Flora and Fauna Assessment

for

Construction of a new dwelling

at

1110 Barrenjoey Road, Palm Beach

Date Published: 05/02/2021

GIS Environmental Consultants

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We acknowledge the traditional owners of this land and pay respect to elders, past, present and emerging.

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1 Introduction

1.1 Background

This report describes the ecological values and constraints at the Study Site, Lot 103 in DP 1256016, which is also known as 1110 Barrenjoey Road Palm Beach.

Native and exotic, plant and animal species present on the site were recorded. The types of vegetation present on the site were classified into Plant Community types, and their distribution and abundance on the site were mapped. The history of disturbance was determined and is described. Threatened flora and fauna species and endangered ecological communities that have suitable habitat on the site were targeted during the field survey.

The likely impacts of the proposed development on terrestrial biodiversity was then assessed as required by Federal, State and Local Government legislation.

Ways to avoided and minimised the impact were discussed with the developer. Recommendations to further ameliorate ecological impacts are included in this report.

This method of describing the ecological values is required when submitting development applications to allow assessment of the application with respect to the; *Environmental Planning and Assessment Act 1979*, the *Biodiversity Conservation Act 2016* and the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999) and other applicable Acts, Policies, Regulations, SEPPs, LEPs, and DCPs.

1.1 Aims of this Report

The aims of this flora and fauna assessment are to:

- Record the **findings of an ecological survey** that describes the flora, fauna and ecological communities and their habitats of the site and surrounding land and the likely impacts the proposal;
- Describe the **importance of the habitat** on the site to the conservation of native flora and fauna, including fauna not found during the survey.
- Determine the ecological **constraints** of the site and provide advice to the applicant on ways the impact can be **avoided** and **minimised** before finalising the proposal plans as required by the mitigation hierarchy of the Biodiversity Conservation Act 2016;
- **Assess** the likely **ecological impact** of the proposal (as described in this report) on the ecological values of the site in particular the significance of the impact to Threatened species, populations and ecological communities or their habitats in accordance with the requirements of the *Environment Planning and Assessment Act* (EP&A Act) Sections 4.15(1) a, b and c, the *Biodiversity Conservation Act 2016* (including threshold test and 5-Part assessment of Significance) and determination of compliance with other relevant NSW legislation including; Acts, regulations SEPPs, LEP and DCPs;
- Determine if the proposal triggers the **BOS threshold test** as required by the *Biodiversity Conservation Act 2016*, which would require the application of the Biodiversity Assessment Method (BAM) and a BDAR assessment;
- Determine if the proposal needs a **referral** to the Federal government for assessment under the EPBC Act;
- Recommend ways the **ecological impacts** can be further **ameliorated** and management actions during construction and for the life of the development.

1.2 Ecologically Relevant Legislation

The ecological legislation relevant to this proposal is determined in Table 1 and the relevant legislation and their requirements are discussed in section 1.3.

Table 1: Ecological Legislation Assessment

Legislation/Policy	Triggers	Requirement	Assessment Requirements	How Addressed
Environment Planning and Assessment Act 1979	This proposal is a Part 4 Local Development Application.	Yes	Triggers other State and Local legislation and section 4.15 to be assessed.	Addressed by this report and in the conclusions in section 5. Heads of Consideration 4.15 parts a, b, and c
Biodiversity Conservation Act 2016 (BC Act)	Threshold Test, 5-part tests of significance s7.3 and prescribed Impacts assessment required for all part 4 DAs. These are triggers for entry into BOS.	Yes But BAM assessment not required.	Threshold Test, 5-part tests of significance. Avoid and minimise impacts.	5-part Test of Significance in Appendix A of this report. BAM Threshold test section 3.9. Entry into BOS not required.
Local land Services Act 2013 (LLS Act)	Mapped on the Native Vegetation Regulatory Map	No, not mapped		
Vegetation in Non-Rural Areas SEPP	Clearing of vegetation when there is no DA.	No		
SEPP 19 - Bushland in Urban areas (section 9)	Impact to Land adjacent to Public Open Space	No		
Water Management Act 2000	Controlled activity on waterfront land and more than one dwelling.	No		
Fisheries Management Act 1994 (FM Act)	Impact to marine vegetation or Threatened species listed in the FM Act.	No		
Coastal Management SEPP 2018	Mapped on Littoral Rainforest & Coastal Wetlands Map	No, not mapped		
Biosecurity Act 2015 (Bio Act)	Priority weeds of environmental weeds at the site.	Yes	All Weeds are identified in Plant species list table.	All weeds are identified and classified.
Koala Habitat Protection SEPP 2019	Evidence of viable Koala population in the locality, property more than 1ha.	No property less than 1ha		
Local Council LEP and DCP	LEP/DCP Mapping	Yes	LEP and DCP addressed by this report	Addressed by this report
Federal Environment Protection and Biodiversity Conservation Act 1999	Actions not likely to meet criteria	No		

1.3 Legislation Addressed by This Report

1.3.1 Environment Planning and Assessment Act 1979

The NSW Environment Planning and Assessment Act 1979 is the framework for approval of development in NSW. The proposed development will be assessed under Part 4 of the NSW Environmental Planning and Assessment Act. Section 4.15 (a) of the Act requires that consent authorities must take into consideration any environmental planning instruments, LEP, DCP, SEPPs and regulations. Section 4.15 (c) requires assessment of the suitability of the land for development.

