencing should be erected around the extent of native vegetation to be retained in order to minimise any disturbance resulting from the proposed construction works.	Risk = high Consequence = Permanent damage or degradation of vegetation.	Construction phase	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.	Risk = moderate Consequence = Harm to native vegetation and native fauna	Construction phase	Construction Contractors
Weed eradication and suppression	All priority weeds should be eradicated across all areas of the Subject Site. Very low weed invasion was recorded on-site. Any weeds should be continually supressed and prevented from re-establishing within retained native vegetation.	Risk = moderate Consequence = Harm to native vegetation and native fauna habitat.	Construction phase and Post-construction phase	Proponent
Stormwater	The proposed development is unlikely to result in significant changes to stormwater runoff so it is expected there will be no exacerbated impact on native species of flora and fauna. Stormwater flow from future dwellings and hard surfaces will be directed to newly installed water storage tanks. Prior to any release, all stormwater is to be piped through any tanks that may be required by the regulating authorities.	Risk = low Consequence = Harm to native vegetation and native fauna habitat.	Post-construction phase	Proponent Construction Architect
Wastewater	n/a	Risk = low Consequence = Harm to native vegetation and native fauna	Post-construction phase	Proponent

Action	Outcome/measure	Risk/ consequence of residual impacts	Timing	Responsibility
		habitat.		

A Construction Environment Management Plan (CEMP) can be provided with the application prior to the release of the Construction Certificate to address all issue in Table 4.5.

6 IMPACT SUMMARY

6.1 Serious and Irreversible Impacts

The OEH (2017) *Guidance to Assist a Decision-maker to Determine a Serious and Irreversible Impact* lists the ecological communities and species that are 'potential serious and irreversible impact (SAII) entities'.

Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion is listed as a SAII entity.

6.2 Impacts Which Require an Offset

Tables 6-1 and 6-2 provide a summary of the impacts that require an offset, under the BAM.

Table 5-1: Vegetation Zones Requiring an Offset

Vegetation Zone	PCT	Area Impacted	Current Vegetation Integrity Score	Future Vegetation Integrity Score	Number of Ecosystem Credits Required
1	PCT 1214/3234	0.02ha	14	0	0

Table 5-2: Threatened Species Requiring an Offset

Species	Area of Impacted Habitat	Number of Species Credits Required
-	--	-

6.3 Impacts Not Requiring an Offset

N/A

6.4 Identification of Areas Not Requiring Assessment

N/A

6.5 Serious and Irreversible Impacts (SAII's)

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- it will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline
- it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size
- it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution
- the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

These principles are set out in clause 6.7 of the Biodiversity Conservation Regulation 2017.

Entities at risk of an SAII in the Threatened Biodiversity Data Collection (DPIE 2021d):

- Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion

Potential breeding habitat for this species is not proposed for removal. However, it is likely to forage in the subject site.

Due to the potential sensitivity of this species, a determination of whether or not the proposed impacts are serious and irreversible is to be undertaken in accordance with Section 9.1 of the BAM (DPIE 2020a) as outlined in Table 6.5.

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest (PSGF) EEC at Risk of an SAII –

No	Assessment Criteria	SAII Assessment Information
2a	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of reduction in geographic distribution as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)*	It is difficult to ascertain the 1970 extent; however, the PSGF Final determination estimates that there has been a 90% reduction in the total geographic extent of PSGF since European Settlement (ie since 1788). *Pittwater Spotted Gum Forest has been extensively cleared from the Barrenjoey Peninsula and the western and southern shores of Pittwater, and is threatened by further clearing for housing and related infrastructure, and for fire mitigation. Remnants are also threatened by weed invasion especially Lantana camara and Acacia saligna and by inappropriate fire regimes.*
2bi	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: change in community structure*	*Remnants of PSGFF have historically been subjected to a range of anthropogenic disturbances (Benson and Howell 1994). These disturbances have affected thestructure and potentially the composition of remnants. For example, the density and average basal diameter of trees in remnants sampled by Benson and Howell (1994) suggested that the removal of large older trees has led to higher densities of smaller trees such that remnants typically have the structure of regrowth forest."*

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

No	Assessment Criteria	SAII Assessment Information
2bii	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: change in species composition*	*Only tiny remnants on western Pittwater are included within Ku-Ring-Gai Chase National Park The major remnants on the Peninsula are within Pittwater Council reserves, McKay Reserve, Angophora Reserve and Stapleton Park.*
2biii	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: disruption of ecological processes*	*The threats to PSGF are ongoing and likely to cause continuing declines in geographic distribution and disruption of biotic processes and interactions."* *The reduction in the geographic distribution of PSGF was initially due to tree-felling for timber and clearing for crops and pastures (Benson & Howell 1990a). Benson & Howell (1990b) estimated that the community had been reduced to approximately half of its pre-European extent by 1850. Following World War II, there was a marked acceleration in urban and industrial development, which continues to deplete the distribution of the community to the present day.* *These trends appear likely to continue into the future as the urban area continues to expand to accommodate Sydney's increasing population, which is projected to grow by 1.0-1.1 million people during the 20 years 2007-2026 and 2.2-3.3 million during the 50 years 2007-2056 (Australian Bureau of Statistics 2008).* *There are significant logistic and technological constraints and time lags associated with efforts to restore the community (Wilkins et al. 2003; Nichols 2005; Nichols et al. 2005). 'Clearing of native vegetation' is listed as a Key Threatening Process under the Threatened Species Conservation Act 1995.*

