WARATAH ECOLOGY

Flora and fauna report

237 McCarrs Creek Road, Church Point NSW 2105

Prepared for Nima Asgari

DOCUMENT TRACKING

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Abbreviations

Abbreviation	Definition
APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
BOS	Biodiversity Offset Scheme
BVM	Biodiversity Values Map
CE	Critically Endangered
CEMP	Construction Environmental Management Plan
DCCEEW	Department of Climate Change, Energy, Environment and Water
DCP	Development Control Plan
DP	Deposited Plan
DPE	Department of Planning and Environment
EEC	Endangered Ecological Community
EP&A Act	Environmental Planning and Assessment Act
EPBC Act	Environment Protection and Biodiversity Conservation Act
ha	Hectares
IPA	Inner Protection Area
LEP	Local Environmental Plan
LGA	Local Government Area
km	Kilometers
m	Meters
MNES	Matter of National Environmental Significance
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant Community Types
PMST	Protected Matters Search Tool
RH	Relative Height
SEPP	State Environmental Planning Policy
SIC	Significant Impact Criteria
TEC	Threatened Ecological Community
ToS	Test of Significance
EEC	Endangered Ecological Community
VMP	Vegetation Management Plan
WE	Waratah Ecology

1. Introduction

1.1. Project background

Waratah Ecology was engaged by Nima Asgari (the client) to undertake a flora and fauna assessment to describe the ecological values and constraints associated with a proposed residential development at 237 McCarrs Creek Road, Church Point NSW 2105 (the study area).

This document reports on the ecological values identified within the study area and considers both the direct and indirect impacts of the proposed development in relation to current environmental and ecological planning legislation. The objectives of this report include the determination of the presence of any threatened ecological communities (TECs) within the study area, as well as to assess the impacts of the proposal on any threatened species or populations which may utilise the study area as habitat, and/or ecological communities, as listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report has been prepared to accompany a Development Application for the Northern Beaches Council (DA2024/1539) and should be considered in conjunction with the following documents:

- Bushfire Planning and Design (2025), *Bushfire Assessment 237 McCarrs Creek Road Church Point 2105 'Proposed Sole Occupancy Dwelling'*, report ref: BR-841524-B, dated 30 May 2025.
- Ezigrow Arboricultural Consulting (2025), *Arboricultural Impact Appraisal and Method Statement, 237 McCarrs Creek Road Church Point, NSW*, report ref: McCarrs Ck_AIA and MS Rev A.doc, dated 28 May 2025.
- Green Measures (2024) *Proposed Single Dwelling, 237 McCarrs Creek Road, Church Point*, Project No.: A002024041, dated 14 September 2024.

1.2. Site description and location

The study area is located 237 McCarrs Creek Road, Church Point, NSW 2105 and covers approximately 515m^2 (0.0515ha). The study area is an uncleared, rectangular lot and completely covered with vegetation. It is located within Northern Beaches Local Government Area (LGA) and can be further identified as Lot 32 in Deposited Plan (DP) 20097. As per the Pittwater Local Environmental Plan (LEP) 2014, the study area is zoned as C4 – Environmental Living and is bordered by other C4 zoned lots to the north, west, and south. The land to the east of the study area is zoned as C2 – Environmental Management/Environmental Conservation.

The vegetation on site is mapped as *Central Coast Escarpment Moist Forest* (PCT 3230), a PCT which commonly occurs along the slopes above the Hawkesbury River and its tributaries. This PCT is not directly associated with any BC / EPBC Act listed TECs.

Regional soil landscape mapping indicates that the study area occurs on the colluvial Watagan landscape, with soils derived from fine-grained Narrabeen Group sediments. The landscape is described as rolling to very steep hills with local relief of 60-120m. This includes narrow, convex crests and ridges, steep colluvial side-slopes and occasional sandstone boulders and benches. The vegetation throughout this landscape is described as tall eucalypt open forest with closed rainforest in more sheltered areas.

The study area is not mapped on the Biodiversity Values Map (BVM); however, it is mapped as containing 'Terrestrial Biodiversity' under the Pittwater LEP 2014 Biodiversity Map (Sheet BIO_011).

Table 1: Site Description

Criteria	Description
Street Address	237 McCarrs Creek Road, Church Point NSW 2105
Lot and DP	Lot 32 DP 20097
Approximate Area	515m^2
Local Governing Area	Northern Beaches (Pittwater)
Land Zoning	C4 – Environmental Living
Plant Community Type	Central Coast Escarpment Moist Forest (PCT 3230)
Soil Landscape	Watagan
Biodiversity Values Map	No
Terrestrial Biodiversity	Yes
Bushfire prone land	Vegetation Category 1

1.3. Proposed development

The proposed development involves the construction of a three-storey residential dwelling and associated driveway in the centre of the site. The bushfire assessment (Bushfire Planning & Design, 2025) states that the site is to be managed as an Inner Asset Protection Zone (APZ) with a canopy coverage of 17%, as defined by the arboricultural report (Ezigrow, 2025). The arboricultural report defines 19 individual trees required to be removed due to encroachment issues or APZ requirements. These tree species include *Allocasuarina torulosa*, *Corymbia gummifera* and *Syncarpia glomulifera*.

1.4. Legislative context

Table 2: Legislative framework reviewed in this report (Commonwealth, State and Local)

Instrument	Consideration	Context
Commonwealth		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Matters of National Environmental Significance	An action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.
State (New South Wales)		
Environmental Planning and Assessment Act 1979 (EP&A Act)	Part 4 – Development Assessment and Consent	**The EP&A Act** is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of proposals.
Biodiversity Conservation Act 2016 (BC Act)	Part 7 – Biodiversity Assessment and Approvals under the Planning Act	**Section 7.3** provides the test for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.
Biodiversity Conservation Regulation 2017 (BC Reg)	Part 7.1	Establishes that a proposed development triggers the biodiversity offset scheme if it involves the clearing of native vegetation on land included on the Biodiversity Values Map.
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Part 2.1 'Aim of Chapter'	This **SEPP** aims to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and to preserve the amenity of non-rural areas

Instrument	Consideration	Context
		of the State through the preservation of trees and other vegetation.
Local Government		
Pittwater Local Environmental Plan 2014	Part 1.2 'Aims of Plan' Part 2.1 'Land use zones' Part 7.6 'Biodiversity'	**1.2 Aims of Plan** **(a) to** promote development in Pittwater that is economically, environmentally and socially sustainable, **(g)** to protect and enhance Pittwater's natural environment and recreation areas, **2.1 Land Use Zones** In accordance with the LEP, the study area is zoned as C4 – 'Environmental Living. The objectives of the zone are: • To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values. • To ensure that residential development does not have an adverse effect on those values. • To provide for residential development of a low density and scale integrated with the landform and landscape. • To encourage development that retains and enhances riparian and foreshore vegetation and wildlife corridors. **7.6 Biodiversity** The objectives of this clause are to maintain terrestrial, riparian, and aquatic biodiversity by protecting native fauna and flora, protecting the ecological processes necessary for their continued existence, and encouraging the conservation and recovery of native fauna and flora and their habitats. This clause applies to development on land that is identified as "Biodiversity" on the Biodiversity Map. Before determining a development application for development on land to which this clause applies, the consent authority must consider: **(a)** whether the development is likely to have: **(i)** any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and **(ii)** any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and **(iii)** any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and **(iv)** any adverse impact on the habitat elements providing connectivity on the land.

Instrument	Consideration	Context
		(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development. Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that: **(a)** the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or **(b)** if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or **(c)** if that impact cannot be minimised—the development will be managed to mitigate that impact.
Pittwater 21 Development Control Plan		This plan provides best practice standards for development, and details controls on needed total landscaped areas for C4 Environmental Living zoned plots.

1.5. Biodiversity Offsets Scheme

Under the BC Act and its Regulations, developments that trigger the 'Biodiversity Offset Scheme' (BOS) may require a 'Biodiversity Development Assessment Report' (BDAR) that addresses the Biodiversity Assessment Method (BAM) and the purchasing of Biodiversity Credits.

For a local development under Part 4 of the EP&A Act, the BOS and BAM may be triggered by the following means:

- It is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3.
- It is carried out in a declared area of outstanding biodiversity value.
- Exceeding the area clearing threshold associated with the minimum lot size for the property (**Table 3**).
- If the impacts occur on an area mapped on the Biodiversity Values Map (BVM).

The BC Act and its regulations stipulate native vegetation clearing 'area threshold' values that determine whether a development is required to be assessed in accordance with the BOS. Minimum entry thresholds for native vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

The biodiversity impacts of any vegetation clearing required for a proposal must be considered under Part 7 of the BC Act. This includes:

- Proposed APZ required under Planning for Bushfire Protection (PBP) 2019 including areas of vegetation that are partially cleared and already meet the specifications of a proposed APZ
- Access roads to meet requirements under the PBP 2021 or for other reasons
- Facilities/works that are ancillary to the proposal such as driveways, fence lines and landscaping.

If an APZ is proposed within vegetation that is partially cleared and meets the specifications of the proposed APZ or subsequent 10/50 clearing entitlement, it must still be considered when determining whether a BDAR is required.

The lot size of the subject property is less than 1ha (0.0515ha), with the proposed development requiring majority of the site to be cleared. This amount of area does not trigger the NSW BOS threshold for native vegetation clearing. The study area is also not mapped on the Biodiversity Values Map (BVM). Under these circumstances, the BOS is not triggered.

Table 3: BOS area clearing thresholds

Minimum lot size associated with the property	Threshold for clearing native vegetation, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

1.6. Significance Assessments

1.6.1. Assessment of Significance under the BC Act

Assessments using the criteria provided under the BC Act (i.e. Test of Significance (ToS)) must be considered by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant impact on the species and hence if entry into the BOS is required.

The results of the field survey have been used to inform whether significance assessments are required for any listed species and communities.

1.6.2. EPBC Act Significant Impact Guidelines

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where Matters of National Environmental Significance (MNES) may be affected. The process includes the application of Significant Impact Criteria (SIC) for listed threatened species and ecological communities that represent a MNES that will be impacted as a result of the proposed action. Significant impact guidelines that outline a number of criteria have been developed by the Commonwealth, to provide assistance in conducting the assessment and help decide whether or not a referral to the Commonwealth is required.

Under the Act, any action which "has, will have, or is likely to have a significant impact on a MNES" is defined as a controlled action and requires approval from the Commonwealth Department of Climate Change, Energy, the Environment and Water.

Figure 1: Site aerial (NearMaps)

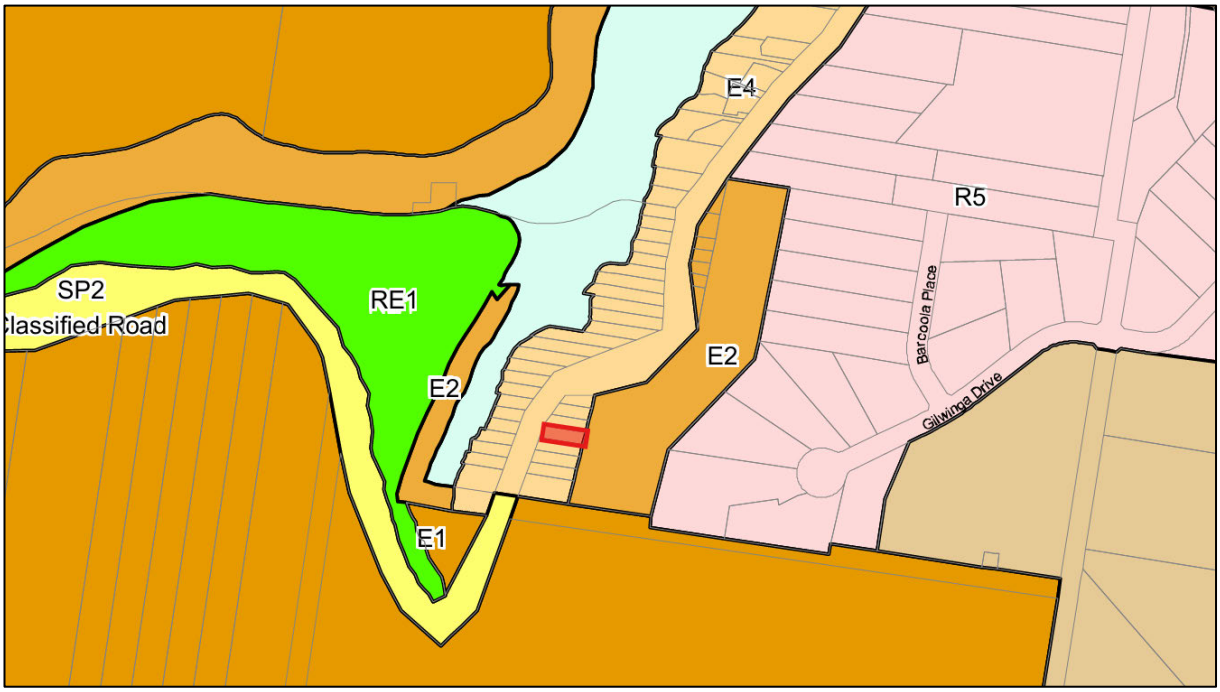

Figure 2: Land Zoning Map (Pittwater LEP 2014)

Figure 3: Terrestrial Biodiversity Map (Pittwater LEP 2014)

Figure 4: Plant Community Types (SEED, 2024)