Section 4.15 (b)) requires the assessment of the likely impacts of a development, including environmental impacts on both the natural and built environments including the BC Act threshold test and if necessary, a BAM assessment and any required offsetting.

1.3.2 Biodiversity Conservation Act 2016

The primary requirement of the BC Act is that ecological impact is to be Avoided and Minimised and the remaining impact is to be offset according to the BAM/BOS scheme.

This act lists the Threatened flora and fauna species and defines the ecological communities in NSW and the regulation for the Act requires that a threshold test be applied to Development Applications. An assessment of significance is required to be undertaken for all Threatened species or ecological communities that may have suitable habitat impacted by the proposal. If the threshold is met, the Biodiversity Assessment Method (BAM) needs to be applied to determine the type of survey and assessment and the amount of offsetting required.

If a development application does not meet the threshold or any other triggers, then a smaller ecological report is still required to address the ecologically relevant "heads of consideration" in the section 4.15 (79C) of the EP&A Act and LEP/DCP requirements. The Federal EPBC Act and Fisheries Acts requirements may also require an ecological assessment report.

1.3.4 Biosecurity Act 2015

The Biosecurity Act requires that all plants be regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or should know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, where it is reasonably practicable.

Specific legal requirements apply to State determined priority weeds listed in Appendix 1 of the Greater Sydney Regional Strategic Weed Management Plan 2017-2022. Weeds listed Appendix 2 as 'other weeds of regional concern' warrant resources for local control or management programs and are a priority to keep out of the region. Inclusion in this list may assist Local Control Authorities and/or land managers to prioritise action in certain circumstances where it can be demonstrated the weed poses a threat to the environment, human health, agriculture etc.

This Act does apply to this property and needs to be assessed and reported but is not consideration for assessment of the application.

1.3.5 Pittwater LEP (2014) and Pittwater LEP 21

The Pittwater Council Local Environment Plan (PLEP 2011) aims to 'make local environmental planning provisions for land in Pittwater in accordance with the relevant standard environmental planning instrument under section 33A of the Act'. The Pittwater Development Control Plan 21 (PDCP 21) contains detailed planning controls. Both the LEP and the DCP must be considered when a determining authority assesses development in this area.

The study area is zoned as Part E4 -Environmental Living.

The parts of PLEP 2014 and PDCP 21 relevant to the proposed development are as follows:

7.6 Biodiversity (PLEP 2014)

The property is mapped as containing Biodiversity on the Terrestrial Biodiversity Map within the PLEP 2014 and therefore clause 7.6 (Biodiversity) applies to this property. This Flora and Fauna report addresses the requirements of clause 7.6 of the PLEP.

B4.7 Pittwater Spotted Gum Forest – Endangered Ecological Community (PDCP 21)

The property is mapped as containing Pittwater Spotted Gum Forest Endangered Ecological Community (EEC) in the Native Vegetation of the Sydney Metropolitan Area V3.1 2016 (OEH) map and therefore clause B4.7 of the PDCP 21 applies to this property. This Flora and Fauna report addresses the requirements of clause B4.7 of the PDCP 21.

1.3.6 Federal Environment Protection and Biodiversity Conservation Act, EPBC Act

This report also identifies flora and fauna species or communities, relevant to the site that are listed under Part 13 Division 1 of the *Environment Protection & Biodiversity Act 1999 (Cwlth)* (EPBC). Species or communities listed in the Act are considered to be "matters of national environmental significance" and consideration needs to be given as to whether the proposed development will or is likely to have a "significant impact" on "matters of national environmental significance". In determining whether a "significant impact" will occur, consideration is given to;

- EPBC Act Administrative guidelines on significance (DEH 2006)

Should the assessment in this report determine that a "significant impact" will occur or is likely to occur on "matters of national environmental significance" the proposed development will need to be referred to the Minister (Cwlth) to determine as to whether or not the proposed development is a "controlled action".

Part 13 Division 1 of the *Environment Protection & Biodiversity Conservation Act 1999 (Cwlth)* (EPBC) lists flora, fauna and ecological communities that are considered to be "matters of national environmental significance". Under the Act consideration must be given as to whether the proposed actions will or is likely to have a "significant impact" on "matters of national environmental significance".

There is currently no agreement in place between the State and Federal governments regarding the requirement for ecological assessment of Matters of National Significance.