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

2biv	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: invasion and establishment of exotic species*	*The PSGF Final Determination states the following in relation to weed invasion: "Remnants of Sydney Turpentine-Ironbark Forest are subject to ongoing invasion by an extensive range of naturalised plant species. Weed invasion is exacerbated by the proximity of remnants to areas of rural and urban development and the associated influx of both weed propagules from gardens and nutrients contained in stormwater runoff, dumped garden refuse and animal droppings (Leishman 1990, Benson and Howell 1994, Leishman et al. 2004, Smith and Smith 2010). Species such as Ligustrum lucidum (Large-leafed Privet) and Ligustrum sinense (Small-leafed Privet) are highly invasive under conditions of enhanced soil nutrients and have been recorded in at least half of all plots sampling PSGF by Tozer (2003). Other frequently recorded species include the shrubs Ochna serrulata (Mickey Mouse Plant), Phytolacca octandra (Inkweed), Sida rhombifolia (Paddy's Lucerne) and Chrysanthemoides monilifera (Bitou Bush/Boneseed), the scandent shrubs Lantana camara (Lantana) and Asparagus aethiopicus (Asparagus Fern), the climbers Araujia sericifera (Moth Vine), Asparagus asparagoides (Bridal Creeper) and Hedera helix (English Ivy) and the grasses Paspalum dilatatum (Paspalum), Ehrhata erecta (Panic Veldtgrass) and Setaria parviflora (Tozer 2003)".*

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

No	Assessment Criteria	SAII Assessment Information
2bv	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: degradation of habitat*	*There is no information regarding evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by degradation of habitat.*
2bvi	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: fragmentation of habitat*	*The PSGF Final Determination states the following in relation to fragmentation of PSGF habitat: "Remnants of the Forest are typically small and fragmented and are susceptible to continuing attrition through clearing for routine land management practices due to the majority of remnants being located in close proximity to rural land or urban interfaces (Benson and Howell 1994; Tozer 2003)."*
2ci	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: extent of occurrence*	*The PSGF Final Determination states the following with respect to extent of occurrence in NSW: "The distribution of PSGF is highly restricted. The extent of occurrence (EOO) of PSGF is approx 1000 km2 based on a minimum convex polygon enclosing known occurrences of the community as interpreted in Sections 4.2 – 4.10 and using the method of assessment recommended by IUCN (Bland et al. 2017). The estimated area of occupancy (AOO) is 12 10 km x 10 km grid cells, the scale recommended for assessing AOO by IUCN and applying a minimum occupancy threshold of 1% (Bland et al. 2017)."*
2cii	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: area of occupancy*	*The PSGF Final Determination states the following with respect to extent of occurrence in NSW: "Tozer et al. (2010) estimated some 30ha of PSGF remains".*

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

2ciii	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: number of threat-defined locations*	*The Final Determination indicates that there is very little PSGF EEC within conservation reserves and "unreserved areas are subject to the threat of vegetation clearing".*

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

No	Assessment Criteria	SAII Assessment Information
2d	*The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence that the TEC is unlikely to respond to management*	There is no information regarding evidence that the TEC is unlikely to respond to management. The *Department of Environment and Conservation (NSW). (2005) Document - Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland.* *Department of Environment and Conservation (NSW), Sydney* outlines theoretical and practical'best practice' guidance for the restoration of PSGF, including examples of small remnant patches.
3	*Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Subsection 9.1.1(2.), the assessor must record this in the BDAR or BCAR.*	It is difficult to ascertain the 1970 extent of the TEC when most studies have focussed on pre-European extent, therefore pre-European data is referenced in (2a). No information was able to be presented in relation to (2bv) and (2d).
4ai	*Include data and information on the impact on the geographic extent of the TEC by estimating the total area of the TEC to be impacted by the proposal: in hectares. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal.*	The Arborist Report has identified that only 2 trees requiresremoval. The understorey is a maintained garden with some native small trees and shrubs and ornamental plants on the perimeter of the property. The groundcover found in the middle of the property is essentially a lawn dominated by Buffalo Grass (*Stenotaphrum secundatum*) interspersed with other introduced species. The vegetation is considered to be in poor condition.
4aii	*Include data and information on the impact on the geographic extent of the TEC by estimating the total area of the TEC to be impacted by the proposal: as a percentage of the current geographic extent of the TEC in NSW. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal.*	According to the Final Determination the current estimate of PSGF CEEC in NSW is 100 ha. The total area impacted by the proposed is less than 0.02 ha. Therefore, the impact of the proposal on the geographic extent is estimated at less than 0.01%.

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

4bi	*The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500 m of the development footprint or equivalent area for other types of proposals.*	This patch will not be fragmented by the proposal.

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

<table>
<tr><th>No</th><th>Assessment Criteria</th><th>SAII Assessment Information</th></tr>
<tr><td>4bii</td><td>The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by:
• distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and
• estimated maximum dispersal distance for native flora species characteristic of the TEC, and
• other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development</td><td>The 0.02 ha of PSGF CEEC to be impacted by the proposal.

No fragmentation will occur as a result of the proposal.</td></tr>
<tr><td>4biii</td><td>The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.</td><td>The Vegetation Integrity (VI) of the PSGF CEEC vegetation is 38.7 and is made up of thefollowing scores for composition, structure and function:

<table><tr><th>Composition condition score</th><th>Structure condition score</th><th>Function condition score</th><th>Current vegetation integrity score</th></tr><tr><td>9.3</td><td>39.6</td><td>7.5</td><td>14</td></tr></table></td></tr>
<tr><td>5</td><td>The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAII is not accurate.</td><td>N/A</td></tr>
</table>

Table 5.5 Additional Impact Assessment for Pittwater Spotted Gum Forest CEEC at Risk of an SAII

7 BIODIVERSITY CREDIT REPORT

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00040997/BAAS18156/23/00040998