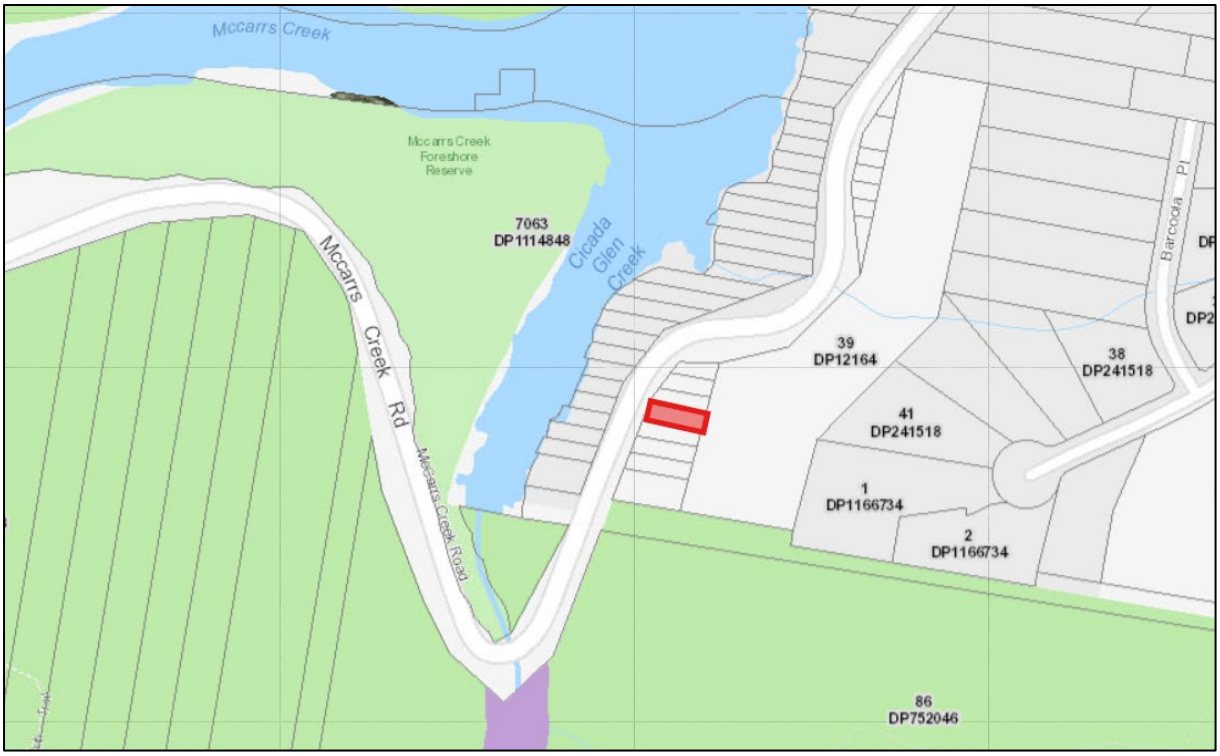

Figure 5: Biodiversity Values Map (OEH, 2024)

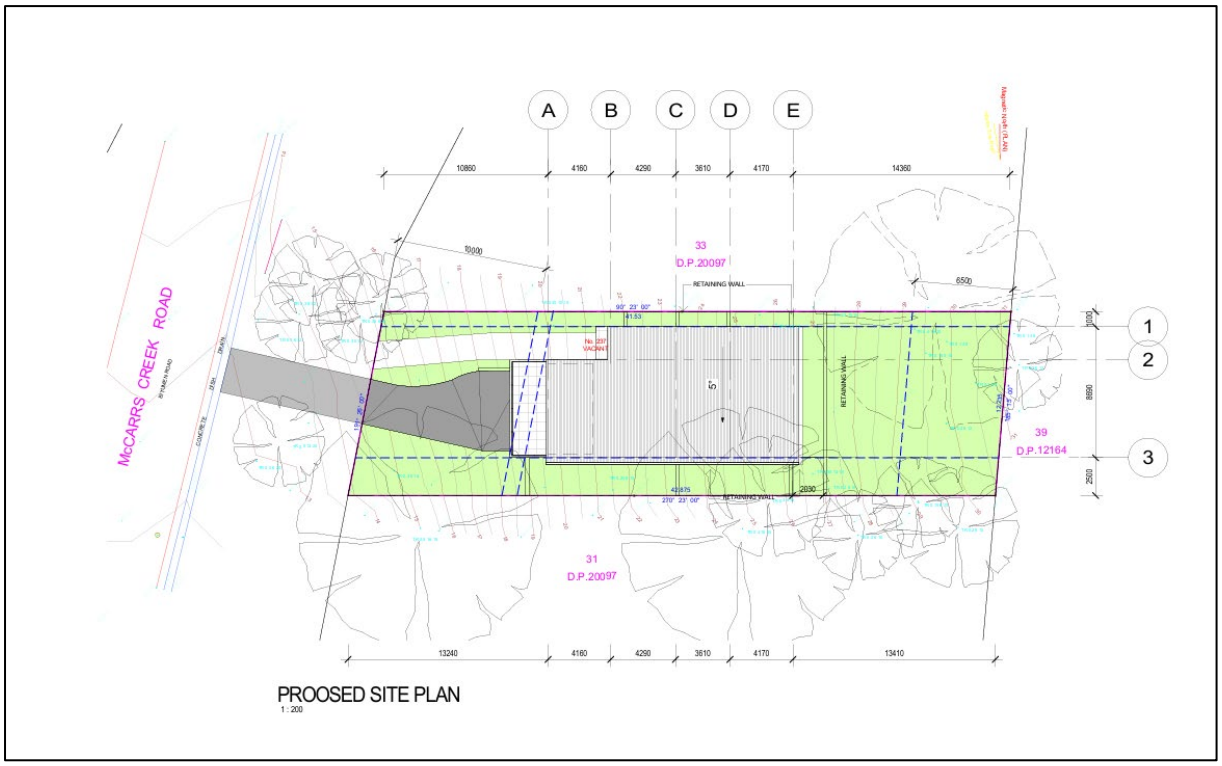

Figure 6: Proposed development plans (Green Measures, 2024)

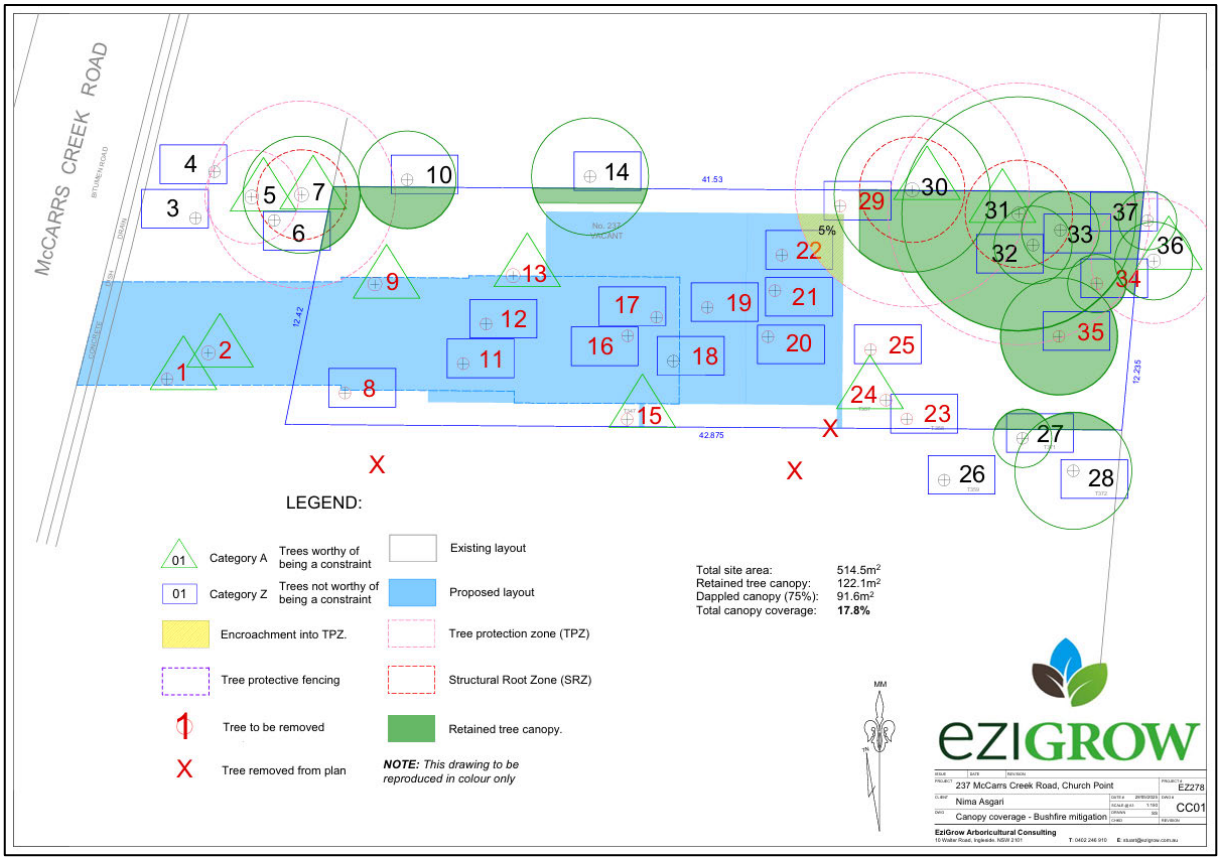

Figure 7: Proposed tree removal plan (Ezigrow, 2025)

2. Methodology

2.1. Literature and database review

A site-specific literature and database review was undertaken prior to the field survey and the preparation of this report. This included desktop analysis of aerial photography and review of regional scale information from the following sources:

- Biodiversity Values Map (DPE 2024a)
- EPBC Act Protected Matters Search Tool (DCCEEW 2024)
- Nearmaps.com
- NSW BioNet Atlas (OEH 2024a)
- NSW BioNet Vegetation Classification (OEH 2024b)
- NSW ePlanning spatial viewer (DPE 2024b)
- Pittwater 21 Development Control Plan
- Pittwater Local Environmental Plan 2014
- SEED The Central Resource for Sharing and Enabling Environmental Data in NSW (OEH 2024c)
- Six Maps (LPI 2022)

Searches using NSW BioNet Atlas (OEH 2024a) and the Commonwealth Protected Matters Search Tool (DCCEEW 2024) were conducted to identify threatened flora and fauna, as well as migratory fauna records within a 10km x 10km cell search area centred on the study area.

This data, combined with the available habitat, was used to establish the likelihood of any threatened species occurring within the study area.

Vegetation communities were assessed against described Threatened Ecological Communities (TECs) listed under the EPBC Act and/or the BC Act.

2.2. Field survey

Traverses were undertaken across the study area, whilst recording visible flora and fauna species and identifying potential habitat for threatened species. Areas that were more likely to resemble intact, resilient vegetation were surveyed more extensively than degraded areas of the site.

An opportunistic fauna survey was undertaken for birds, amphibians, reptiles and mammals, which included observations along with signs of direct and indirect occupancy (i.e., scats, owl pellets, fur, bones, tracks, bark scratches, foliage chew marks etc.).

Fauna habitat searches were conducted for potential foraging, roosting, breeding or nesting habitat of nocturnal and diurnal species. This included tree hollows, stags, bird nests, possum dreys, decorticating bark, mature/old growth trees, food trees, culverts, dens, dams, riparian areas and refuge habitats.

2.3. Likelihood assessment

The likelihood and occurrence of threatened species, populations and migratory species:

- Reviewing the location and date of recent (<5 years) and historical (>5-20 years) records
- Reviewing available habitat within the study area and surrounding areas
- Applying expert knowledge of each species' ecology.

The potential for each threatened species, population and/or migratory species to occur was assessed and the necessity for targeted field surveys was determined.

Following field surveys and review of available habitat within the subject site and study area, the potential for species to utilise the site and be affected directly or indirectly by the proposed action were considered as either:

- "Recent record" = species has been recorded in the study area within the past 5 years
- "High" = species has previously been recorded in the study area (>5 years) or in proximity (for mobile species), and/or habitat is present that is likely to be utilised by a local population
- "Moderate" = suitable habitat for a species is present onsite but no evidence of a species detected and relatively high number of recent records (5-20 years) in the locality or species is highly mobile
- "Low" = suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively low number of recent records in the locality
- "Not present" – suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the study area.

The likelihood assessment is presented in Appendix B. Significance Assessment(s) were conducted as per the BC / EPBC Act for all species with a "moderate" or higher likelihood of occurrence within the study area. These are presented in Appendix D and Appendix E.

3. Results

This section outlines the results of the desktop assessment and field survey.

3.1. Literature and database review

3.1.1. Pittwater LEP 2014

The site is zoned as containing 'Terrestrial Biodiversity' as per the Pittwater LEP 2014 *Terrestrial Biodiversity Map* (Sheet BIO_011). The objectives and consent conditions of this clause are presented in Section 1.4, Table 2 of this report.

Waratah Ecology considers that development consent may be granted for the proposed development should the mitigation measures recommended in Section 5 of this report be adhered to, therefore allowing the development to meet the objectives of the clause:

- To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.
- To ensure that residential development does not have an adverse effect on those values.
- To provide for residential development of a low density and scale integrated with the landform and landscape.
- To encourage development that retains and enhances riparian and foreshore vegetation and wildlife corridors.

As stated in the clause, the consent authority must consider the *following* when determining a development application on land which is classified as containing 'Terrestrial Biodiversity':

(a) *whether the development is likely to have:*

(i) *any adverse impact on the condition, ecological value and significance of the fauna and flora on the land.*

The proposed residential development requires the removal of 19 mature, native trees from vegetation classified as PCT 3230 *Central Coast Escarpment Moist Forest*, which is part of a more extensive, intact distribution of this PCT. This clearing constitutes the majority of the site's area, and is recommended that any revegetation is to be of species known to occur within this PCT.