Assessment of a Development Application with respect to the EPBC Act 1999 is not a Council issue but is the responsibility of the proponent. Proponents should be advised by their ecological consultant whether a referral is necessary. Assessment under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is needed if the proposal is considered likely to have an impact on a 'matter of National Environmental Significance (NES)' then the proposal would need detailed assessment and referral to the Federal Department of Environment and Energy (DEE) thus providing a trigger for referral of the proposal to the Environment Department for assessment. Matters of national environmental significance identified in the Act are: world heritage properties; national heritage places; RAMSAR wetlands; nationally threatened species and communities; migratory species protected under international agreements; the Commonwealth marine environment; nuclear actions and a water resource, in relation to coal seam gas development and large coal mining development.

This report addresses the requirements of this legislation.

1.4 Definitions and Acronyms

APZ (Bushfire hazard fuel reduction Asset Protection Zone) - Defined in the document '*Planning for Bushfire Protection 2006*' by the NSW Rural Fire Service. Usually consisting of an Inner Protection Area (**IPA**) and an Outer Protection Area (**IPA**)

BAM - Biodiversity Assessment Method described by Office of Environment and Heritage August 2017 and referred to by the BC Act regulation.

BOS – Biodiversity Offset Scheme the system of trading biodiversity offset credits, paying for offsets and the Biodiversity Trust.

BC Act (NSW Biodiversity Conservation Act 2016) - Contains the lists of threatened species, the definitions of the threatened ecological communities, the 5-part Test of Significance and the BOS. There are associated Biodiversity Conservation regulations which refers to the BAM.

DCP (Development Control Plan) - A local planning instrument for each LGA.

DPIE – NSW government of Department of Planning, Industry and Environment

EES – DPIE group Environment Energy and Science, formerly OEH, NPWS, DEC, DECC and DECCW. The department responsible for the conservation of native flora and fauna.

Direct Impacts - impacts that directly affect habitat, ecosystems and individuals. They include, but are not limited to, death, trampling, poisoning of the animal/plant itself and the removal of vegetation and suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development during construction. As defined by the 2006 DECC Assessment of significance guidelines.

Indirect Impacts - Occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. Indirect impacts may occur after construction during the life of the development, e.g. escape of garden plants, excess nutrients and changes in fire frequency and grazing. As with direct impacts, consideration must be given, to all of the likely indirect impacts of the proposed activity or development (2006 DECC Assessment of Significance Guidelines)

DPIE – NSW government of Department of Primary Industries and Environment

EPA Act (EP&A Act) – NSW Environment Planning and Assessment Act 1979, controls development in NSW.

EPBC Act (Federal Environment Protection and Biodiversity Conservation Act 1999) – Identifies matters of national environmental significance to protect nationally significant fauna, ecological communities and heritage sites.

IPA (Bushfire hazard Inner Protection Area) - Defined in the document '*Planning for Bushfire Protection 2006*'.

LEP (Local Environment Plan) - A local planning instrument for each LGA.

Native Vegetation –as defined in the LLS Act section **60B:**

Meaning of "native vegetation"

"native vegetation" *means any of the following types of plants native to New South Wales:*

(a) trees (including any sapling or shrub or any scrub),

(b) understorey plants,

(c) groundcover (being any type of herbaceous vegetation),

(d) plants occurring in a wetland.

(2) A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of

the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.

(3) For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if:

(a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and

(b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.

(4) For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under section 14.7 of the Biodiversity Conservation Act 2016 that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.

OPA (Bushfire hazard Outer Protection Area) - Defined in the document '*Planning for Bushfire Protection 2006*'.

Property – Adjacent or nearby lot(s) that have the same ownership.

Protected Fauna - Refers to any native bird, mammal, reptile or frog in NSW.

Study Area - The subject Site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (DECC 2006).

Subject Site - The area directly affected by the proposal (DECC 2006).

Test of Significance (5-Part Test) - Assessment under Section 7.3 of the BC Act to determine whether a proposed development or activity is likely to significantly affect threatened species, or ecological communities, or their habitats.

Threatened Species or Ecological Community - Refers to those biotas listed in the schedules of the Biodiversity Conservation Act 2016 as "Critically Endangered ", "Endangered" or "Vulnerable".

For definitions that are relevant to the Assessment of Significance such as ***Life cycle***, ***Viable***, ***Local population***, ***Risk of extinction, Local occurrence***, ***Risk of extinction, Composition***, ***Habitat***, ***Extent***, ***Importance***, ***Locality***, "***likely***" and "***significant***" "***affect***" see the Assessment of Significance Appendix.