Proposal Name
56 Central Road Avalon

BAM data last updated *
14/04/2023

Assessor Name
Alex FRASER

Assessor Number
BAAS18156

BAM Data version *
58

Proponent Names
Azar Mortezapour

Report Created
10/06/2023

BAM Case Status
Finalised

Assessment Revision
2

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
10/06/2023

BOS entry trigger
BOS Threshold: Biodiversity Values Map

* 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
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Endangered Ecological Community	3234-Hunter Coast Lowland Spotted Gum Moist Forest

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3234-Hunter Coast Lowland Spotted Gum Moist Forest	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	0.0	0	0	0

BAM Biodiversity Credit Report (Like for like)

3234-Hunter Coast Lowland Spotted Gum Moist Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion This includes PCT's: 3234, 3437	-	3234_Poor	No	0	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

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id

00040997/BAAS18156/23/00040998

Proposal Name

56 Central Road Avalon

BAM data last updated *

14/04/2023

Assessor Name

Alex FRASER

Assessor Number

BAAS18156

BAM Data version *

58

Proponent Name(s)

Azar Mortezapour

Report Created

10/06/2023

BAM Case Status

Finalised

Assessment Revision

2

Assessment Type

Part 4 Developments (Small Area)

Date Finalised

10/06/2023

BOS entry trigger

BOS Threshold: Biodiversity Values Map

* 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
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Endangered Ecological Community	3234-Hunter Coast Lowland Spotted Gum Moist Forest

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

BAM Biodiversity Credit Report (Variations)

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
3234-Hunter Coast Lowland Spotted Gum Moist Forest	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	0.0	0	0	0.00

3234-Hunter Coast Lowland Spotted Gum Moist Forest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion This includes PCT's: 3234, 3437	-	3234_Poor	No	0	Pittwater,Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region

	Wet Sclerophyll Forests (Grassy sub-formation)	Tier 3 or higher threat status	3234_Poor	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like options

BAM Candidate Species Report

Proposal Details

Assessment Id 00040997/BAAS18156/23/00040998	Proposal Name 56 Central Road Avalon	BAM data last updated * 14/04/2023
Assessor Name Alex FRASER	Report Created 10/06/2023	BAM Data version * 58
Assessor Number BAAS18156	Assessment Type Part 4 Developments (Small Area)	BAM Case Status Finalised
Assessment Revision 2	Date Finalised 10/06/2023	BOS entry trigger BOS Threshold: Biodiversity Values Map

* 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.

List of Species Requiring Survey

Name	Presence	Survey Months

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Eastern Australian Underground Orchid	Rhizanthella slateri	Refer to BAR
Eastern Cave Bat	Vespadelus troughtoni	Refer to BAR
Large Bent-winged Bat	Miniopterus orianae oceanensis	Refer to BAR
Large-eared Pied Bat	Chalinolobus dwyeri	Refer to BAR
Little Bent-winged Bat	Miniopterus australis	Refer to BAR
Native Guava	Rhodomyrtus psidioides	Refer to BAR
Regent Honeyeater	Anthochaera phrygia	Refer to BAR
Scrub Turpentine	Rhodamnia rubescens	Refer to BAR

Swift Parrot	Lathamus discolor	Refer to BAR

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00040997/BAAS18156/23/00040998	56 Central Road Avalon	14/04/2023
Assessor Name	Report Created	BAM Data version *
Alex FRASER	10/06/2023	58
Assessor Number	BAM Case Status	Date Finalised
BAAS18156	Finalised	10/06/2023
Assessment Revision	Assessment Type	BOS entry trigger
2	Part 4 Developments (Small Area)	BOS Threshold: Biodiversity Values Map

* 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.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Hunter Coast Lowland Spotted Gum Moist Forest												
1	3234_Poor	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	14	14.0	0.02	Geographic Distribution	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	0
											Subtotal	**0**
											Total	**0**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00040997/BAAS18156/23/00040998	56 Central Road Avalon	14/04/2023
Assessor Name	Report Created	BAM Data version *
Alex FRASER	10/06/2023	58
Assessor Number	Assessment Type	BAM Case Status
BAAS18156	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
2	BOS Threshold: Biodiversity Values Map	10/06/2023

* 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.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Barking Owl	Ninox connivens	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Black Bittern	Ixobrychus flavicollis	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Eastern Osprey	Pandion cristatus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Flame Robin	Petroica phoenicea	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Gang-gang Cockatoo	Callocephalon fimbriatum	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Glossy Black-Cockatoo	Calyptorhynchus lathami	3234-Hunter Coast Lowland Spotted Gum Moist Forest

Grey-headed Flying-fox	Pteropus poliocephalus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Bent-winged Bat	Miniopterus australis	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Eagle	Hieraaetus morphnoides	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Little Lorikeet	Glossopsitta pusilla	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Masked Owl	Tyto novaehollandiae	3234-Hunter Coast Lowland Spotted Gum Moist Forest
New Holland Mouse	Pseudomys novaehollandiae	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Powerful Owl	Ninox strenua	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Regent Honeyeater	Anthochaera phrygia	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Rosenberg's Goanna	Varanus rosenbergi	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Scarlet Robin	Petroica boodang	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Spotted-tailed Quoll	Dasyurus maculatus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Square-tailed Kite	Lophoictinia isura	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Superb Fruit-Dove	Ptilinopus superbus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Swift Parrot	Lathamus discolor	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Varied Sittella	Daphoenositta chrysoptera	3234-Hunter Coast Lowland Spotted Gum Moist Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3234-Hunter Coast Lowland Spotted Gum Moist Forest
White-throated Needletail	Hirundapus caudacutus	3234-Hunter Coast Lowland Spotted Gum Moist Forest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3234-Hunter Coast Lowland Spotted Gum Moist Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00040997/BAAS18156/23/00040998	56 Central Road Avalon	14/04/2023
Assessor Name	**Report Created**	**BAM Data version ***
Alex FRASER	10/06/2023	58
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS18156	Part 4 Developments (Small Area)	Finalised
Assessment Revision	**Date Finalised**	**BOS entry trigger**
2	10/06/2023	BOS Threshold: Biodiversity Values Map

* 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.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3234_Poor	3234-Hunter Coast Lowland Spotted Gum Moist Forest	Poor	0.02	1	

8 BIBLIOGRAPHY

Cropper, S. (1993). *Management of Endangered Plants*. CSIRO Publications, East Melbourne, Victoria.