(ii) *any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna.*

None of the individual trees proposed for removal are hollow-bearing and are not considered critical to the survival of the native fauna.

(iii) *any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land.*

The 19 trees proposed for removal are part of a more extensive distribution of PCT 3230. No fragmentation is predicted, nor are any biodiversity linkages to be damaged. The removal of this vegetation can be offset by the revegetation of species known to occur within this PCT.

(iv) *any adverse impact on the habitat elements providing connectivity on the land.*

Certain habitat elements will be lost with the clearing of the vegetation on site; however, they may be somewhat managed with appropriate revegetation and habitat retention as the site is developed.

(b) *any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.*

Appropriate mitigation measures are listed in Section 5 of this report.

3.1.2. Threatened flora and fauna

A review of the NSW BioNet Atlas identified 17 threatened flora species and 55 threatened fauna species that are known or considered likely to occur within 10km of the study area. A habitat assessment and review of recent records was undertaken to determine the likelihood of occurrence and whether a significant impact assessment was required. Ten threatened fauna species and two threatened flora species were considered to have a 'moderate' likelihood of occurrence within the study area. One species (*Calyptorhynchus lathami lathami*) was considered to have a 'high' likelihood of occurrence within the study area due to the presence of an active nest in close vicinity to the study area and the availability of feed trees within the study area.

Many of the threatened flora and fauna species excluded from further consideration are species that do not have suitable habitat in the study area and thus are not likely to be affected by the proposed works. The likelihood assessment is provided at **Appendix B.**

The Protected Matters Search Tool (PMST) (DCCEEW, 2024) identified seven TECs which may occur on or within 5km of the site. None of which are directly associated with the PCT identified on site, nor are the flora species on site characteristic of any of the listed TECs.

3.1.3. Migratory fauna species

The EPBC Act listed migratory fauna species listed in **Table 5** are considered likely or are known to occur within 5km of the study area. Marine species were not considered as part of this assessment.

Table 4: Migratory fauna species

Scientific Name	Common Name	Class
Anous stolidus	Common Noddy	Bird
Thalassarche salvini	Salvin's Albatross	Bird
Apus pacificus	Fork-tailed Swift	Bird
Macronectes halli	Northern Giant Petrel	Bird
Hirundapus caudacutus	White-throated Needletail	Bird
Calonectris leucomelas	Streaked Shearwater	Bird
Motacilla flava	Yellow Wagtail	Bird
Limosa lapponica	Bar-tailed Godwit	Bird
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	Bird
Diomedea antipodensis	Antipodean Albatross	Bird
Thalassarche melanophris	Black-browed Albatross	Bird
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Bird
Thalassarche cauta	Shy Albatross	Bird
Ardenna grisea	Sooty Shearwater	Bird
Diomedea exulans	Wandering Albatross	Bird
Diomedea epomophora	Southern Royal Albatross	Bird
Thalassarche steadi	White-capped Albatross	Bird
Thalassarche carteri	Indian Yellow-nosed Albatross	Bird
Fregata ariel	Lesser Frigatebird, Least Frigatebird	Bird
Actitis hypoleucos	Common Sandpiper	Bird

Scientific Name	Common Name	Class
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	Bird
Calidris acuminata	Sharp-tailed Sandpiper	Bird
Pandion haliaetus	Osprey	Bird
Tringa nebularia	Common Greenshank, Greenshank	Bird
Calidris melanotos	Pectoral Sandpiper	Bird
Ardenna carneipes	Flesh-footed Shearwater, Fleshy-footed Shearwater	Bird
Calidris ferruginea	Curlew Sandpiper	Bird
Calidris canutus	Red Knot, Knot	Bird

The proposed development will have minimal impacts to potential foraging and breeding habitat for these species, given their migratory nature and the large areas of suitable foraging habitat in the immediate surrounding area. As such, the proposed development is not likely to have a significant impact on these species.

3.1.4. Vegetation type

Based on regional vegetation mapping, the site is covered with *Central Coast Escarpment Moist Forest* (PCT 3230), a PCT that commonly occurs along the slopes above the Hawkesbury River and its tributaries.

PCT Number: 3230

- PCT name: *Central Coast Escarpment Moist Forest*
- Vegetation Class: Northern Hinterland Wet Sclerophyll Forests
- Vegetation Formation: Wet Sclerophyll Forests (Grassy sub-formation)
- IBRA: Sydney Basin
- LGAs: Central Coast, Cessnock, Hawkesbury, Hornsby, Lake Macquarie, Northern Beaches
- Associated TECs: None

PCT description

A tall to very tall sclerophyll open forest with a sparse mixed mesophyll and sclerophyll mid-stratum and a ground layer of ferns and grasses. This PCT occurs on Narrabeen sandstone slopes and escarpments of the Lower Hawkesbury, Pittwater, Brisbane Waters and Watagan Ranges, Central Coast region.

The tree canopy is variable in composition and no set of eucalypt species is consistently recorded with a high cover. *Angophora floribunda* and *Syncarpia glomulifera* are common, however maybe a member of the upper canopy or as a small tree, sometimes both. There are a range of canopy species that also have high cover; however, each occur no more than occasionally or rarely across the distribution of the PCT. These include *Eucalyptus pilularis*, *Eucalyptus piperita*, *Eucalyptus saligna* or *Eucalyptus deanei*, *Eucalyptus paniculata*, *Angophora costata*, *Eucalyptus umbra* or *Eucalyptus punctata*. A layer of small trees is almost always present and dominated by *Allocasuarina torulosa*, with a lower shrub layer very frequently including *Persoonia linearis*, commonly *Breynia oblongifolia*, occasionally with *Platysace lanceolatus*, *Myrsine variabilis* and *Synoum glandulosum subsp. glandulosum*. Occasionally there is a sparse cover of *Livistona australis*, typically with no more than one or two individuals. The ground layer is characterised by a high cover of ferns with *Pteridium esculentum* almost always present, commonly with a higher cover of *Calochlaena dubia* and occasionally *Blechnum cartilagineum*. Small mesic climbers are both diverse and very frequent including *Eustrephus latifolius*.

Grasses also comprise a high proportion of the cover, very frequently including *Imperata cylindrica* and *Entolasia stricta*, commonly with *Microlaena stipoides*. Graminoids almost always include *Dianella caerulea* and very frequently *Lomandra longifolia*.

This PCT is primarily found at low elevation Narrabeen escarpments and hills, commonly on lower slopes above the flooded Hawkesbury and Pittwater valleys. It occurs typically on sheltered to intermediate easterly aspects or rarely on crests of the main range east of Gosford and in the Watagan Range, both identified as residual Hawkesbury Sandstone, however this may only be a thin layer above the Narrabeen stratum. A geological outlier occurs on a volcanic dyke at West Head in Kuring-Gai National Park. On Narrabeen shales in the Central Coast-Pittwater districts it is replaced by moist forest PCT 3234 on sheltered aspects or dry grassy forest PCT 3437 on drier aspects.

3.1.5. State Environmental Planning Policy (Koala Habitat Protection) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021, Chapter 4 – Koala habitat protection 2021 (Koala Habitat SEPP 2021) applies to all land zones in the Northern Beaches LGA.

According to Part 2 of the Koala Habitat SEPP 2021:

- Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.
- If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.

Step 1: *Is the land highly suitable habitat (where highly suitable habitat means 15% or greater of the total number of trees within any Plant Community Type (PCT) are the regionally relevant species of those listed in the SEPP).*

- The study area contains four koala-use tree species as listed in Schedule 2 of the Koala Habitat SEPP 2021 for the Central Coast koala management area. These include *Allocasuarina torulosa* (Forest She-oak), *Corymbia gummifera* (Red Bloodwood), *Eucalyptus paniculata* (Grey Ironbark) and *Syncarpia glomulifera* (Turpentine). These trees cover 97% of the site, as per the Tree Schedule in Appendix 2 of the arboricultural report (Ezigrow, 2024).

Step 2: *Is the land considered to be core koala habitat, where core koala habitat is: (a) an area of land which has been assessed by a suitable qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or (b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.*

- Historical koala occupation of the study area is determined by considering koala records within the last 18 years. In this report, records from the NSW BioNet and *Atlas of Living Australia* were consulted and utilised. Within a 5km radius of the site over last 18 years, there are a combined 7 records of koalas. None of these records were recorded on the site or in its immediate surroundings, with most occurring further to the west of the site in more suitable habitat. No signs of koalas, including scratch marks or scats, were observed during the field survey on the site conducted by Waratah Ecology.

Based on this information, whilst there is an abundance of known koala feed trees present on the site, the lack of koala records in the immediate area suggests that the site is not core koala habitat. Therefore, it is considered that further koala-specific assessments, such as a Koala Assessment Report or a BDAR, are not required.

3.2. Field survey

A daytime field survey was conducted on 21 January 2025. Weather conditions on the day were fine and sunny. A second site visit was conducted on 11 July 2025, to assess signs of *Calyptorhynchus lathami lathami* within and surrounding the study area.

Table 5: Field survey weather conditions

Date	Temp (C°)		Rainfall (mm)	Wind		Humidity (%)
	Min	Max		Direction	Speed (km/h)	
21 January 2025	14.8	25.1	0	NNE	39	63.5
11 July 2025	9	17.3	0	NW	23	48

3.2.1. Flora

The vegetation identified throughout the site includes several large native canopy species, including Red Bloodwood (*Corymbia gummifera*), Grey Ironbark (*Eucalyptus paniculata*), Turpentine (*Syncarpia glomulifera*) and Forest She-Oak (*Allocasuarina torulosa*). The groundcover was dominated by Bracken Fern (*Pteridium esculentum*), interspersed with Spiny-head Mat-rush (*Lomandra longifolia*). Several Cabbage Tree palms (*Livistona australis*) were also present throughout the site. The vegetation on site was considered to be of high ecological quality, with few exotic species present. Small Leaf Spiderwort (*Tradescantia fluminensis*), Painted Spurge (*Euphorbia cyathophora*), Buffalo Grass (*Stenotaphrum secundatum*), and Ear-leaved Nightshade (*Solanum mauritianum*) were the only exotic species identified during the survey.

A list of flora species identified during the survey is provided at **Appendix C**. No threatened flora species were recorded during the survey.

3.2.2. Vegetation and ecological communities

The vegetation on site was characteristic of PCT 3230 *Central Coast Escarpment Moist Forest*, with canopy tree species including Grey Ironbark (*Eucalyptus paniculata*), Turpentine (*Syncarpia glomulifera*) and Red Bloodwood (*Corymbia gummifera*). The groundcover is dominated by Cabbage Tree Palms (*Livistona australis*), Spiny-head Mat-rush (*Lomandra longifolia*) and various ferns charismatic of PCT 3230, which was observed on site. The vegetation on site is considered to represent a high-quality version of this PCT, as there are only several exotic flora species throughout.

This PCT is not directly associated with any BC / EPBC Act listed TECs and is not consistent with any of the TECs listed as occurring within 5km of the site by the Commonwealth PMST.

3.2.3. Fauna and fauna habitat

The fauna species identified on site consisted primarily of several native bird species, including *Alectura lathami* (Australian Brush-turkey), *Trichoglossus haematodus* (Rainbow Lorikeet) and *Dacelo navaeguineae* (Laughing Kookaburra). A Common Brushtail Possum (*Trichosurus vulpecula*) was also identified in a *Eucalyptus paniculata* tree. No threatened fauna species were recorded on the site during the field survey; however, an active South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) nest has been identified within a tree hollow approximately [redacted]

The site has various areas of potential fauna habitat, including extensive groundcover, rocks and overhangs, fallen timber and logs and large mature trees. An empty nest box was also identified just outside of the site boundary.

These habitat features provide suitable foraging, nesting and resting habitat for the native species identified on the site, as well as threatened fauna species which potentially may utilise the site. No tree hollows were identified in the mature trees on site.

Table 6: Fauna habitat features within the site

Habitat features	Fauna species
Shrubs and groundcover	Habitat and foraging resources for diurnal birds, reptiles, ground mammals
Leaf litter	Foraging resources for reptiles, gastropods, birds and mammals
Juvenile and mature trees	Habitat, nesting, and foraging resources for birds, bats and arboreal mammals
Rocks, fallen timber and logs	Refuge and foraging habitat for reptiles, ground mammals, and birds.

3.2.4. Survey limitations

The field survey data collected during the survey period is representative of species occurring within the study area for that occasion. Due to effects of fire, breeding cycles, migratory patterns, camouflage, weather conditions, time of day, visibility, predatory and / or feeding patterns, increased species frequency or richness may be observed within the study area outside the nominated survey period.

Targeted surveys would need to be repeated over several seasons, at dawn and dusk, to more adequately capture the diversity of flora and fauna that may utilise the habitat within the study area.

The flora survey aimed to record as many species as possible. However, a definitive list of the flora within the study area cannot be gathered without systematic traverses and surveys across several seasons. Additional species may be recorded during a longer survey over various seasons. The techniques used in this investigation are considered adequate to gather the data necessary to validate the vegetation communities and vegetation condition in the study area and assess the likelihood of occurrence of any threatened flora species.

Sufficient detail to determine the likelihood of occurrence of threatened and migratory species for the purpose of this report was achieved through opportunistic surveys and habitat assessment during the field survey.

4. Impact Assessment

All applications to Council for development or clearing approvals must set out how impacts on biodiversity will be avoided, minimised or mitigated. This includes applications that do not trigger entry into the Biodiversity Offsets Scheme.

Avoidance measures, as well as direct and indirect impacts for the proposed works have been considered in the impact assessment below.