1.5 Assumptions and Limitations

- This report only addresses the impacts of the proposal described in this report and shown on the maps in this report. If there are changes or additions that may change the ecological impact of the proposal, then this report may require updating.
- This report describes the habitat and species within the Study Area at the time of the field survey. Vegetation and habitat will change over time, as does legislation. Therefore, the findings of this report are likely to be out of date in 12 months.
- This report assesses only the current proposal and does not consider the cumulative impact of other developments on this property or on adjacent land or the potential edge effects or impacts caused by the occupation of the land.
- There may be flora and/or fauna species present within the study area that were not recorded because they are seasonal, cryptic and/or have large home ranges. Some threatened species may use the study area as habitat at some time. The conclusions drawn in this report are a result of testing, observation and experience.
- This report should be read in its entirety and no part should be taken out of context.
- No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.
- No landscape plan was available at the time of writing.

1.6 Qualifications and Experience of the Field Ecologist and Authors

Nicholas Skelton's formal qualifications include a Bachelor of Science with Honours (B. Sc. (Hons) USyd) and a Masters in Applied Science (M. App. Sc. in Vegetation Management UNSW). Nick has been an environmental scientist for 25 years, including a university lecturer, research ecologist and a bush regenerator for 8 years. His work is focused on the Sydney bioregion and he has published many papers in independently reviewed journals on the ecology of NSW. He has expert knowledge of the local soils, the climate of this area and the local indigenous plants and animals as a result of over 900 ecological surveys. Nick is a member of the relevant professional organisations including: a practising member of the Ecological Consultants Association of NSW and Royal Zoological Society. He is licensed by NSW OEH and NSW Department of Primary Industries to carry out surveys on threatened plants and animals and he is a qualified Biodiversity Assessor under the BC Act 2016. Nick was the principal ecologist on all field surveys and was responsible for map making and report writing and editing. Further details can be found at ecology.net.au

1.7 General Description of the Proposal

The proposal as shown on Map 6, includes:

- Construction of a new multi-storey dwelling with decks;
- Construction of a second, single-storey dwelling;
- Construction of a new pool;
- Construction of a new garage;
- Landscaping unspecified;
- Removal of 14 trees, 7 of which are local native species being removed due to the proposal.

The house and deck is on piers and is built over some of the large sandstone floating rocks that occur on the site. Access will mostly be via a shared driveway from Barrenjoey Rd in the lower eastern part of the site. The property also has pedestrian access to the road above the site to the east.

1.7.1 Bushfire Asset Protection

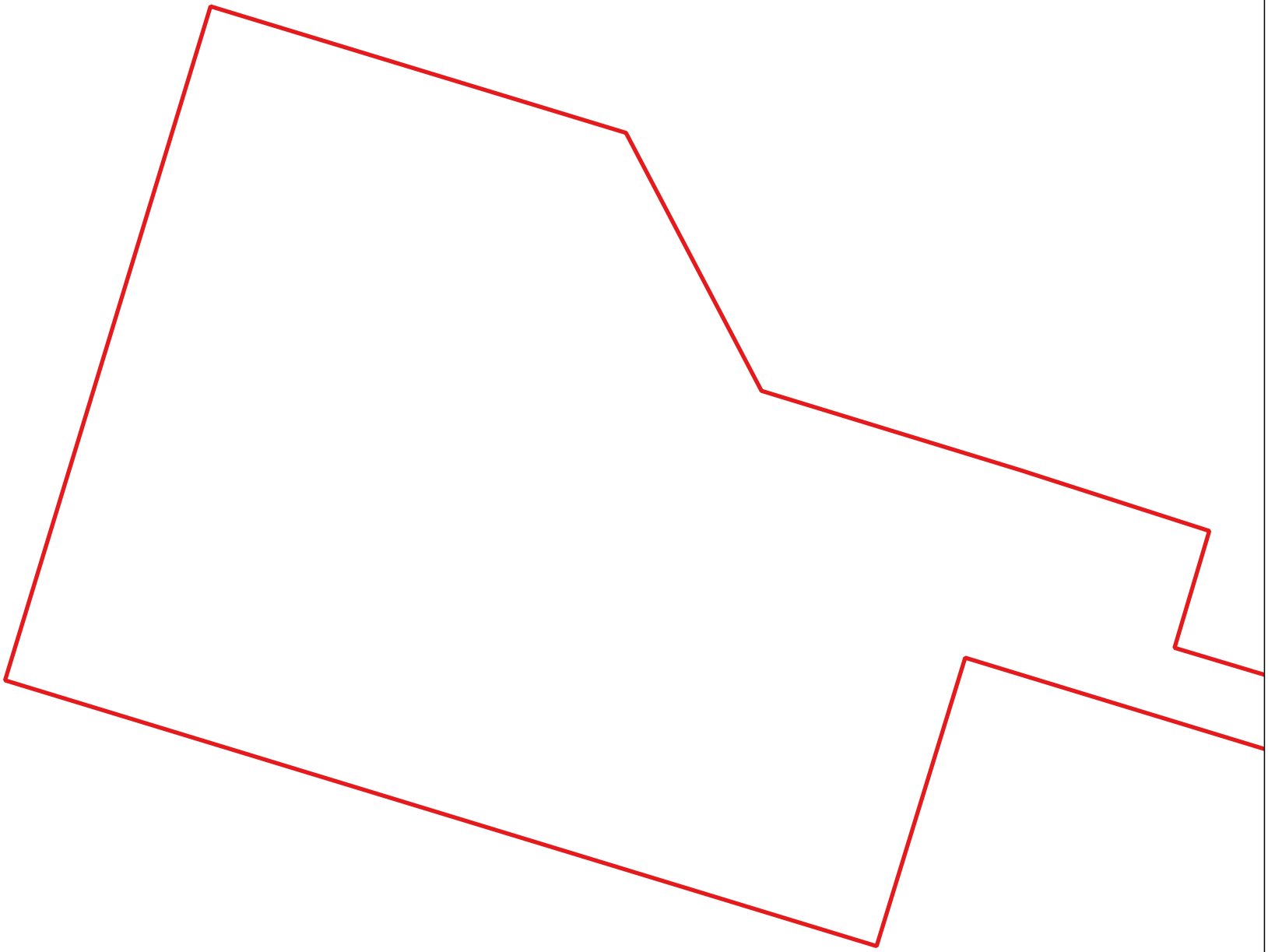
The subject site is not mapped on Northern Beaches Councils Bushfire Prone Land Map (2020).