Department of Environment and Resource Management (2011). *National recovery plan for the large-eared pied bat Chalinolobus dwyeri*. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DEC (2004). *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities.* Working Draft November 2004.

DEE (2008). *Approved Conservation Advice for Cynanchum elegans (White-flowered Wax Plant).* A statement for the purposes of approved conservation advice (s266B of the Environment Protection and Biodiversity Conservation Act 1999).

DEE (2008). *Approved Conservation Advice for Cryptostylis hunteriana (Leafless Tongue-orchid)*. A statement for the purposes of approved conservation advice (s266B of the Environment Protection and Biodiversity Conservation Act 1999).

DEE (2018). *Species Profile and Threats Database*. Accessed June-Septemer 2018. < http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

DEWHA (2013). *Matters of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth of Australia.

Harden, G. (ed) (2002). *Flora of New South Wales, Volume 2*. Revised edition. New South Wales University Press, NSW.

Harden, G. (ed) (2000). *Flora of New South Wales, Volume 1*. Revised edition. New South Wales University Press, NSW.

Harden, G. (ed) (1993). *Flora of New South Wales, Volume 4*. New South Wales University Press, NSW.

Harden, G. (ed) (1992). *Flora of New South Wales, Volume 3.* New South Wales University Press, NSW.

Morcombe, M. and Stewart, D. (2010). *The Michael Morcombe eGuide to the Birds of Australia*. PDA Solutions Pty Ltd.

Murray, M., Bell, S., Hoye, G. (2002). *Flora and Fauna Survey Guidelines: Lower Hunter Central Coast Region 2002.* Lower Hunter & Central Coast Regional Environmental Management Strategy, NSW.

NSW Office of Water (2012). *Guidelines for Riparian Corridors on Waterfront Land*. July 2012.

NSW Scientific Committee (2012) *Listing guidelines version 1.3, January 2012. Guidelines for interpreting listing criteria for species, populations and ecological communities under the NSW Threatened Species Conservation Act*.

OEH (2016). *NSW Guide to Surveying Threatened Plants* (OEH, 2016)

OEH (2017). *Biodiversity Assessment Method*, 2017 No 469.

OEH (2017). *Guidance to Assist a Decision-maker to Determine a Serious and Irreversible Impact.*

OEH (2018a) *Saving NSW Threatened Species*, accessed June-September 2018. <http://www.environment.nsw.gov.au/threatenedspecies/>.

OEH (2018b) *Atlas of NSW Wildlife (BioNET)*, accessed June-September 2018. <http://www.bionet.nsw.gov.au/>.

OEH (2018c) *Six Maps*, accessed June-September 2018. <http://maps.six.nsw.gov.au/apps/channels_3.5/?config=vegetation>.

OEH (2018d). *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method*. 3 October 2018

Robinson, L. (2003). *Field Guide to the Native Plants of Sydney*. 3rd ed. Kangaroo Press, Cammeray NSW.

Robinson, M. (1998). *A Field Guide to Frogs of Australian*. New Holland Publishers (Australia Pty Ltd).

Rose, H. & Rose, C. (2012). *Grasses of Coastal NSW*. Department of Primary Industries, NSW.

Richardson, F.J., Richardson, R.G. and Shepherd, R.C.H. (2016). *Weeds of the South-East: An Identification Guide for Australia*. 3rd Edition. R.G and F.J. Richardson, Meredith Vic.

Scotts, D. (2003). *Key habitats and corridors for forest fauna: A landscape framework for conservation in north-east New South Wales*. NSW NPWS Occasional Paper 32, NSW National Parks and Wildlife Service, Sydney.

Triggs, B. (2004). *Tracks, Scats and Other Traces: a Field Guide to Australian Mammals.* Oxford University Press, Australia.

Van Dyck, S., Gynther, I. and Baker, A. (2013). *Field Companion to the Mammals of Australia*. New Holland Publishers, Sydney.

APPENDIX A SITE PLANS

SITE AREA - 872.6m²

LEGEND FOR WORKING WITHIN THE SYDNEY WATER MAIN SEWER LINE

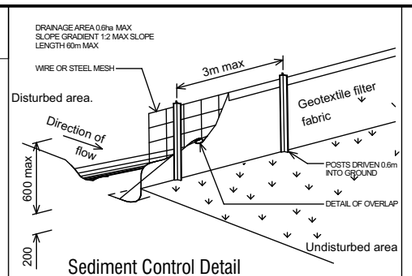
INTERNAL SEWER LINE
RUNNING FROM THE EXISTING RESIDENCE INTO THE **MAINS**

SYDNEY WATER MAINS SEWER LINE
TAKEN FROM SEWER PEGOUT REPORT (WHERE AVAILABLE)

ZONE OF INFLUENCE (ZOI)-
ANY WORKS WITHIN THE **ZOI** WILL REQUIRE ADDTIONAL PIERING OR ENCASING, AS WELL AS ADDITIONAL APPROVALS & INSPECTIONS BY A WATER SERVICES COORDINATOR

BOUNDARY LINE

FENCE LOCATION



Sediment Control Detail
Not to Scale

STORMWATER NOTE:

PLEASE NOTE THAT UNLESS INCLUDED IN OUR TENDER, GFS WILL CONNECT ALL THE ROOF WATER FROM THE GRANNY FLAT ROOF ONLY AS PER THE HYDRAULIC ENGINEERS PLANS.
IF THE OWNER IS UNDERTAKING THEIR OWN LANDSCAPING WORKS AFTER HANDOVER, IT IS THE OWNER'S RESPONSIBILITY TO ENSURE ALL SURROUNDING GROUND WATER IS COLLECTED AND DRAINED AWAY FROM THE GRANNY FLAT.
IT IS HIGHLY RECOMMENDED TO ENGAGE A REPUTABLE LANDSCAPER AND INSTALL ADEQUATE DRAINAGE AROUND THE PERIMETER OF THE BUILDING TO AVOID ANY WARRANTY ISSUES.
FOR MORE INFORMATION, PLEASE ASK YOUR PROJECT MANAGER DURING CONSTRUCTION.