4.1. Avoidance

The vegetation on site adjoins a Council Reserve to the east which contains a large area of intact native vegetation. With adjacent lots having been cleared or being cleared for residential development, it is vital to avoid unnecessary damage to valuable ecological resources in this area.

Due to the nature of the site and the proposed development, clearing of native vegetation cannot be avoided. It is therefore recommended that any disturbance to ecological resources on or surrounding the site is to be minimised to the fullest extent possible.

The presence of an active South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) nest to the east of the site, suggests that the *Allocasuarina* trees throughout the site are likely to provide foraging habitat for these birds. The proposed development requires the removal of several of these trees.

It is noted that evidence of South-eastern Glossy Black-Cockatoo presence and use (evidence of feeding) was not detected during site inspections undertaken by Waratah Ecology and Council Biodiversity Officers. However, this cannot be definitively determined without targeted surveys, carried out at dawn and dusk over at least 4 days (20 hours total survey effort).

4.2. Direct impacts

Direct impacts are those impacts that directly affect habitat and individuals. Direct impacts considered for this assessment are vegetation and habitat removal.

The proposed development requires the clearance of all vegetation over a large proportion of the site (0.0515ha). This includes the removal of a total of 19 trees. This vegetation consists primarily of native species and forms part of PCT 3230 *Central Coast Escarpment Moist Forest*, which is the dominant PCT in the immediate area. The development also requires large amounts of soil to be excavated due to the slope of the site.

These impacts will directly impact potential flora and fauna habitat, particularly South-eastern Glossy Black-Cockatoo feed trees. It will also potentially create soil and erosion issues for the immediate nearby area, as the site has a relatively steep gradient. It is recommended that the mitigation measures listed in Section 5 of this report be implemented to help reduce the direct impacts of the proposed development on the areas of immediate biodiversity.

4.3. Indirect impacts

Indirect impacts associated with the proposed development include:

- Weed spread and edge affects associated with construction.
- Damage to native vegetation adjacent to the proposed development.
- Increase in surface water runoff, sedimentation, and erosion during and following construction.
- Increase in noise and disturbance to fauna in adjacent vegetation.

The presence of similar extensive, contiguous vegetation surrounding the site creates areas for effective connectivity for local native fauna. It is therefore considered that the proposed development does not fragment any existing biodiversity linkages. It is recommended however, that any revegetation efforts are to utilise native species known to occur in the wider area and listed in PCT 3230.

Impacts associated with changed water runoff, increased sedimentation and increased erosion rates during construction should be mitigated through preparation and implementation of an Erosion and Sediment Control Plan.

Increases in noise and disturbance to potential fauna inhabitants in adjacent vegetation is not likely to differ substantially during construction, given the urban environment, ongoing construction activities in neighbouring lots, and availability of suitable habitat adjacent to the study area.

All other impacts are considered to be manageable through adherence with the recommendations listed in Section 5.

5. Recommendations

This section of the report details recommended efforts to avoid, minimise and mitigate impacts on biodiversity values associated with the proposed development at 237 McCarrs Creek Road, Church Point NSW. Measures that are to be implemented before, during and post construction are provided below. It should be noted that all applications to Council for development or clearing approvals must set out how impacts on biodiversity will be avoided and minimised. This includes applications that do not trigger entry into the NSW Biodiversity Offsets Scheme.

- Construction fencing pre and during construction should be put in place to ensure that construction related impacts are contained within the construction areas.
- Areas of retained native vegetation, both on and adjacent to the study area, should be no-go zones for plant and equipment and be clearly delineated with construction fencing.
- All trees that are not directly impacted by the proposed development both on and adjacent to the property should be protected with appropriate tree protections to prevent damage during construction.
- Tree removal toward the rear of the property must be undertaken with the utmost care to avoid any impacts to vegetation in the surrounding lots.
- Any impacts to the *Allocasuarina* trees along the eastern boundary of the site should be avoided as most practically possible.
- Works should be conducted outside of the South-eastern Glossy Black-Cockatoo's nesting period (March-August)
- Targeted surveys are required to determine the South-eastern Glossy Black-Cockatoo's use of and reliance on feed trees within the study area
- If native fauna is identified during the project, works should cease, and an ecologist be contacted.
- Any potential fauna habitat that is directly impact by the development (unidentified tree hollows, rocks, nest boxes etc.) should be appropriately relocated to the surrounding areas.
- An Erosion and Sediment Control Plan should control sediment and stormwater runoff within the work site and prevent detrimental impacts from occurring in the surrounding area.
- Silt fences should be put in place around the construction site to limit the spread of sediment and weeds into adjacent vegetation.
- The works should be scheduled outside of predicted heavy rain periods.
- Erosion controls should be inspected regularly (daily during workdays) and after rainfall. Damaged controls should be fixed immediately. Accumulated sediment or waste material is to be removed from within the sediment controls regularly and disposed of at a licensed waste facility.
- Erosion and sediment controls are to be left in place until after the works are completed.
- Any areas outside the study area that are disturbed in any way (vegetation removal, soil disturbance) should be rehabilitated with appropriate revegetation techniques. Native flora species known to occur in PCT 3230 are to be prioritised, as well as the *Allocasuarina* trees due to the presence of a nesting pair of South-eastern Glossy Black-Cockatoos to the east of the site.

- Weed control management should be put in place as follows:
    - Ensure construction vehicles and earthmoving equipment are clean (and if necessary, are cleaned to remove soil and weed seed) before entering or leaving the study area.
    - Monitor soil disturbance in the work area and control any weeds as soon as they emerge.
    - Consider planting native species that are indigenous to the local area in landscaping.
    - Ensure garden plantings do not include other potentially invasive plant species.
    - Any exotic vegetation removed from the site should be disposed of at an approved facility.

6. Conclusions

This report provides an assessment of the ecological value of the flora and fauna within the subject land located at 237 McCarrs Creek Road, Church Point NSW 2105 and considers the impacts of the proposed residential development in relation to current environmental and ecological planning legislation.

The proposed residential development requires the removal of 19 trees from the site, as well as associated understorey and groundcover, resulting in an area of approximately 0.0515ha. The vegetation on site is classified as PCT 3230 *Central Coast Escarpment Moist Forest*, which is the classification given to the immediate wider locality of vegetation. This vegetation is considered to be of relatively high ecological quality, as it is dominated by native flora and fauna species.

The proposed native vegetation clearing is below the clearing threshold that triggers the Biodiversity Offset Scheme (BOS) under the BC Act. Furthermore, no vegetation clearing is proposed in areas identified as high biodiversity on the NSW Biodiversity Values Map. The site is highlighted on the Pittwater LEP 2014 Terrestrial Biodiversity Map and the mitigation measures outlined in this report should be considered to address the required biodiversity points outlined in Section 7.6 of the Pittwater LEP 2014.

Tests of significance conducted under the BC Act and EPBC Act, as part of this report are presented in Appendix D and Appendix E. Theses assessments indicate that the proposed development is not likely to have a significant impact on those threatened species with a 'moderate' likelihood of occurrence. One species (*Calyptorhynchus lathami lathami*) was considered to have a high likelihood of occurrence within the study area due to recent records in very close proximity to the site. Targeted surveys are considered necessary to determine whether the removal of feed trees is likely to have a significant impact on the local population of this species.

It is noted that other threatened fauna species may utilise the area intermittently as foraging habitat. However, the habitat in the study area is not likely to be significant for populations, as most of these species are highly mobile and will utilise the similar habitat in the surrounding environment. It is unlikely that any species would be reliant upon the vegetation to be removed and would only utilise the habitat on an opportunistic basis while moving throughout the wider landscape. However, it is noted that the site does contain significant habitat values for several species.

Noting the limitations referenced in section 3.2.4, for the purposes of this report, the assessment has adequately considered threatened species and communities in the context of the proposed development within the study area by:

- Conducting a field survey.
- Adopting the precautionary principle in the assessment of threatened species.
- Designating appropriate recommendations and mitigation measures to minimise potential impacts to threatened species that may transiently occur on the site as well as any other fauna.

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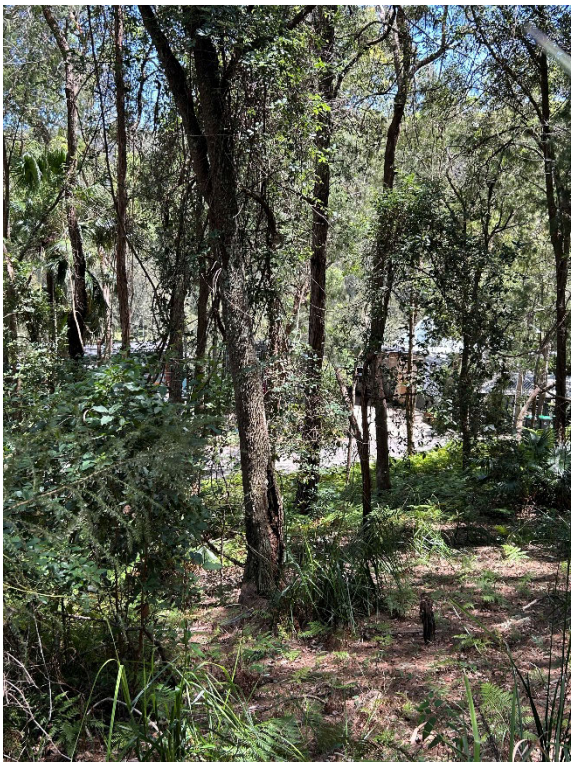
Appendix A: Images – 237 McCarrs Creek Road, Church Point NSW

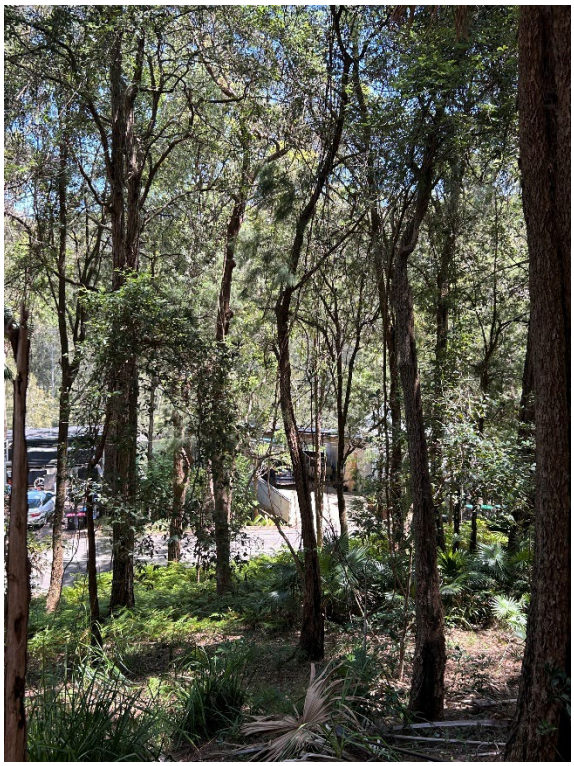
Photograph 1: View facing north across the site.

Photograph 2: View of the canopy in the north of the site.

Photograph 3: The southern boarder of the site and the adjacent site's dwelling.



Photograph 4: Facing west towards McCarrs Creek Road.



Photograph 5: View of the lots across McCarrs Creek Road.

Photograph 6: Rocks in the central portion of the site.

Photograph 7: Building timber which may potentially be utilised as habitat.

Photograph 8: View facing south across to the adjacent lot.

Photograph 9: She-Oak canopy coverage.

Photograph 10: Fallen timber and logs throughout the site.

Photograph 11: View of the open understorey in areas of the site.

Photograph 12: View facing southwest through to the adjacent lot and the other side of McCarrs Creek.