1.8 Plans and Documents Used for this Report

The plans and documents used in this report are listed in Table 2.

Table 2: Plans and documents used in this report

Title	Author	Rev	DWG./Doc. No./Ref.	Date
Details and Levels over Lot 103 in D.P. 1256016	Adam Clerke Surveyors Pty Ltd	-	206885	23/11/2020
Site Plan	Jorge Hrdina Architects Pty Ltd	-	DA1001	5/2/2021
Arboricultural Impact Assessment 1110 Barrenjoey Road Palm Beach	Rain Tree Consulting	-		14/11/2021



Legend

1110 Barrenjoey Rd, Palm Beach

Aerial photo Source: Six Spatial Services Portal

Map 1
Site, Aerial Photograph

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Date: 15/12/2020
Drawn by: Nicholas Skelton
Version 1
Projection: GDA 94 MGA 56

0 4 8 m

Legend

1110 Barrenjoey Rd, Palm Beach

Northern Beaches

Cadastre

Map 1
Site, Aerial Photograph

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ecology@ecology.net.au, ecology.net.au

Date: 5/2/2021
Drawn by: Nicholas Skelton
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Projection: GDA 94 MGA 56

0 4 8 m

Legend

1110 Barrenjoey Rd, Palm Beach

Northern Beaches

pointofinterest for Aerial

Watercourse

Watercourse Non Perennial

National Park

Aerial photo Source: Six Spatial Services Portal

Map 2
Locality, Aerial Photograph

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Projection: GDA 94 MGA 56

0 200 400 m

2 Existing Environment – Vegetation Habitat and Environmental Context

2.1 Literature and Database Search

Relevant information was obtained from literature, local knowledge and established sources such as scientific journals, electronic databases and reports. Records gathered were also used and data in databases were consulted including BioNet (NPWS Atlas of NSW Wildlife records, Australian Museum specimen records and the Royal Botanic Gardens), ROTAP records and Birds Australia Atlas. Searches were also undertaken on the DOEE – 'protected matters search tool' website to generate a report that will help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in the area of interest.

This information was used to ascertain which threatened species are known to occur within a 5km radius of the study area. The data were then combined with local knowledge and the habitat conditions within the study area to compile a list of plant and animal species for specific targeting during the fieldwork. These lists are Table 1 and 2.

2.2 Locality and Adjacent Land

The site is surrounded by residential lots many of which are also steep and have large remnant Spotted Gum trees. The residential lots to the north, currently has a house being constructed. There is a contiguous tree canopy across the neighbouring lots from south to north as can be seen on the aerial photograph on the cover and Map 1 and Map 5. The environmental and built form features are shown on Maps 2 and 3. To the west are historic buildings (hotel and restaurant) and further to the west is Barrenjoey Road, Barrenjoey Park and Pittwater.

The proximity of the site to nearby bushland is shown on the cover and on Maps 1, 2 and 3.

2.3 Landscape Features in the Locality

The location of the site and it's local context with respect to topography, cadastre, water features, roads, reserves, soil types, fire history, infrastructure and mapped vegetation shown on Maps 2, 3 and 4.

2.4 Study Area and Subject Site

For this proposal the Subject Site, Study Area and Property are the same.

2.4.1 Geographic co-ordinates

The geographic co-ordinates of the study area are -33.597408, 151.320725 or the cartesian co-ordinates UTM Zone 56 MGA 344183, 6288213.

2.4.2 Topography

The site slopes to the west at an approximately 18º slope increasing to 24º on the western side. The site varies from 14m altitude in the western side of the proposal area to 32m on the eastern side. 2 m contours of the site are shown by pink lines and labels on Map 6 and 10m contours in the locality are shown on Map 3.