SITE INDUCTION NOTE:

BEFORE ENTERING THE SITE, PLEASE REVIEW AND MAKE YOURSELF FAMILIAR WITH THE EMERGENCY CONTACTS, AND SITE INDUCTION INFORMATION. IF YOU HAVE ANY TROUBLES UNDERSTANDING THE INSTRUCTIONS, PLEASE CONTACT YOUR SITE SUPERVISOR BEFORE ENTERING THE SITE.

IMPORTANT SURVEY NOTE:

PARCEL BOUNDARY DIMENSIONS, BEARINGS AND AREAS HAVE BEEN ADOPTED FROM THE SUBJECT DEPOSITED PLAN AND HAVE NOT BEEN INVESTIGATED. ANY BEARING, DISTANCE, AREA, SETBACK OR OTHER DIMENSION MAY BE SUBJECT TO CHANGE WITH FURTHER INVESTIGATION AND LODGEMENT OF A PLAN AT THE LAND TITLES OFFICE.

THEREFORE, AT TIME OF SITE PEGOUT BEFORE CONSTRUCTION WORKS COMMENCE, THERE MAY BE SOME MINOR DISCREPANCIES WITH THE SETBACKS BETWEEN BUILDINGS AS SHOWN ON THE SITE PLAN.

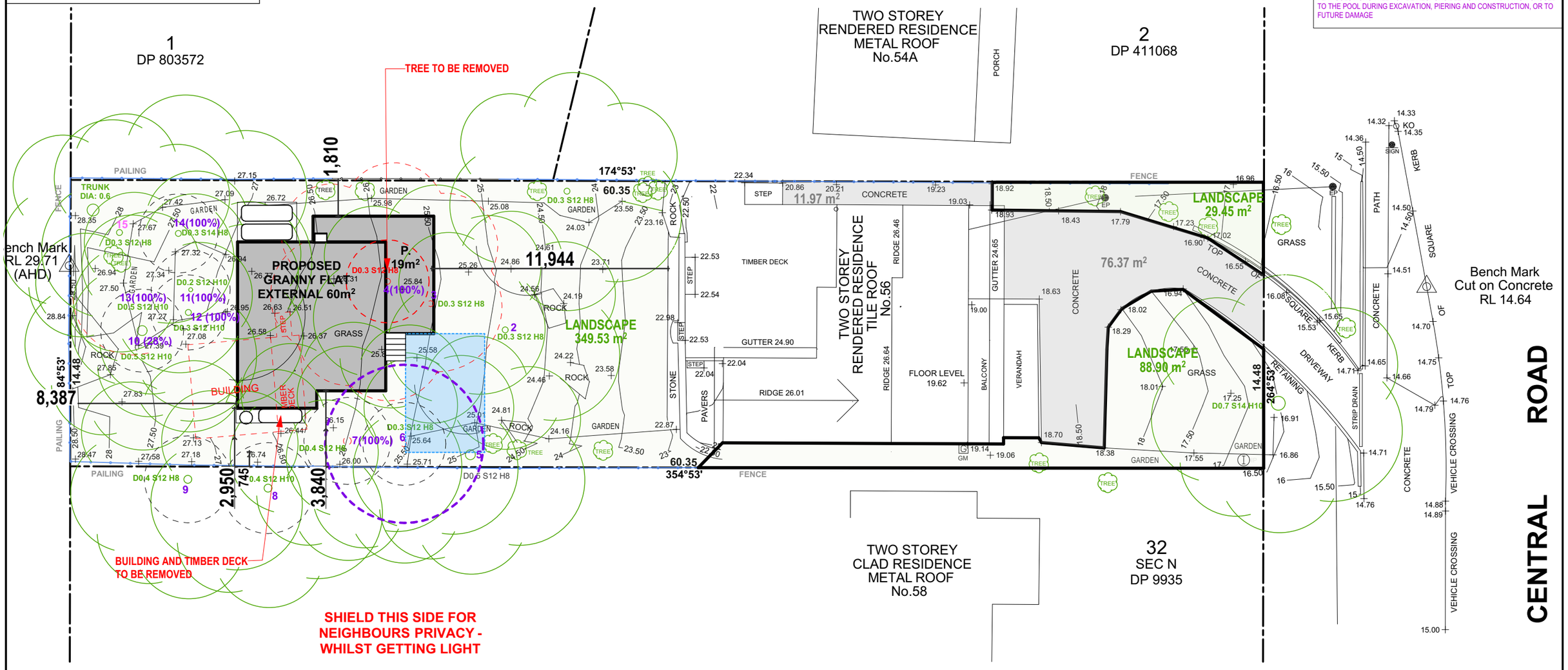
CONTOURS ARE INDICATIVE OF SURFACE TOPOGRAPHY ONLY. SURVEYED SPOT LEVELS ARE THE ONLY VALUES AT WHICH REDUCED LEVEL CAN BE RELIED UPON. CONTOURS ARE DISPLAYED AT 1 METRE MAJOR AND 0.25 METRE MINOR INTERVALS.