Appendix B: Threatened flora and fauna species – likelihood assessment

BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable, N/L = not listed

EPBC Act Key: M = migratory, CE = critically endangered, E = endangered, V = vulnerable, N/L = not listed

Scientific Name **(Common Name)**	**Fauna/ flora type**	**BC Act Status, EPBC Act Status**	**Distribution and Habitat**	**Records within 5km of study area within the last 20 years**	**Records within 5km of the study area within the last 5 years**	**Likelihood of occurrence (potential habitat to be disturbed)**	**Impact Assessment Required**
Heleioporus australiacus (Giant Burrowing Frog)	Amphibian	V V	This species is known to inhabit sandstone heathland and dry and wet sclerophyll forests from the northern Sydney area to southeastern Victoria. Burrows below the soil surface or in leaf litter, whilst in non-breeding habitat. They breed on the edges of creeks after heavy rainfall in Autumn and Spring.	41	10	**Low** Potentially suitable habitat on site, however, no limited to the locality. Other sightings made nearby in more suitable habitat.	**No** This species was not detected during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Pseudophryne australis (Red-crowned Toadlet)	Amphibian	V N/L	Found throughout temporary creeks and soaks in sandstone habitats in sclerophyll forests, heaths and woodlands around the Sydney Basin.	115	Approximately 35.	**Low** Several nearby sightings, however, no water body present on site.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Anthochaera Phrygia	Bird	E4, P CE	This species range is currently restricted to between north-eastern Victoria and south-eastern Queensland, with breeding regions in NSW at Capertree Valley,	33	0	**Low** Whilst potentially suitable habitat is	**No** This species was not identified during the

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
(Regent Honeyeater)			Mudgee/Wollar, Lower Hunter Valley, and the Bundarra-barraba region. They are found in temperate woodlands and open forests on the inland slopes of south-east Australia, particularly Box-Ironbark woodland and riparian forests of River Sheoak. They may also be found in drier coastal woodlands and forests with some flocks observed foraging in flowering coastal Swamp Mahogany and Spotted Gum Forests.			present, the nearby records were made in urbanised area over 10 years ago.	site survey. No significant impact on this species is anticipated as a result of the proposed development.
Boitaurus poicloptilus (Australasian Bittern)	Bird	E1, P E	The Australasian Bittern is widespread, yet uncommon over southeastern Australia, where they favour permanent freshwater wetlands with tall, dense vegetation, specifically those with bullrush and spikerush species. They hide during the day amongst dense reeds or rushes.	2	0	**Low** Minimal suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Burhinus grallarius (Bush Stone-curlew)	Bird	E1, P N/L	Bush Stone-curlew are found throughout Australia except for the central southern coast and inland, the far-southeast corner, and Tasmania. In the south-east it is either rare or extinct throughout its former range. Bush Stone-curlews inhabit open forests and woodlands with a sparse grassy ground layer and fallen timber.	6	0	**Low** Suitable habitat is present, however, no records within the last 10 years.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Callocephalon fimbriatum	Bird	E1 E	In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west	1	0	**Low**	**No**

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
(Gang-gang Cockatoo)			slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee. Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.			Potentially suitable resting habitat present, however no recent records.	This species was not detected in the subject site during surveys. Suitable habitat is present but not limited in the locality. No hollow bearing trees will be impacted by the proposed works and impact to foraging habitat is marginal for this highly mobile species.
Calyptorhynchus lathami lathami (South-eastern Glossy Black-Cockatoo)	Bird	V, P V	In NSW, this species is widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina. Open forest and woodlands of the coast and the Great Dividing Range where stands of She-oak occur.	68	1	**High** Suitable habitat is present in the form of extensive She-oak trees. Some nearby records over the last 20 years and an active nest in close proximity to the study area	**Yes**
Daphoenositta chrysoptera (Varied Sittella)	Bird	V, P N/L	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked	3	0	**Low** Suitable habitat is present in the form of various eucalypt species.	**No** This species was not identified during the site survey. No significant impact on

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland.			No recent records, however.	this species is anticipated as a result of the proposed development.
Gallinago hardwickii (Latham's Snipe)	Bird	V, P V	This species has been recorded with a range extending in land over the Eastern Tablelands in south-eastern Queensland, and to west of the Great Dividing Range in NSW. Latham's Snipe spends non-breeding periods at sites located south of the Richmond River in NSW. They occur in permanent and ephemeral wetlands, usually in habit in open, freshwater wetlands with low, dense vegetation such as swamps, flooded grasslands or heathlands, and other waterbodies. Sometimes occurring in habitats with saline or brackish water including saltmarshes, mangrove creeks, around bays and beaches, and at tidal rivers.	1	0	**Low** Minimal suitable habitat present on site. Highly mobile species with no recent records.	**No** This species was not identified during the site survey. No significant impact on this highly mobile species is anticipated as a result of the proposed development.
Glossopsitta pusilla (Little Lorikeet)	Bird	V, P N/L	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs.	9	0	**Low** Potentially suitable habitat is present on site. No recent records, however. Most records made in more urban areas to the site's south.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Haemoatopus fuliginosus (Sooty Oystercatcher)	Bird	V, P N/L	Sooty Oystercatchers favour rocky headlands, rocky shelves, exposed reefs with rockpools, beaches, and muddy estuaries. They forage on exposed rock or coral at low tide for foods such as limpets and mussels. They are found	5	0	**Low** No suitable habitat on site.	**No** This species was not identified during the site survey. No significant impact on

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			around the entire Australian coast, with small numbers of the species distributed along the NSW coast				this species is anticipated as a result of the proposed development.
Haliaeetus leucogaster (White-bellied Sea-Eagle)	Bird	V, P N/L	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as guard roosts. Nests are large structures built from sticks and lined with leaves or grass.	43	Approximately 20	**Moderate** Suitable foraging and resting habitat on site. Many recent and nearby records.	**Yes**
Hieraaetus morphnoides (Little Eagle)	Bird	V, P N/L	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	7	0	**Low** Suitable foraging habitat is present; however, no recent records of	**No** This species was not identified during the site survey. No significant impact on this species is

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
						this species have been made.	anticipated as a result of the proposed development.
Hirandapus caudacutus (White-throated Needletail)	Bird	V, P V	The White Throated Needletail is a migratory species, as it builds its nest in Central Asia and southern Siberia, and travels south during the winter. It is found along the eastern coast of Australia during non-breeding season (northern winter).	5	2	**Low** Minimal critical habitat present. Two recent records.	**No** This species was not identified during the site survey. No significant impact on this highly mobile species is anticipated as a result of the proposed development.
Ixobrychus flavicollis (Black Bittern)	Bird	V, P N/L	Black Bitterns inhabit both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. The species may occur in flooded grassland, forest, woodland, rainforest, and mangroves where permanent water is present. They have a wide distribution from southern NSW, north to Cape York and along the north coast to the Kimberley region. NSW records are scattered along the east coast, rarely recorded south of Sydney or inland.	10	0	**Low** Minimal suitable habitat for this species is present. No recent records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Lathamus discolor (Swift Parrot)	Bird	E1 CE	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.	27	6	**Low** Potentially suitable habitat present. Most records made in more suitable nearby habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a

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			Favoured feed trees include winter flowering species such as Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Forest Red Gum (*E. tereticornis*), Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*).				result of the proposed development.
Lophoictinia isura (Square-tailed Kite)	Bird	V, P N/L	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	8	1	**Low** Potentially suitable foraging habitat. Limited records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Melithreptus gularis gularis (Black-chinned Honeyeater (eastern subspecies)	Bird	V, P N/L	The eastern subspecies of this genus is found from central Queensland, south through NSW, Victoria and rarely in eastern South Australia. It is widespread in NSW, with records throughout the tablelands and western slopes, with some scattered records throughout the Hunter, Central Coast and Illawarra. They occupy mostly the upper levels of drier open forests or woodlands, which are dominated by box and ironbark eucalypts. They also inhabit open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks and tea trees.	1	0	**Low** Suitable habitat is present. Extremely limited records, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Ninox connivens (Barking Owl)	Bird	V, P N/L	The Barking Owl is distributed throughout mainland Australia, except for highly arid regions. It occurs in a sparse distribution throughout NSW. It inhabits woodlands and open forests, including fragmented remnants and partly	20	0	**Low** Limited suitable habitat is present. Most nearby records made in	**No** This species was not identified during the site survey. No significant impact on

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			cleared farmland. It occasionally breeds along timbered watercourses in heavily cleared areas.			more semi-urban environments.	this species is anticipated as a result of the proposed development.
Ninox strenua (Powerful Owl)	Bird	V, P N/L	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species.	460	Approximately 250	**Moderate** Many records over last 20 years. Suitable foraging habitat present.	**Yes**
Onychoprion fuscata (Sooty Tern)	Bird	V, P N/L	The Sooty Tern is found over tropical and sub-tropical seas and on associated islands around Northern Australia. In NSW, it is only known to breed on Lord Howe Island, however, it is occasionally seen along the NSW coastline, especially after cyclones. They soar over open water in large flocks and rest along beaches.	1	1	**Low** No suitable habitat present on site.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Pandion cristatus (Eastern Osprey)	Bird	V, P N/L	Eastern Osprey favour coastal areas, especially the mouths of large rivers, lagoons, and lakes. Eastern Ospreys are found around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast,	25	5	**Moderate** Potentially suitable resting habitat present.	**Yes**

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			especially on rocky shorelines, islands, and reefs. There are a handful of records from inland areas.				
Pertoice boodang (Scarlet Robin)	Bird	V, P N/L	Found from south-east Queensland to south-east South Australia, the Scarlet Robin occurs from the coast of NSW to the inland slopes. They may also be found dispersed to the lower valleys and plains of the tablelands and slopes after breeding. The Scarlet Robin lives in dry eucalypt forests and woodlands, with an open and grassy understorey. They occasionally occur in mallee or wet forest communities, or in wetlands and tea-tree swamps.	2	0	**Low** Potentially suitable habitat on the site. Not limited to the site, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Ptilinopus regina (Rose-crowned Fruit Dove)	Bird	V, P N/L	These colourful rainforest pigeons a distributed throughout the coast and ranges of eastern NSW and Queensland and occasionally in Victoria. The occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful.	3	0	**Low** Limited suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Ptilinopus superbus (Superb Fruit-Dove)	Bird	V, P N/L	Superb Fruit-Doves occur principally from Queensland to north-eastern NSW though are less common further south, largely confined to pockets of suitable habitat as far south as Moruya. They inhabit rainforest and similar closed forests foraging high in the canopy, eating a variety of fruits from trees such as figs and palms. Some young birds move south through Sydney especially in Autumn.	6	3	**Low** Suitable habitat present. Limited records, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the

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							proposed development.
Rostratula australis (Australian Painted Snipe	Bird	E1, P E	The Australian Painted Snipe is most common in eastern Australia with a number of recordings at scattered locations throughout Queensland, NSW, and Victoria, with most records from the south-east particularly the Murray Darling Basin. In NSW they have been recorded at the Paroo wetlands, Lake Cowal, Macquarie Marshes, Five bough Swamp, swamps near Balldale and Wanganella, and wetlands on the Hawkesbury River, the Clarence, and lower Hunter Valleys. Australian Painted Snipes prefer the fringes of swamps, dams, and marshy areas with grass, lignum, low scrub, or open timber cover.	3	0	**Low** Limited suitable habitat and records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Stictonetta naevosa (Freckled Duck)	Bird	V, P N/L	The Freckled Duck is found primarily in south-eastern and south-western Australia, breeding in large temporary swamps created by floods in the Bulloo and Lake Eyre Basins, and the Murray-Darling system particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. They may also occur as far as coastal NSW and Victoria during extensive inland droughts when wetlands in the Murray River basin provide important habitat. They prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. Freckled Ducks will also move to more permanent waters such as lakes, reservoirs, farm dams, and sewage ponds in drier times.	1	0	**Low** No suitable habitat on site.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Thalassarche cauta (Shy Albatross)	Bird	E1, P E	Shy Albatross spend the majority of their time at sea, inhabiting sub-Antarctic and sub-tropical marine waters. Occasionally this species occurs in continental shelf waters, in bays, and harbours. They occur widely in the southern oceans, along the east coast of Australia from Stradbroke Island in Queensland and along the entire south coast to Carnarvon in Western Australia though uncommon north of	1	1	**Low** One record made in coastal habitat. No suitable habitat present on site.	**No** This species was not identified during the site survey. No significant impact on this species is

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			Sydney. The Shy Albatross has been recorded in Ben Boyd National Park.				anticipated as a result of the proposed development.
Tyto novaehollandiae (Masked Owl)	Bird	V, P N/L	The Masked Owls distribution ranges from the coast to the western plains of NSW, with no seasonal variation known for this species. It prefers dry eucalypt forest and woodlands, below 1100m in elevation. It hunts along edges of forests and roads. It roosts and breeds in moist eucalypt forested gullies, utilising hollows or caves for nesting.	5	1	**Low** Suitable foraging and resting habitat. Limited recent records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Tyto tenebricosa (Sooty Owl)	Bird	V, P N/L	Sooty Owls occur in rainforests, including dry rainforest, subtropical, and warm temperate rainforest, as well as moist eucalypt forests. They roost in hollows of tall forest trees, or in heavy vegetation. They occur on the coast, coastal escarpments and the eastern Tablelands of NSW.	2	2	**Low** 2 wildlife rehabilitation records made. Potentially suitable foraging habitat present but not limited to the site.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Xenus cinereus (Terek Sandpiper)	Bird	V, P V	The Terek Sandpiper is a migratory species which occurs along the eastern coasts of Australia on coastal mudflats, lagoons, creeks and estuaries. They are also found amongst brackish pools up to 10km inland. They are known to roost amongst mangroves or dead trees.	2	0	**Low** No suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a

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							result of the proposed development.
Petalura gigantea (Giant Dragonfly)	Insect	E1 N/L	The Giant Dragonfly is found along the east coast of NSW from the Victorian boarder to northern NSW. It is not found west of the Great Dividing Range. They live in permanent swamps and bogs with some free water and open vegetation.	2	2	**Low** Nearby records made in more suitable habitat. Limited suitable habitat present on site.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Arctocephalus forsteri (New Zealand Fur-Seal)	Mammal	V, P N/L	New Zealand Fur-seals occur in both Australia and New Zealand, with some non-breeding animals found along the southern NSW coast especially on Montague Island, and other isolated locations to the north of Sydney. They are found along rocky shores of the mainland but also the rocky parts of islands, with jumbled terrain and boulders.	4	3	**Not Present – Marine species**	**No**
Arctocephalus pusillus doriferus (Australian Fur-seal)	Mammal	V, P N/L	Non-breeding Australian Fur-seal individuals can be found at Montague Island, with regular haul-out sites along the NSW coast such as Steamers Beach south of Jervis Bay and Green Cape along the far South Coast. They occur on flatter areas than New Zealand Fur-seals at locations where the sperate two species occur together, preferring the rocky parts of islands with flat, open terrain.	2	1	**Not Present – Marine species**	**No**
Cercartetus nanus (Eastern Pygmy-possum)	Mammal	V, P N/L	The eastern Pygmy-possum is found throughout southeastern Australia. It occurs in a broad range of habitats, from rainforest through to sclerophyll forest, woodlands and heaths. They are known to occur in grassy woodlands, with the presence of eucalypts alone are enough	503	Approximately 300	**Moderate** Many records made in more suitable habitat to the west, as well	**Yes**