2.4.3 Drainage

Drainage on the site is to the east generally across the whole slope with no clear drainage line. The tidal saltwater estuary of Pittwater lies approximately 100m to the west. The South Tasmin sea is on the other side of the escarpment to the east and will contribute a moderate salt load to the site. Drainage in the locality is shown by light blue lines or polygons on Map 3.

2.4.4 Riparian Land

The site is not mapped as containing Riparian Land.

2.4.5 Geology and Soils

The property is on the Watagan Soil Type (Soils Sydney ed4 DPI) on Hawkesbury Sandstone geology (NSW seamless geology v2) as is shown on Map 4 in a thick brown line and labels. There are patches of exposed sandstone rock floaters across the site that are shown in brown on Maps 3 to 7. The soils have a clear clay influence which will increase the water holding capacity and higher nutrient levels allowing the tall forest vegetation type in this vicinity.

2.5 Vegetation Mapping in the Locality

Map 4 shows the location and abundance of the vegetation types (ecological communities) that have been mapped at local scale in the vicinity of the site (Native Vegetation of the Sydney Metropolitan Area V3.1 2016 (OEH). The vegetation in the central part of the property is mapped as Pittwater Spotted Gum Forest (S_WSF11, PCT 1214). A small section of the eastern end of the site is mapped as "Urban Exotic/Native".

2.6 Wildlife Corridors

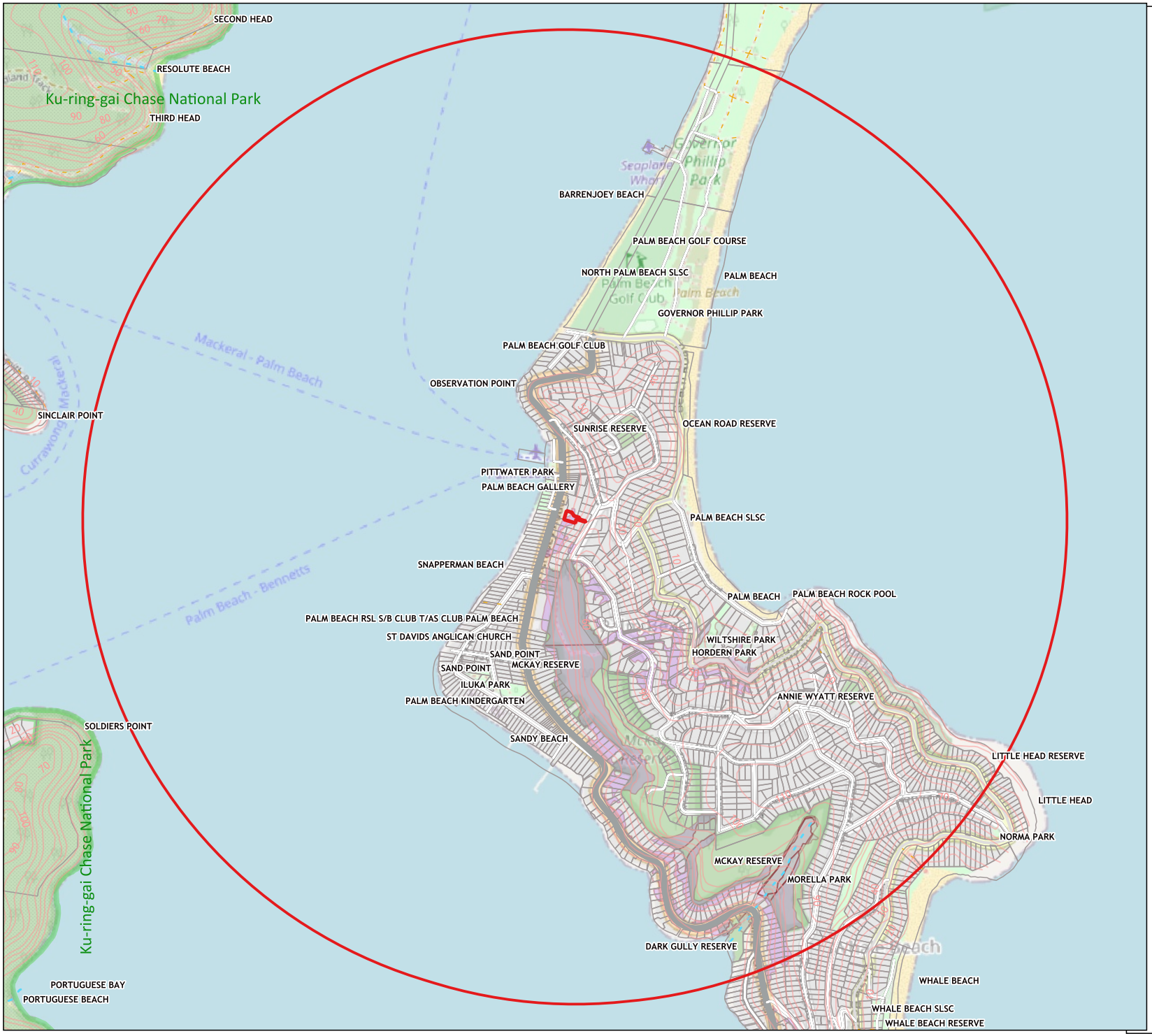
Wildlife corridors form important connections between remnant patches of bushland. They allow exchange of genetic material (pollen, seed, spores, animals etc.) between large areas of habitat in the landscape and fragmented remnants. They are very important in preventing local extinctions of flora and fauna.