SERVICES SHOWN HAVE BEEN DERIVED FROM VISUAL EVIDENCE APPARENT AT THE TIME OF SURVEY. IT IS STRONGLY ADVISED TO VISIT 'DIAL BEFORE YOU DIG' PRIOR TO ANY EXCAVATION OR CONSTRUCTION AND VERIFY LOCATIONS WITH A SUITABLY QUALIFIED SERVICE LOCATOR PRIOR TO ANY WORKS OR CRITICAL DESIGN.

IT IS STRONGLY ADVISED TO REVIEW AN UP TO DATE TITLE SEARCH AND GIVE CAREFUL CONSIDERATION TO ALL ITEMS PRIOR TO ANY PLANNING OR CONSTRUCTION.

TREE AND ROOF PROFILE DETAILS ARE APPROXIMATE ONLY.

WHEN BUILDING ON A SITE WITH AN EXISTING INGROUND POOL, GRANNY FLAT SOLUTIONS WILL NOT BE RESPONSIBLE FOR ANY VIBRATION CAUSED TO THE POOL DURING EXCAVATION, PIERING AND CONSTRUCTION, OR TO FUTURE DAMAGE



SERVICES NOTE:

SERVICES/EXTERNAL CONDUITS WILL MOST LIKELY BE LOCATED NEAR THE WATER FLOW READER. CONDUITS PROTRUDING FROM THE GROUND IS COMMON AND MAY BE VISIBLE.
THE PROJECT MANAGER WILL ADVISE IF SERVICES/EXTERNAL CONDUITS WILL NEED TO BE LOCATED ELSEWHERE.

www.dialbeforeyoudig.com.au
DIAL1100 BEFORE YOU DIG

N
M G A

GENERAL NOTES

DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS TO TAKE PRECEDENCE

ANY DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF GRANNYFLAT SOLUTIONS/NEW SOUTH HOMES, PRIOR TO WORKS COMMENCING.

DATE	DRAWN BY	REVISION	ISSUE	CUSTOMER SIGN
11/05/2023	AM	E	PRELIMINARY CONCEPT	
			DESIGN DEVELOPMENT	
			CONSTRUCTION ISSUE	

JOB REF 220296
SCALE A3 1:200
SHEET CDC 02

CLIENT DETAILS
56 Central Road, Avalon Beach
Rob Raine
LOT 33A Sec N - DP 359416

SITE PLAN

DESIGN BY
NEW SOUTH HOMES
GrannyFlat solutions
90 PACIFIC HIGHWAY, WAITARA NSW 2077 // Ph: (02) 9481 7443
www.grannyflatsolutions.com.au/www.newsouthhomes.com.au

APPENDIX B PLOT DATA

BAM Site – Field Survey Form

Survey Name		Date	Zone ID	Recorders	
56 Central Rd, Avalon		01/06/2023	1	J. McIvor	
Zone: 56	Datum: MGA	Plot ID: 1	Plot dimensions: 50x20 m		Photo #: 1 & 2
Easting: 345059	Northing: 6277230	IBRA region: Sydney Basin Sub-region: Pittwater		Midline bearing from 0 m:	
Vegetation Class: Southern Lowland Wet Sclerophyll Forests					Confidence H
Plant Community Type: Pittwater Spotted Gum Forest # 1214				EEC: Y	Confidence H

Record easting and northing at 0m on midline. Dimensions (Shape) of 0.04ha base plot.

BAM Attribute (400m^2 plot)	Sum values	
	Count of native richness	Cover
Trees	**4**	**50**
Shrubs	**0**	**0**
Grasses etc.	**0**	**0**
Forbs	**0**	**0**
Ferns	**0**	**0**
Other	**1**	**0**
High threat weed cover		**40**

BAM Attribute (1000m^2 plot)		
DBH	**#Tree Stems Count**	**#Stems with Hollows**
80 + cm		
50 – 79 cm		
30 – 49 cm	7	
20 – 29 cm	6	
10 – 19 cm		
5 – 9 cm		
<5 cm		
Length of logs (m) (≥ 10 cm diameter, >50cm in length)	**Tally: 0**	**Total:** 0

Counts apply when the number of tree stems within a size class is ≤ 10. Estimate can be used when > 10 (eg. 10, 20, 30….100, 200). For a multi-stemmed tree, only the largest living stem is included in the count / estimate. Tree stems must be living.

For hollows, count only the presence of a stem containing hollows. For a multi-stemmed tree, only the largest stem is included in the count/estimate. Stems may be dead and may be shrubs.

BAM Attribute (1 x 1 m plots)																				
	Litter cover %					**Bare ground cover %**					**Cryptogam cover %**					**Rock cover %**				
Subplot score % in each	5	15	25	35	45	5	15	25	35	45	5	15	25	35	45	5	15	25	35	45
	3	15	30	5	-	3	0	10	3	-										
Average of the 4 subplots	13.3%																			

Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10cm in diameter)

BAM Site – Plot Species List

400m² plot: Sheet 1 of 1	Survey Name	Plot ID	Recorders
Date: 1st June 2023	56 Central Rd, Avalon	1	Jesse McIvor

GF Code	Top 3 native species in each growth form group: full species name mandatory. All other native and exotic species: full species name where practicable	N, E or HTE	Cover	Abund	Stratum	Voucher	Photo #
TG	*Angophora costata*	N	20	6	C		
TG	*Corymbia gummifera*	N	10	4	C		
TG	*Eucalyptus umbra*	N	10	2	C		
TG	*Eucalyptus haemastoma*	N	10	1	C		
	Syzygium leuhmannii - not locally native	N planted	5	2	M		
	Calltistemon viminalis - not locally native	N planted	5	2	M		
	Syzygium smithii - not locally native	N planted	3	1	M		
	Viola hederacea	N planted	2	10	G		
	Cordyline stricta	N planted	3	3	M		
	Hypochaeris radicata	E	1	5	G		
	Crassula multicava	E	1	5	G		
	Stenotaphrum secundatum	HTE	40	>50	G		
	Coleus neochilis	E	1	5	G		
	Ehretia acuminata	E	5	1	C		
	Dracaena reflexa angustifolia	E	3	2	M		
	Stellaria media	E	2	10	G		
	Chlorophytum comosum	E	3	3	G		
	Agave attenuata	E	2	2	G		
	Agapanthus praecox	E	2	4	G		