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			to support populations in low densities. They feed on nectar, pollen and insects and shelter in tree hollows, stumps and under loose bark.			as to the south in urbanised habitat. One record from Church Point. No hollow-bearing trees present on site.	
Chalinolobus dwyeri (Large-eared Pied Bat)	Mammal	E1, P E	Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes. Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, subalpine woodland, edges of rainforests and sandstone outcrop country.	15	0	**Low** Potentially suitable habitat present, however, limited records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Dasyurus maculatus (Spotted-tailed quoll)	Mammal	V, P E	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	5	1	**Low** Potentially suitable foraging habitat present. Limited nearby and recent records, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Falsistrellus tasmaniensis	Mammal	V, P N/L	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees	1	0	**Low** Minimal potential roosting habitat	**No** This species was not identified during the

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(Eastern False Pipistrelle)			taller than 20 m. They generally roosts in eucalypt hollows but has also been found under loose bark on trees or in buildings.			present. Limited records.	site survey. No significant impact on this species is anticipated as a result of the proposed development.
Isoodon obesulus obesulus (Southern Brown Bandicoot (easter sub species))	Mammal	E1, P E	The Southern Brown Bandicoot has a patchy distribution throughout NSW. In NSW, it is found throughout south eastern NSW, east of the Great Dividing Range south from the Hawkesbury River. The prefer heath or open forest with a heathy understorey, on sandy or friable soils.	43	15	**Low** Suitable habitat present, however, majority of nearby records made in more intact, suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Micronomus norfolkensis (Eastern Coastal Free-tailed Bat)	Mammal	V, P V	The Eastern Coastal Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	19	1	**Moderate** Two records made adjacent to the site, with some suitable habitat present on site also.	**Yes**
Miniopterus australis (Little Bent-winged Bat)	Mammal	V, P N/L	The Little Bent-winged Bat occurs along the east coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. They inhabit moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bent-winged Bats roost in caves, tunnels, tree hollows, abandoned mines,	46	Approx. 20	**Moderate** Several nearby and recent records, with some suitable habitat present on site.	**Yes**

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			stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.				
Miniopterus orianae oceanensis (Large Bent-winged Bat)	Mammal	V, P N/L	Large Bent-winged Bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures.	76	Approx. 40	**Moderate** Several nearby and recent records, with some suitable habitat present on site.	**Yes**
Myotis macropus (Southern Myotis)	Mammal	V, P N/L	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. They generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves, bridges and in dense foliage.	36	8	**Moderate** Several nearby and recent records, with some suitable habitat present on site.	**Yes**
Petaurus norfolcensis (Squirrel Glider)	Mammal	V, P N/L	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum Forest west of the Great Dividing Range and Blackbutt-Bloodwood Forest with heath understorey in coastal areas.	6	1	**Low** Limited recent records. No hollow-bearing trees present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Phascolarctos cinereus (Koala)	Mammal	E1, P E	Fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands,	7	3	**Low** Known feed trees dominate the site, however,	**No** This species was not identified during the site survey. No

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			southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.			only a handful of nearby records, with most of them in more intact vegetation to the west of the site.	significant impact on this species is anticipated as a result of the proposed development.
Pseudomys novaehollandiae (New Holland Mouse)	Mammal	P V	The New Holland Mouse has a fragmented distribution across NSW, and is known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	4	2	**Low** Potentially suitable foraging habitat present. Limited records, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Pteropus poliocephalus (Grey-headed Flying-fox)	Mammal	V V	This species is distributed along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	132	Approx. 50	**Moderate** Many recent records within 5km of the site as well as some suitable foraging habitat present. No evidence of a camp on site.	**Yes**
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	Mammal	V, P N/L	The Yellow-bellied Sheathtail-bat is found in many habitats usually flying above the canopy. Usually few in a colony, roots in burrow, in cracks in the soil and under rock labs as well as tree hollows or other animal nests and buildings.	1	0	**Low** Limited records. Potential foraging habitat present.	**No** This species was not identified during the site survey. No

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							significant impact on this species is anticipated as a result of the proposed development.
Scoteanax rupali (Greater Broad-nosed Bat)	Mammal	V, P N/L	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however, does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	5	1	**Moderate** Several nearby records, with some suitable habitat present on site. No evidence of a camp on site.	**Yes**
Vespadelus troughtoni (Eastern Cave Bat)	Mammal	V, P N/L	The Eastern Cave Bat is found on both sides of the Great Dividing Range, with records in NSW primarily found in the north, with some as far south as the ACT. Very little is known about the biology of this species, however it is usually found in dry open forest and woodlands, near cliffs where is roosts in caves or rocky overhangs. It is also known to roost in abandoned mines in colonies of up to 500 individuals.	2	1	**Low** Limited records and suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Callistemon linearifolius (Netted Bottle Brush)	Plant	V N/L	This plant grows in dry sclerophyll forest on the coast and adjacent ranges from the Georges River to the Hawkesbury River in the Greater Sydney region, and north to the Nelson Bay area of NSW.	1	0	**Low** Limited records and suitable habitat.	**No** This species was not identified during the site survey. No significant impact on

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							this species is anticipated as a result of the proposed development.
Chamaesyce psammogeton (Sand Spurge)	Plant	E1 N/L	This species is found sparsely along the coast from south of Jervis Bay at Currarong, Culburra, and Seven Mile Beach National Park, to Queensland and Lord Howe Island. Populations have been recorded in Wamberal Lagoon Nature Reserve, Myall Lakes National Park, Moonee Beach Nature Reserve, and Bundjalunh National Park. Grows in fore-dunes, pebbly strandlines, and exposed headlands often with Spinifex and Prickly Couch.	9	0	**Low** Limited suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Eucalyptus camfieldii (Camfield's Stringybark)	Plant	V V	This species frows in poor coastal country in shallow sandy soils overlying Hawkesbury Sandstone, throughout the Greater Sydney area. It also occurs in small scatters strands near the boundary of tall coastal heaths and low open woodlands of the slightly more fertile inland areas.	2	0	**Low** Minimal suitable habitat and records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Eucalyptus nicholii (Narrow-leaved Black Peppermint	Plant	V V	This species is sparsely distributed throughout the New England Tablelands and is planted as urban trees, windbreaks and corridors. It typically grows in dry grassy woodlands on shallow soils of slopes and ridges.	1	0	**Low** No recent records and minimal suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is

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							anticipated as a result of the proposed development.
Genoplesium baueri (Baeur's Midge Orchid)	Plant	E1, P E	This species has been recorded from locations between Ulladulla and Port Stephens, with the species currently known from 13 sites. It grows in dry sclerophyll forest and moss gardens, underlain by sandstone.	1	0	**Low** No recent records and minimal suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Grammitis stenophylla (Narrow-leaf Finger Fern)	Plant	E1 N/L	The Narrow-leaf Finger Fern is known from 30 locations across NSW, primarily along the east coast. It occurs in moist places, usually near streams, on rocks in rainforest and dry and moist eucalypt forest.	1	0	**Low** No recent records. Potentially suitable habitat present, however.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Grevillea caleyi (Caley's Grevillea)	Plant	E4 CE	This species distribution is known from a restricted 8km square area around Terrey Hills, approximately 20km north of Sydney. All known sites occur on the ridgetop between elevations of 170m asl to 240m asl, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *Eucalyptus gummifera*.	2,466	Approx. 1,000	**Moderate** Habitat potentially suitable, however most records made further	**Yes**

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						south in more suitable habitat.	
Kunzea rupestris	Plant	V V	This species restricted distribution ranges throughout northwestern Sydney, in Ku-ring-gai Chase National Park and the Central Coast. It grows in shallow depressions on large flat sandstone rock outcrops and is found in short to tall shrubland or heathland.	1	0	**Low** Limited suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Lasiopetalum joyceae	Plant	V V	This species has restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It grows in heath on sandstone within this region.	2	1	**Low** Potentially suitable habitat. Limited records.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Macadamia integrifolia (Macadamia Nut)	Plant	N/L V	This species is not known to occur naturally in the wild throughout NSW, however, is known not be associated with warm temperate and subtropical rainforests in the Sydney Basin area.	3	1	**Low** Limited records. Potentially suitable habitat present on site.	**No** This species was not detected on the subject site during surveys. Considered very unlikely to be present. No significant impact on

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
							this species is anticipated as a result of the proposed development
Melaleauca deanei (Deane's Paperbark)	Plant	V V	This species occurs in several distinct areas: northwestern areas in the Sydney area and west of Nowra and along the Hawkesbury coast in the Central Coast area. It occurs along ridgetop woodlands.	1	1	**Low** Minimal suitable habitat present on site.	**No** This species was not detected on the subject site during surveys. Considered very unlikely to be present. No significant impact on this species is anticipated as a result of the proposed development.
Microtis angusii (Angus's Onion Orchid)	Plant	E1, P E	All known records of this species are located within the Northern Beaches LGA. They are known from disturbed areas, with most individuals occurring in road verges.	165	0	**Low** Limited nearby records. No suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
Pimelea curviflora var.curviflora	Plant	V V	This species distribution is confined to the coastal area of the Sydney and Illawarra regions, with populations known between northern Sydney and Maroota in the northwest. They occur on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands.	1	0	**Low** Limited suitable habitat.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Prostanthera densa (Villous Mint-bush)	Plant	V V	This erect mint-smelling shrub has been recorded from the Currarong area in Jervis Bay, through to the Royal National Park in Cronulla and north to Nelson Bay near Port Stephens. It grows in sclerophyll forest and shrubland on coastal headlands, as well as near coastal ranges. It prefers sandstone-based soils.	1	0	**Low** Limited records. Potentially suitable habitat present.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.
Syzygium paniculatum (Magenta Lilly Pilly)	Plant	E1 V	The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	9	4	**Moderate** Several nearby records within last 5 years, potentially suitable habitat in northern half of the site.	**Yes**
Tetratheca glandulosa	Plant	V N/L	Restricted to several LGAs throughout the northern Sydney area, this species is associated with shale-sandstone transition habitat where shale capping occur over	30	2	**Low** Limited suitable habitat.	**No** This species was not identified during the

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			sandstone. The plant prefers ridgetops, upper slopes and mid slope sandstone benches. Soils are generally shallow, consisting of a yellow clayey/sandy loam.				site survey. No significant impact on this species is anticipated as a result of the proposed development.
Caretta caretta (Loggerhead Turtle)	Reptile	E1, P E	Loggerhead Turtles are found in tropical and temperate waters off the Australian coast. In NSW they are seen as far south as Jervis Bay and have been recorded nesting on the NSW north coast and feeding around Sydney. They are ocean dwelling and forage in deeper waters. Females will come to shore to lay eggs in holes dug on the beach in tropical regions during warmer months.	7	3	**Not present – marine species**	**No**
Chelonia mydas (Green Turtle)	Reptile	V, P V	Green Turtles are an ocean-dwelling species spending most of its life at sea, laying eggs in holes dug in beaches throughout their range with records along the NSW coast. They are widely distributed in tropical and sub-tropical seas, and also coastal waters of NSW generally seen on the north or central coast, with occasional records from the south coast.	11	3	**Not present – marine species**	**No**
Dermochelis coriacea (Leatherback Turtle)	Reptile	E1, P E	Occasional breeding records exist between Ballina and Lennox Head in northern NSW. Large numbers can be found feeding in coastal waters from southern Queensland to the central NSW coast. Leatherback Turtles occur in onshore and offshore marine waters, rarely breeding in Australia though occasional records exist from the NSW coast.	2	0	**Not present – marine species**	**No**
Eretmochelys imbricata (Hawksbill Turtle)	Reptile	P V	The Hawksbill Turtle juveniles are pelagic and drift on ocean currents, and once reaching 30 to 40cm curved carapace length, they settle and forage in tropical tidal and sub-tidal	1	0	**Not present – marine species**	**No**

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status, EPBC Act Status	Distribution and Habitat	Records within 5km of study area within the last 20 years	Records within 5km of the study area within the last 5 years	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			coral and rocky reef habitats. They have been found with in seagrass habitats of coastal waters, and in temperate regions as far south as northern NSW.				
Varanus rosenbergi (Rosenberg's Goanna)	Reptile	V, P N/L	This species is found throughout the southern Australia mainland, most commonly in the west, but populations are also known around Sydney and Canberra. They are associated with sandy heathland, open woodland and sclerophyll forests.	51	2	**Low** Minimal recent records. Extensive records in nearby, more suitable open sclerophyll forests.	**No** This species was not identified during the site survey. No significant impact on this species is anticipated as a result of the proposed development.