Across the site north-south is a wildlife corridor which joins the site to McKay Reserve, a large bushland area to the south as can be seen on Map 4 and 3. There are tree canopies in the properties immediately adjacent to the site in the south and north which form a small part of the corridor.

2.7 Biodiversity Values Mapping

The site and the area of impact has recently been mapped as "within 90 days" mapping on the "Biodiversity Values" Map as can be seen on Maps 3 and 5. The 90 days will mature on the 24th of February 2021 and the site will become "Biodiversity Mapped" and a BDAR (Biodiversity Development Assessment Report, Biodiversity Conservation Act) report and BOS (Biodiversity Offsetting Scheme) offsetting will be required by any DA submitted on this land after this date.

This report will not be valid to be used for any DA after 24th of February 2021.



Legend

1110 Barrenjoey Rd, Palm Beach

Northern Beaches

pointofinterest for Aerial

Contour

10 metre

Arterial Road

Distributor Road

Local Road

Path

Watercourse

Watercourse Non Perennial

Cadastre

Biodiversity Values Map

Biodiversity Values V11 Nov 2020

Biodiversity Values

Biodiversity Values added in the last 90 days

National Park

Topographic Map (Source: OpenStreetMap)

Map 3
Locality, Topography and Features

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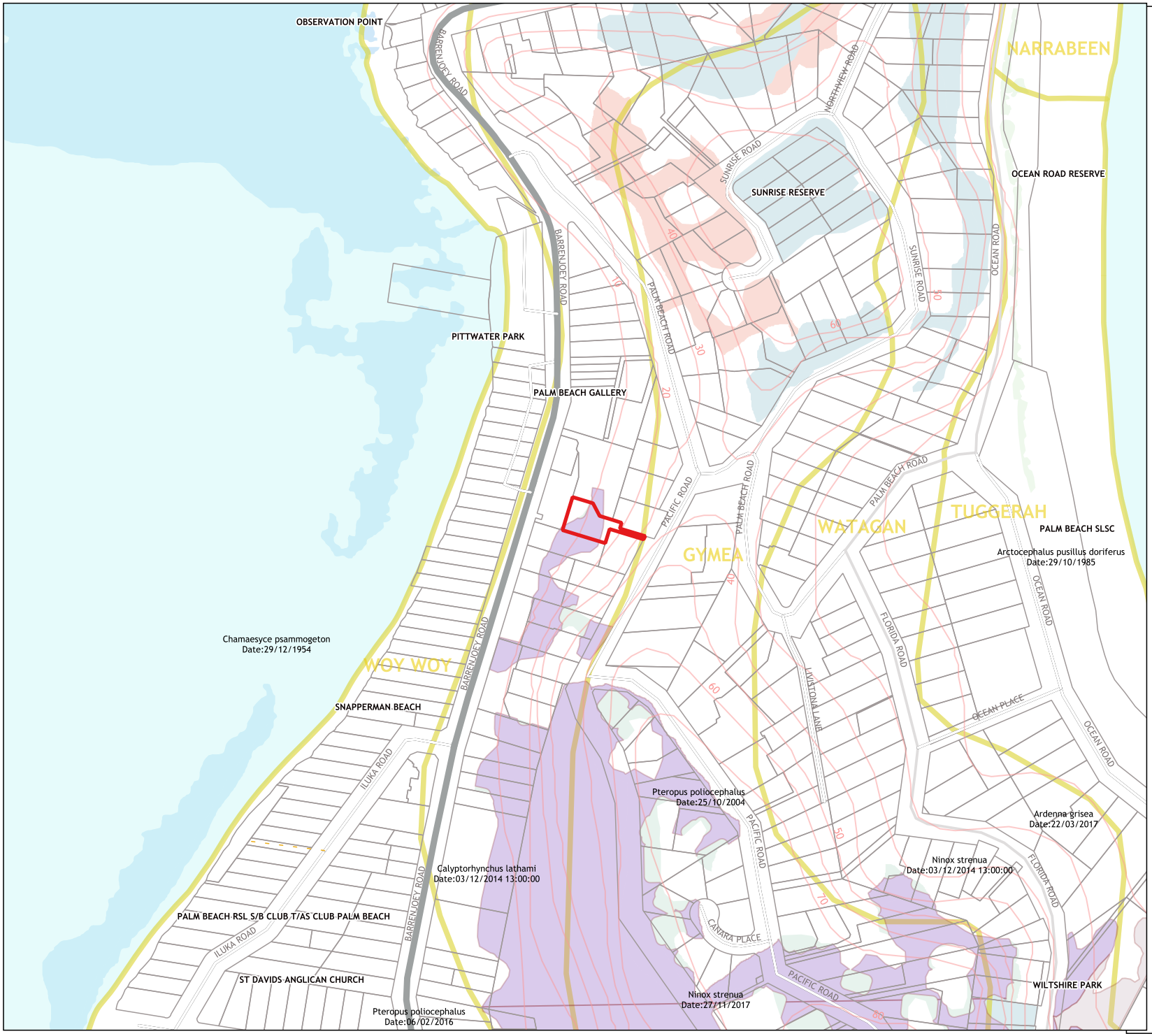
Date: 15/12/2020
Drawn by: Nicholas Skelton
Version 1
Projection: GDA 94 MGA 56