N: native, **E**:exotic, **HTE**: high threat exotic, **GF** – circle code if 'top 3'
Cover: 0.1, 0.2, 0.3….. 1,2,3,……,10, 15, 20, 25, ….. 100% (foliage cover). *Note: 0.1% cover is approx.. 63x63 cm or a circle about 71 cm diameter, 0.5% approx. 1.4 x 1.4m, 2% cover is approx. 2 x 2m, 5% = 4 x 5m, 25% 10 x 10m*
Abundance: 1, 2, 3, ….10, 20, 30, ….. 100, 200,…., 1000
Stratum: E – emergent, C – canopy, M – mid-storey / sub canopy, S – shrub layer, G – ground layer

APPENDIX C QUALIFICATION, LICENSING AND CERTIFICATION

Alexander Fraser

alohafraser@gmail.com | 0423238193 | 665 The Scenic Rd Macmasters Beach, NSW 2251

Key skills

- 12+ years private ecological consulting (Fraser Ecological Consulting)
- 15 + years local government ecological assessment for DAs (Hornsby Shire Council – current employer)
- 10 + years Land & Environment Court expert witness experience
- 2 years state government ecological assessment (NSW OEH)
- High level botanical field identification skills, plot surveys and project management
- Fauna survey and field assistant experience
- Biodiversity Assessment Reporting (BDAR) preparation and Stewardship Site (BSAR) under the NSW BOS Credit Scheme

Qualifications

Bachelor Environmental Science (Honours) Southern Cross University

Certificate 3 Natural Area Restoration

Certificate 3 Vertebrate Animal Pest Control (NSW DPI, Orange)

NPWS Scientific Licence - S10445

Animal Ethics Authority - 11/4299

Accredited under the Biodiversity Assessment Methodology - BAM (Accreditation No. BAAS18156)

Practising member of NSW Ecological Consultants Association (ECA)

Summary

Alex Fraser (Principal Ecologist, Fraser Ecological) has extensive experience in DA related ecological assessment as both an assessor (Hornsby Shire Council) and private consultancy (Fraser Ecological) which actively and currently involve a wide array projects. Fraser Ecological is based locally on the Central Coast, however, project experience extends to South Coast, Blue Mountains, Mid-north Coast and mainly in the Sydney Basin Bioregion.

Previous work roles include ecological consulting for Parsons Brinckerhoff (large infrastructure), NPWS threatened species unit (biodiversity surveys), former NSW Department of Climate Change/ OEH (SIS DGRs and major projects assessment) and Hornsby Shire Council (DA assessment officer) have focussed primarily on ecological survey, development assessment, project management and policy development for consent authorities.

Alex offers high level botanical ID and field survey skills which includes targeted surveys and BAM plot surveys. Fraser Ecological has extensive experience in the preparation of over 15 BDARs under the new BC Act 2016 BOS credit trading scheme. Alex has experience dealing with consent authorities including Council, Crown Lands, Metropolitan Land Council, RFS, Biodiversity Conservation Trust and Department of Planning for major projects including SSDI proposals.

Fraser Ecological has established a wide network of ecological specialists including the Royal Botanic Gardens and Australian Museum as well academic institutions for expert advice when required. Alex is a current member of the North Sydney Regional Land Managers Group that includes staff from Central Coast Council, Northern Beaches, Ku-ring-gai Council, Hornsby Council (HSC), NPWS and Crown Lands) as project manager developing the Natural Area Recreation Strategy for HSC. Current main role at Council is development assessment and review of Flora and Fauna Reports and Biodiversity Assessment Reports.

Fraser Ecological has been engaged by various Councils (Central Coast, Ku-ring-gai, Liverpool City, Blacktown City Council, Hornsby Shire Council and Hawkesbury City Council) to undertake biodiversity assessments for major civil works projects. He is continuously providing biodiversity assessments for private clients for a range od development proposals across coastal and western NSW. We have also undertaken threatened flora and fauna species survey and monitoring for the NSW OEH Save our Species grants.

Key skills:

- Targeted flora and fauna surveys
- BAM plots in accordance with the BAM
- Ecological monitoring & Opportunity and Constraints mapping
- Preparation of BDARs, BAM calculator and credit reporting
- Retirement of credits for approved projects via BCT and brokers
- Establishment of stewardship sites and other offset packages
- Expert witness reporting and attendance in the LAEC
- Compliance investigations and auditing
- Preparation of Vegetation Management Plans
- Preparation of Nestbox Monitoring Plans

CERTIFICATE OF ACCREDITATION AS A BIODIVERSITY ASSESSMENT METHOD ASSESSOR under the *Biodiversity Conservation Act 2016* (NSW)

BAM Assessor		
Alexander Fraser		
Accreditation number	**Accreditation date (Date of issue)**	**Expiry Date of**
BAAS18156	17 October 2021	17 October 2024

The person named above is accredited under section 6.10 of the *Biodiversity Conservation Act 2016* (NSW) (**BC Act**) as a Biodiversity Assessment Method Assessor to apply the Biodiversity Assessment Method in connection with the preparation of biodiversity stewardship site assessment reports, biodiversity development assessment reports and biodiversity certification assessment reports pursuant to Part 6 of the BC Act.