Appendix C: Flora and fauna list

Flora					
Family	*Scientific Name*	Common Name	Native / Exotic	Weed of National Significance	Regional Priority Weed
Acanthaceae	*Pseuderanthemum variabile*	Pastel Flower	Native	NA	NA
Apiaceae	*Hydrocotyle sibthorpioide*	Pennywort	Native	NA	NA
Arecaceae	*Livistona australis*	Cabbage Tree Palm	Native	NA	NA
Asparagaceae	*Lomandra longifolia*	Spiny-head Mat-rush	Native	NA	NA
Asphodelaceae	*Dianella caerulea*	Blue Flax Lily	Native	NA	NA
Asteraceae	*Sigesbeckia orientalis*	Indian Weed	Native	NA	NA
Cannabaceae	*Trema tomentosa*	Nettle Tree	Native	NA	NA
Casuarinaceae	*Allocasuarina littoralis*	Black She-oak	Native	NA	NA
Casuarinaceae	*Allocasuarina torulosa*	Forest She-oak	Native	N/A	N/A
Commelinaceae	*Tradescantia fluminensis*	Small-leaf Spiderwort	Exotic	No	No
Dennstaedtiaceae	*Pteridium esculentum*	Bracken Fern	Native	NA	NA
Euphorbiaceae	*Euphorbia cyathophora*	Painted Spurge	Exotic	No	No
Meliaceae	*Synoum glandulosum*	Scentless Rosewood	Native	NA	NA
Myrtaceae	*Angophora floribunda*	Rough-barked Apple	Native	NA	NA
Myrtaceae	*Corymbia gummifera*	Red Bloodwood	Native	NA	NA
Myrtaceae	*Eucalyptus paniculata*	Grey Ironbark	Native	NA	NA
Myrtaceae	*Syncarpia glomulifera*	Turpentine	Native	NA	NA
Oleaceae	*Notelaea longifolia*	Mock Olive	Native	NA	NA
Poaceae	*Oplismenus aemulus*	Basket Grass	Native	NA	NA
Poaceae	*Stenotaphrum secundatum*	Buffalo Grass	Exotic	No	No
Primulaceae	*Myrsine variabilis*	Muttonwood	Native	NA	NA
Solanaceae	*Solanum mauritianum*	Ear-leaved Nightshade	Exotic	No	No

Vitaceae	*Cissus hypoglauca*	Giant Water Vine	Native	NA	NA

NA – Not Applicable

Fauna			
Family	***Scientific Name***	**Common Name**	**Native / Exotic**
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet	Native
Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum	Native
Megapodiidae	*Alectura lathami*	Australian Brush-turkey	Native
Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra	Native
Artamidae	*Gymnorhina tibicen*	Australian Magpie	Native
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	Native
Meliphagidae	*Manorina melanocephala*	Noisy Miner	Native

Appendix D: BC Act- Test of Significance

Threatened Fauna

The following species have been recorded within a 5km radius of the study area and have been deemed to have a 'moderate' likelihood of occurring throughout and utilising the habitat within the study area. Although, it is highly unlikely that individuals of the following species are completely dependent upon the resource within the study area for their continued survival.

The following subcategories of threatened fauna species have been grouped together as they are considered to have similar behaviours, habitat requirements and lifestyles. However, where substantial differences exist, they are discussed separately.

Bats

Micronomus norfolkensis (Eastern Coastal Free-tailed Bat) BC Act Status: Vulnerable, Protected

The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.

Miniopterus australis (Little Bent-winged Bat) BC Act Status: Vulnerable, Protected

The Little Bent-winged Bat occurs along the east coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. They inhabit moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bent-winged Bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.

Miniopterus orianae oceanensis (Large Bent-winged Bat) BC Act Status: Vulnerable, Protected

Large Bent-winged Bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures.

Myotis Macropus (Southern Myotis) BC Act Status: Vulnerable, Protected

The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. They generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves, bridges and in dense foliage.

Pteropus poliocephalus (Grey-headed Flying Fox) BC Act Status: Vulnerable

This species is distributed along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.

Scoteanax Rupali (Eastern Coastal Free-tailed Bat) BC Act Status: Vulnerable, Protected

The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however, does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.

Biodiversity Conservation Act 2016 – Test of Significance for BC Act listed bats with a 'moderate' likelihood of occurrence.		
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Impacts that are considered to impact on the life cycle of a species relates to impacts on stages of reproduction, growth, development, ageing and death. These bats may utilise the habitat on site as potential opportunistic foraging or resting habitat. It is to be noted that no signs of a camp was identified on the site. Impacts from the proposed development on these species relates to the loss of habitat. The development will result in the removal of approximately 515m^2 of vegetation. This vegetation is not limited to the boundaries of the study area. The areas of potential foraging habitat represent a very small amount of more consolidated vegetation which exists within a 10 km radius of the site. The relative impact is expected to be relatively small given the surrounding vegetation considered potential habitat within 10kms. The removal of approximately 515m^2 foraging habitat is highly unlikely to dramatically impact these species' life cycle such that they are placed at risk of extinction. The development is not likely to have an adverse effect on the life cycle of these species such that a viable population of these species is likely to be placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	Not applicable.

	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The development would result in the removal of approximately 515m^2 of habitat which is considered to be of high ecological quality. This is unlikely to significantly modify the other high-quality habitat within the surrounding area.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The impact from the proposal would not fragment or isolate any potential habitat from other areas of habitat.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Important habitat relates to the stages of a species life cycle and reproductive success. The 515m^2 of potential foraging habitat is not considered important to the long-term survival or reproductive success of these species considering they are able to utilise habitat within the wider locality.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	There are no areas of outstanding biodiversity value within the study area.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	There is one key threatening process, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation clearance: • Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process) The removal of approximately 515m^2 of potential habitat is considered a small disturbance, particularly in relation to the surrounding vegetation which is more suitable habitat. Therefore, it is considered	

	unlikely that the proposed vegetation removal would exacerbate any key threatening processes to such an extent that they would place any local populations of these species at risk of extinction.
Conclusion	The proposal will directly affect a maximum area of 515m^2 of potential habitat. The vegetation exists adjacent to an already moderately disturbed landscape and residential area. Even if these species did use the study area for an intermittent period of time, the localised nature of the vegetation removal and the presence of abundant suitable foraging and sheltering resources in the broader landscape, indicate that the proposed action is unlikely to have a significant impact on this species such that it would put a local population of any of these species at risk of extinction or substantially isolate any areas of potential habitat. In summary: • no individuals of this species were recorded during survey • the habitat to be removed will not isolate or fragment other foraging habitat or resources • potential foraging habitat for this species will remain throughout the locality A Species Impact Statement or BDAR is not recommended with respect to these species.

Birds

Calyptorhynchus lathami lathami **(South Eastern Glossy Black Cockatoo) BC Act Status: Vulnerable, Protected**

In NSW, this species is widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina. It prefers open forest and woodlands of the coast and the Great Dividing Range where stands of She-oak occur, as they are a specialist She-oak feeder. They prefer *Allocasuarina littoralis* and *A. torulosa*. They are also dependent on large hollow-bearing eucalypts for nest sites, with a single egg laid between March and May, and breeding season lasting until late August. An active nest is present within close proximity [redacted] to the study area and feed trees are present within the site

Biodiversity Conservation Act 2016 – Test of Significance for BC Act listed *Calyptorhynchus lathami lathami* (South Eastern Glossy Black Cockatoo)		
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Impacts that are considered to impact on the life cycle of a species relates to impacts on stages of reproduction, growth, development, ageing and death. This species is known to utilise *Allocasuarina* trees close to their nest site for feeding and therefore may utilise the *Allocasuarina* trees on and adjacent to the site. Impacts from the proposed development on this species relate to the loss of foraging habitat. The development will result in the removal of approximately 515m^2 of vegetation within the site including several *Allocasuarina* trees. The *Allocasuarina* to be removed represent a small percentage of these trees throughout the wider locality. However, this species has a highly specialised diet and preference of individual feed trees. It also nests close to, or within, foraging habitat Species specific surveys would need to be carried out during *C. lathami lathami* breeding season in order to determine whether the trees on site are preferred feed trees for the local population. It is noted that no signs of feeding were identified during the site surveys undertaken by Waratah Ecology or Council Biodiversity Officers	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	Not applicable.

	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The development would result in the removal of several known feed trees of this species. There are no nesting habitat present within the study area
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The impact from the proposal is not likely to fragment or isolate any areas of habitat from one another as the study area is within a residential area adjacent to similar cleared blocks.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Important habitat relates to the stages of a species life cycle and reproductive success. Several targeted surveys would need to be conducted to determine the importance of the feed trees on site to the local population of *C. lathami lathami* (i.e. whether they are regularly used for feeding during breeding season).
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	There are no areas of outstanding biodiversity value within the study area.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	There is one key threatening process, as listed in Schedule 4 of the BC Act which is relevant to the proposed development: • Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process) The removal of approximately 515m^2 of vegetation and suitable *C. lathami lathami* habitat is considered a relatively minor disturbance, due to the presence of suitable habitat in the immediately surrounding	

	areas. However, targeted surveys would need to be conducted to determine the importance of the feed trees on site to the local population of *C. lathami lathami*.
Conclusion	The proposed development will directly impact an area of approximately 515m², which contains several *Allocasuarina* trees. An active nest is believed to be present in a tree hollow [redacted] to the northeast of the site and this species is known to utilise feed trees close to their nest. No evidence of feeding by the birds was not identified during site visits but targeted surveys at dawn and dusk, over a number of days, would be required to definitively determine this. However, the proposed works are unlikely to have a significant impact on these birds, such that they would be put at risk of extinction. The site is bordered by high-quality vegetation to the east, with a high number of *Allocasuarina* trees in the immediate area. In summary: • No individuals of this species were recorded during the site survey. • No evidence of these birds feeding (i.e. chewed She-oak seeds) was identified on the site. • The trees to be removed will not isolate or fragment other areas of foraging habitat or resources. • Other areas of similar habitat, containing extensive coverage of *Allocasuarina* exist in the wider locality of the site. • Targeted surveys at dawn and dusk, over a number of days, would be required to definitively determine whether the trees proposed for removal are 'preferred' feed trees for the local population.

Haliaeetus leucogaster (White-bellied Sea-Eagle) BC Act Status: Vulnerable, Protected

The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways.

Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as guard roosts. Nests are large structures built from sticks and lined with leaves or grass.

Ninox strenua (Powerful Owl) BC Act Status: Vulnerable, Protected

The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species.

Pandion cristatus (Eastern Osprey) BC Act Status: Vulnerable, Protected

Eastern Osprey favour coastal areas, especially the mouths of large rivers, lagoons, and lakes. Eastern Ospreys are found around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands, and reefs. There are a handful of records from inland areas.

Biodiversity Conservation Act 2016 – Test of Significance for BC Act listed Birds with a 'moderate' likelihood of occurrence.	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Impacts that are considered to impact on the life cycle of a species relates to impacts on stages of reproduction, growth, development, ageing and death. These birds may utilise the habitat on site as potential opportunistic foraging or resting habitat. Impacts from the proposed development on these species relates to the loss of habitat. The development will result in the removal of approximately 515m^2 of vegetation. This vegetation is not limited to the boundaries of the study area. The areas of potential foraging habitat represent a very small amount of more consolidated vegetation which exists within a 10km radius of the site. The White-bellied Sea-eagle and Eastern Osprey would only utilise the site for resting, as majority of their hunting is done on or around waterways. The Powerful Owl is the only bird which might exclusively hunt within the habitat found on and directly adjacent to the site.

	The impact on the local populations of these species is expected to be relatively small given the surrounding vegetation within a 10km radius. The removal of approximately 515m^2 foraging and resting habitat is highly unlikely to dramatically impact these species' life cycle such that they are placed at risk of extinction. The development is not likely to have an adverse effect on the life cycle of these species such that a viable population is placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	Not applicable.
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The development would result in the removal of approximately 515m^2 of vegetation, which is considered to be of high-ecological quality. This is unlikely to significantly modify or impact habitat within the surrounding area.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The impact from the proposal would not fragment or isolate any potential habitat from other areas of habitat.

	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Important habitat relates to the stages of a species life cycle and reproductive success. The 515m^2 of potential habitat is not considered critically important to the long-term survival or reproductive success of these species considering they are able, and may prefer, to utilise habitat within the wider locality.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	There are no areas of outstanding biodiversity value within the study area.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	There is one key threatening process, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation clearance: • Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process) The removal of approximately 515m^2 of potential habitat is considered a small disturbance, particularly in relation to the surrounding vegetation, which is considered to be equal or higher quality habitat. Therefore, it is considered unlikely that the proposed vegetation removal would exacerbate any key threatening processes to such an extent that they would place any local populations of these species at risk of extinction.	
Conclusion	The proposal will directly affect a maximum area of 515m^2 of potential habitat. The vegetation exists adjacent to an already moderately disturbed landscape and residential area to the west, as well as high quality habitat to the east. Even if these species did use the study area for an intermittent period of time, the localised nature of the vegetation removal and the presence of abundant suitable foraging and sheltering resources in the broader landscape, suggests that the proposed development is unlikely to have a significant impact on these species such that it would put a local population of any of them at risk of extinction or substantially isolate any areas of potential habitat. In summary: • No individuals of these species were recorded during survey. • Individuals from each species are not exclusively reliant on the habitat found on the site. • The habitat to be removed will not isolate or fragment other foraging habitat or resources.	

	• Potential foraging habitat for these species will remain throughout the locality. A Species Impact Statement or BDAR is not recommended with respect to these bird species.

Arboreal Mammals

Cercartetus nanus **(Eastern Pygmy-possum) BC Act Status: Vulnerable, Protected**

The Eastern Pygmy-possum is found throughout southeastern Australia. It occurs in a broad range of habitats, from rainforest through to sclerophyll forest, woodlands and heaths. They are known to occur in grassy woodlands, with the presence of eucalypts alone are enough to support populations in low densities. They feed on nectar, pollen and insects and shelter in tree hollows, stumps and under loose bark.

Biodiversity Conservation Act 2016 – Test of Significance for BC Act listed *Cercartetus nanus*.		
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Impacts that are considered to impact on the life cycle of a species relates to impacts on stages of reproduction, growth, development, ageing and death. The *C. nanus* may utilise the habitat on site as potential opportunistic foraging or resting habitat. No tree hollows are present on site. Impacts from the proposed development on this species relates to the loss of habitat. The development will result in the removal of approximately 515m^2 of vegetation. The areas of potential foraging habitat represent a very small amount of more consolidated vegetation which exists within a 10km radius of the site. The impact on this species is expected to be relatively small given the surrounding vegetation considered potential habitat within 10kms. The removal of approximately 515m^2 of habitat is highly unlikely to dramatically impact this species' life cycle such that it is placed at risk of extinction. The development is not likely to have an adverse effect on the life cycle of this species such that a viable population is likely to be placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	Not applicable.

	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The development would result in the removal of approximately 515m^2 of habitat which is considered to be of high ecological quality. This is unlikely to significantly modify habitat within the surrounding area.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The impact from the proposal would not fragment or isolate any potential habitat from other areas of habitat.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Important habitat relates to the stages of a species life cycle and reproductive success. The 515m^2 of potential habitat is not considered important to the long-term survival or reproductive success of the local population of *C. nanus*, considering they are able to utilise habitat within the wider locality.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	There are no areas of outstanding biodiversity value within the study area.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	There is one key threatening process, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation clearance: • Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process) The removal of approximately 515m^2 of potential habitat is considered a small disturbance, particularly in relation to the surrounding vegetation. Therefore, it is considered unlikely that the proposed vegetation removal would exacerbate any key threatening processes to such an	

	extent that they would place any local populations of this species at risk of extinction.
Conclusion	The proposal will directly affect a maximum area of 515m^2 of potential habitat. The vegetation exists adjacent to an already moderately disturbed landscape and residential area to the west, and areas of intact native vegetation to the east. Even if *C. nanus* individuals utilised the site for intermittent periods of time, the localised nature of the vegetation removal and the presence of abundant suitable foraging and sheltering resources in the broader landscape suggests that the proposed development is unlikely to have a significant impact on this species, and that it would not put it at further risk of extinction. In summary: • No individuals of this species were recorded during survey. • The habitat to be removed will not isolate or fragment other foraging habitat or resources. • Potential foraging habitat for this species will remain throughout the locality. A Species Impact Statement or BDAR is not recommended with respect to this species.

Threatened Flora

The following two flora species have been grouped together as they are considered to have similar habitat requirements and are recorded from specific populations within a 5km radius of the site. Where substantial differences exist between the two species, they are discussed separately.

Grevillea caleyi **(Caley's Grevillea) BC Act Status: Critically Endangered**

This species distribution is known from a restricted 8km square area around Terrey Hills, approximately 20km north of Sydney. All known sites occur on the ridgetop between elevations of 170m asl to 240m asl, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *Eucalyptus gummifera*.

Syzygium paniculatum **(Magenta Lilly Pilly) BC Act Status: Endangered**

The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.

Biodiversity Conservation Act 2016 – Test of Significance for BC Act Listed flora species with a 'moderate' likelihood of occurrence.		
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	Impacts from the proposed action are not likely to have an adverse effect on the life cycle of these two flora species. As these species were not identified on site during the site survey, the proposed works will result in the removal of potential future habitat for these species. However, the site represents a small amount of more consolidated vegetation which exists within a 10km radius. The relative impact is expected to be very small given the adjacent woodland habitat within 10km. The removal of 515m^2 of potential habitat is unlikely to impact these species' such that they are placed at risk of extinction. The development is not likely to have an adverse effect on the life cycle of these species such that a viable population is likely to be placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	Not applicable.
	(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable.
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The development would result in the removal of approximately 515m^2 of potential habitat. This is unlikely to significantly modify habitat within the surrounding area.

	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The impact from the proposal would not fragment or isolate any potential habitat from other areas of habitat.
	(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Important habitat relates to the stages of a species life cycle and reproductive success. The 515m^2 of potential habitat is not considered important to the long-term survival or reproductive success of these species.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	There are no areas of outstanding biodiversity value within the study area.	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	There is one key threatening process, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation clearance: • Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the key threatening process) The removal of approximately 515m^2 of potential habitat is considered a small disturbance, particularly in relation to the surrounding habitat. Therefore, it is considered unlikely that the proposed vegetation removal would exacerbate any key threatening processes to such an extent that they would place any local populations of these species at risk of extinction.	
Conclusion	The proposal will directly affect a maximum area of 515m^2 of potential habitat. The vegetation exists adjacent to an already moderately disturbed landscape and residential area to the west, and an area of intact native vegetation to the east. In summary: • No individuals of these species were recorded during the survey • the habitat to be removed will not isolate or fragment vegetation • potential habitat for these species will remain throughout the locality A Species Impact Statement or BDAR is not recommended with respect to these species.	

Appendix E: EPBC Act- Significant Impact Criteria

Fauna

Calyptorhynchus lathami lathami (Southeastern Glossy Black Cockatoo) EPBC Act Status: Vulnerable

In NSW, this species is widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina. It prefers open forest and woodlands of the coast and the Great Dividing Range where stands of She-oak occur, as they are a specialist She-oak feeder. They prefer *Allocasuarina littoralis* and *A. torulosa*. They are also dependent on large hollow-bearing eucalypts for nest sites, with a single egg laid between March and May, and breeding season lasting until late August.

An action is likely to have a significant impact on an endangered species if there is a real chance of possibility that is will:

Criterion (a): lead to a long-term decrease in the size of an important population of a species;

A tree hollow [redacted] to the east of the site is believed to contain an active nest. This species is known to feed on *Allocasuarina* trees within a close proximity to its nest. The proposed development requires the removal of several of these feed trees. However, there is an extensive presence of these trees throughout the immediate locality of the site, specifically further towards the east. Targeted surveys would need to be conducted during breeding season in order to determine the use of these trees by individuals of this species. No evidence of feeding (i.e. chewed seeds) has been identified on site.

Criterion (b): reduce the area of occupancy of an important population;

A pair of *C. lathami lathami* are known to occupy a tree-hollow [redacted] to the east of the site, there are extensive areas of suitable feeding habitat surrounding the development. However, removal of the trees on site may reduce the area of occupancy of an important population.

Criterion (c): fragment an existing important population into two or more populations;

Whilst the proposed development requires the removal of several feed trees, it is not likely to fragment an existing important population into two or more populations.

Criterion (d): adversely affect habitat critical to the survival of a species;

The *Allocasuarina* to be removed represent a small percentage of this tree species throughout the wider locality. However, *C. lathami lathami* has a highly specialised diet and preference for individual feed trees. It also nests close to, or within, foraging habitat. While the habitat is not considered to be critical to the species as a whole it may be critical to a local population. Targeted surveys would need to be carried out to determine whether the habitat within the study area contains preferred feed trees.

Criterion (e): disrupt the breeding cycle of an important population;

A tree-hollow [redacted] to the east of the site is believed to contain an active nest. Whilst the birds were not identified during the site visits, and no evidence of feeding was identified on site (i.e. chewed She-oak seeds), the birds are known to feed on trees in close proximity to their nest. The vegetation removal associated with the proposed development may force the birds to find alternative feed trees or potentially relocate. However, the use of these feed trees to the birds would need to be observed during targeted surveys. Therefore, it cannot be confirmed that the

removal of feed trees associated with the proposed development would disrupt the breeding cycle of these birds.

Criterion (f): Adversely affect habitat critical to the survival of a species; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

The habitat to be removed is not considered critical to the survival of this species. There are other resources (feed trees) available in the surrounding areas. The importance of habitat within the study area can only be determined through targeted surveys.

Criterion (g): Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

The project is unlikely to result in the establishment of an invasive species that is harmful to this species.

Criterion (h): Introduce disease that may cause the species to decline;

The project is unlikely to result in the introduction of a disease that is harmful to this species.

Conclusion of the EPBC Act Significant Impact Criteria Guidelines for C. lathami lathami:

- Whilst several known feed trees are to be removed as part of the proposed development, large areas of these trees remain in the surrounding areas.
- No evidence of feeding (i.e. chewed She-oak seeds) are present throughout the site.
- Targeted surveys at dawn and dusk, over a number of days, would be required to definitively determine whether the trees proposed for removal are important to the local population.

Micronomus norfolkensis (Eastern Coastal Free-tailed Bat) EPBC Act Status: Vulnerable

The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.

An action is likely to have a significant impact on an endangered species if there is a real chance of possibility that is will:

Criterion (a): lead to a long-term decrease in the size of an important population of a species;

No important populations or obvious signs of roosts of *Micronomus norfolkensis* have been recorded within the study area.

Criterion (b): reduce the area of occupancy of an important population;

This study area does not support an important population of this micro-bat species.

Criterion (c): fragment an existing important population into two or more populations;

The study area does not support an important population of *Micronomus norfolkensis*. The habitat on site is part of a much larger and intact piece of vegetation. No fragmentation will occur, nor will any ecological corridors be impacted.

Criterion (d): adversely affect habitat critical to the survival of a species;

Approximately 515m^2 of potential *M. norfolkensis* foraging and roosting habitat will be removed as part of the proposed development. The surrounding and adjoining vegetation within a 10km radius provides further suitable habitat for the species.

Criterion (e): disrupt the breeding cycle of an important population;

No important populations of this species is known from within or directly adjacent to, the study area.

Criterion (f): Adversely affect habitat critical to the survival of a species; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

Although approximately 515m^2 of potential habitat will be removed as part of the proposal, the surrounding vegetation is considered to provide similar habitat. It is unlikely that the habitat to be removed would be considered critical to the long-term survival of the local population of this species.

Criterion (g): Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

The project is very unlikely to result in the establishment of an invasive species that is harmful to this species.

Criterion (h): Introduce disease that may cause the species to decline;

The project is very unlikely to result in the introduction of a disease that is harmful to this species.

Conclusion of the EPBC Act Significant Impact Criteria Guidelines for Micronomus norfolkensis:

A referral is not recommended for this species as:

- Minimal habitat will be impacted.
- The proposal will not directly impact critical breeding habitat.
- Large areas of suitable habitat remain throughout the locality.

Pteropus poliocephalus (Grey-headed Flying Fox) EPBC Act Status: Vulnerable

This species is distributed along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.

An action is likely to have a significant impact on an endangered species if there is a real chance of possibility that is will:

Criterion (a): lead to a long-term decrease in the size of an important population of a species;

No important populations or obvious signs of camps of *Pteropus poliocephalus* have been recorded within the study area.

Criterion (b): reduce the area of occupancy of an important population;

This study area does not support an important population of *P. poliocephalus*.

Criterion (c): fragment an existing important population into two or more populations;

The study area does not support an important population of *P. poliocephalus*. The habitat on site is part of a much larger and intact piece of vegetation. No fragmentation will occur, nor will any ecological corridors be impacted.

Criterion (d): adversely affect habitat critical to the survival of a species;

Approximately 515m^2 of potential *P. poliocephalus* foraging habitat will be removed as part of the proposed development. The surrounding and adjoining vegetation within a 10km radius provides further suitable habitat for the species.

Criterion (e): disrupt the breeding cycle of an important population;

No important populations of this species is known from within or directly adjacent to, the study area.

Criterion (f): Adversely affect habitat critical to the survival of a species; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

Although approximately 515m^2 of potential habitat will be removed as part of the proposal, the surrounding vegetation is considered to provide similar habitat. It is unlikely that the habitat to be removed would be considered critical to the long-term survival of the local population of this species.

Criterion (g): Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

The project is very unlikely to result in the establishment of an invasive species that is harmful to this species.

Criterion (h): Introduce disease that may cause the species to decline;

The project is very unlikely to result in the introduction of a disease that is harmful to this species.

Conclusion of the EPBC Act Significant Impact Criteria Guidelines for Pteropus poliocephalus:

A referral is not recommended for this species as:

- Minimal habitat will be impacted.

- The proposal will not directly impact critical breeding habitat.
- Large areas of suitable habitat remain throughout the locality.

Flora

Grevillea caleyi (Caley's Grevillea) EPBC Act Status: Critically Endangered

This species distribution is known from a restricted 8km square area around Terrey Hills, approximately 20km north of Sydney. All known sites occur on the ridgetop between elevations of 170m asl to 240m asl, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *Eucalyptus gummifera*.

Syzygium paniculatum (Magenta Lilly Pilly) EPBC Act Status: Vulnerable

The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

Criterion (a): lead to a long-term decrease in the size of an important population of a species;

No important populations of these species have been recorded within or directly adjacent to the study area. They study area also does not support key resources required by these species for dispersion and maintaining genetic diversity.

Criterion (b): reduce the area of occupancy of an important population;

This study area does not support an important population of Caley's Grevillea or Magenta Lilly Pilly.

Criterion (c): fragment an existing important population into two or more populations;

This study area does not support an important population of Caley's Grevillea or Magenta Lilly Pilly.

The habitat on site is part of a much larger and intact piece of vegetation. No fragmentation will occur, nor will any ecological corridors be impacted.

Criterion (d): adversely affect habitat critical to the survival of a species;

Although approximately 515m^2 of potential habitat for this species will be removed as part of the proposed development, the surround and adjoining vegetation within a 10km radius continues to provide more suitable habitat for the species.

Criterion (e): disrupt the breeding cycle of an important population;

No important populations of these species are known from within the study area.

Criterion (f): Adversely affect habitat critical to the survival of a species; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

Although approximately 515m^2 of potential habitat for these species will be removed for the proposal, the surrounding vegetation (within a 10 km radius) is considered to also provide suitable habitat for these species. Given the amount of habitat to be removed and the quality of potential habitat outside of the study area, it is unlikely that the habitat to be removed would be considered important to the long-term survival of the species in the locality.

Criterion (g): Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

The project is very unlikely to result in the establishment of an invasive species that is harmful to either of these species.

Criterion (h): Introduce disease that may cause the species to decline;

The project is very unlikely to result in the introduction of a disease that is harmful to either of these species.

Conclusion of the EPBC Act Significant Impact Criteria Guidelines for Caley's Grevillea and the Magenta Lilly Pilly

A referral is not recommended for these species, as:

- Minimal areas of potential habitat likely utilised by these species, will be impacted.
- Large areas of more suitable habitat are present directly adjacent to the site, as well as throughout the locality.

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