The accreditation is in force until and including the Expiry Date. The accreditation is subject to the conditions set out in the *Accreditation Scheme for the Application of the Biodiversity Assessment Method*, under the BC Act, and the conditions specified on the reverse of this certificate.

LUCIAN MCELWAIN

Manager Ecosytem Programs
Department of Planning, Industry & Environment

NOTES

- DPIE maintains a register of Accredited Biodiversity Assessment Method (BAM) Assessors accessible from the DPIE website.
- The BAM Assessor's accreditation expires on the Expiry Date unless renewed in accordance with the *Accreditation Scheme for the Application of the Biodiversity Assessment Method*. It is the BAM Assessor's responsibility to monitor the Expiry Date of their accreditation, and apply for any renewal with sufficient time for the application to be processed prior to the Expiry Date.
- Words and expressions used in this accreditation instrument and which are also used in the Act have the same meaning.

SUMMARY OF CONDITIONS UNDER SCHEME

The following are conditions of all accreditations granted under the Scheme:

1. an accredited person must prepare Biodiversity Assessment Reports (and conduct surveys and other activities in connection with the preparation of such reports) in accordance with:
   a. the Biodiversity Assessment Method Manual,
   b. the Credit Calculator Operational Manual,
   c. Accredited Person Code of Conduct.
   d. this Scheme,
   e. any guidance materials published by the Department of Planning, Industry and Environment in connection with preparation of Biodiversity Assessment Reports or the application of the BAM
   f. any accreditation requirements notified by the Department of Planning, Industry and Environment to the accredited assessor from time to time.
2. an accredited person must maintain a detailed and up to date working knowledge of, and comply with, all relevant legislation.
3. an accredited person must maintain records of surveys and assessments, including field data sheets and targeted flora and fauna surveys, undertaken and used as part of the preparation of a Biodiversity Assessment Report, for at least ten years after certification of the relevant Biodiversity Assessment Report.
4. all records required kept by an accredited person must be in legible form, or in a form that can be readily be reduced to a legible form.
5. an accredited person must provide to the Department of Planning, Industry and Environment any information related to biodiversity assessment reports required to be provided by all accredited persons, or by a group of accredited persons, by way of a notice specified on a website maintained by it, in the form and within the time frames required in that notice.
6. an accredited person must comply with any scientific licence conditions relating to survey records.
7. an accredited person must possess, or operate under, an appropriate scientific licence as required for the type work, they are completing in the Biodiversity Offsets Scheme.

Note. Information that the Environment Agency Head (EAH) may require to be provided may include information collected during the application of the BAM such as site specific survey data.

Note. In addition to the conditions above, accredited persons must comply with obligations under the BC Act and regulations, including Part 6 Division 3 of the BC Act. Failure to comply with any of the conditions above may result in the EAH exercising the power to vary, suspend or cancel that accreditation under Part 5 of this Scheme.

ECA ECOLOGICAL CONSULTANTS ASSOCIATION of NSW Inc

2023 PRACTISING MEMBER

Level 2, 338 Pitt Street,
Sydney NSW 2000
Phone: 1300 249 268

Certificate of Currency

Professional Indemnity

This Certificate:

- is issued as a matter of information only and confers no rights upon the holder;
- does not amend, extend or alter the coverage afforded by the policy listed;
- is only a summary of the cover provided. For full particulars, reference must be made to the current policy wording;
- is current only at the date of issue.

Name of Insured	Alex Fraser Trading As Fraser Ecological Consulting (ABN: 79763740114)
Occupation	Consultancy Occupations • Environmental Consulting
Policy Number	S0B/18206/000/22/N
Policy Period	4.00pm Local Standard Time on 28 June 2022 to 4.00pm Local Standard Time on 28 June 2023
Limit of Indemnity	Professional Indemnity : AUD$5,000,000 any one claim and in the aggregate. The overall aggregate limit is subject to the number of reinstatements on the policy.
Excess	Professional Indemnity : AUD$0 each and every claim.
Reinstatements	1
Interested Party	None Noted
Underwriter	DUAL Australia Pty Ltd on behalf of certain underwriters at Lloyd's in accordance with the authorisation granted under Unique Market Reference Number: B1736DU2200001
Signature	
Name of Signatory	Michael Gottlieb (BizCover)
Capacity/Title	Director
Date	20 Oct 2022

Please note
This Certificate is issued subject to the policy's terms and conditions and by reference to the insured's declaration. The information set out in this Certificate is accurate as at the date of signature and there is no obligation imposed on the signatory to advise of any alterations.

Level 2, 338 Pitt Street,
Sydney NSW 2000
Phone: 1300 249 268

Certificate of Currency

Public Liability

This Certificate:

- is issued as a matter of information only and confers no rights upon the holder;
- does not amend, extend or alter the coverage afforded by the policy listed;
- is only a summary of the cover provided. For full particulars, reference must be made to the current policy wording;
- is current only at the date of issue.

Name of Insured	Alex Fraser Trading As Fraser Ecological Consulting (ABN: 79763740114)
Policy Number	PB/27002/000/22/N
Policy Period	4.00pm Local Standard Time on 28 June 2022 to 4.00pm Local Standard Time on 28 June 2023
Interest Insured	Public Liability
Situation	665 The Scenic Road, MACMASTERS BEACH, NSW, 2251
Sum Insured	**Public Liability:** $10,000,000
Interested Party	None Noted
Underwriter	DUAL Australia Pty Ltd on behalf of certain underwriters at Lloyd's in accordance with the authorisation granted under Unique Market Reference Number: B1736DU2200001
Signature	
Name of Signatory	Michael Gottlieb (BizCover)
Capacity/Title	Director
Date	20 Oct 2022

Please note
This Certificate is issued subject to the policy's terms and conditions and by reference to the insured's declaration. The information set out in this Certificate is accurate as at the date of signature and there is no obligation imposed on the signatory to advise of any alterations.