0 200 400 m



Legend

1110 Barrenjoey Rd, Palm Beach

Northern Beaches

pointofinterest for Aerial

Contour

10 metre

Cadastre

Biodiversity Values Map

Biodiversity Values V11 Nov 2020

Biodiversity Values

Biodiversity Values added in the last 90 days

Geology and Soils

Soil Type

Vegetation of Sydney v3 (OEH 2016)

Aquatic PCT Number: 1913
S_SW03: Seagrass Meadows

Forest PCT Number: 1776
S_DSF04: Coastal Enriched Sandstone Dry Forest

Rainforest PCT Number: 1833
S_RF07: Coastal Escarpment Littoral Rainforest

Scrub PCT Number: 772
S_HL05: Coastal Foredune Wattle Scrub

Tall Forest PCT Number: 1214
S_WSF11: Pittwater Spotted Gum Forest

Woodland/Forest PCT Number: 1776
S_DSF04: Coastal Enriched Sandstone Dry Forest

Map 4
Locality, Mapped Vegetation Types and Threatened Species

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Date: 15/12/2020
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Version 1
Projection: GDA 94 MGA 56

0 70 140 m

2.8 Targeted Threatened Species

Table 3: Targeted Threatened Flora Species

Genus and Species	Common Name	BC Act status	EPBC Act status	BioNet records within 5 km
Callistemon linearfolius	Netted Bottle Brush	V, 3		24
Cryptostylis hunteriana	Leafless Tongue Orchid	V, 2	V	1
Persoonia hirsuta	Hairy Geebung	E1, 3	E	5
Rhodamnia rubescens	Scrub Turpentine	E4A		12
Syzygium paniculatum	Magenta Lilly Pilli	E1	V	11

Table 4: Targeted Threatened Fauna Species

Class	Common Name	Genus and Species	BC Act status	EPBC Act status	BioNet records within 5 km
Amphibia	Red-crowned Toadlet	*Pseudophryne australis*	V,P		57
Aves	Barking Owl	*Ninox connivens*	V,P,3		15
Aves	Gang-gang Cockatoo	*Callocephalon fimbriatum*	V,P,3		1
Aves	Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V,P,2		44
Aves	Little Eagle	*Hieraaetus morphnoides*	V,P		3
Aves	Little Lorikeet	*Glossopsitta pusilla*	V,P		3
Aves	Masked Owl	*Tyto novaehollandiae*	V,P,3		3
Aves	Powerful Owl	*Ninox strenua*	V,P,3		192
Aves	Scarlett Robin	*Petroica boodang*	V, P		4
Aves	Superb Fruit-Dove	*Ptilinopus superbus*	V, P		3
Aves	Swift Parrot	*Lathmus discolor*	E1, P, 3	CE	5
Aves	Turquoise Parrot	*Neophema pulchella*	V, P, 3		4
Mammalia	Eastern Freetail-bat	*Mormopterus norfolkensis*	V,P		3
Mammalia	Eastern Pygmy Possum	*Cercartetus nanus*	V,P		10
Mammalia	Greater Broad-nosed Bat	*Scoteanax rueppelii*	V,P		2
Mammalia	Grey-headed Flying-fox	*Pteropus poliocephalus*	V,P	V	59
Mammalia	Koala	*Phascolarctos cinereus*	V,P	V	89
Mammalia	Koala in the Pittwater Local Government Area	*Phascolarctos cinereus*	E2, V, P	V	59
Mammalia	Large-eared Pied Bat	*Challinobolus dwyeri*	V,P	V	6
Mammalia	Little Bent-winged Bat	*Miniopterus australis*	V, P		24
Mammalia	Southern Brown Bandicoot (eastern)	*Isoodon obesulus obesulus*	E1,P	E	27
Mammalia	Southern Myotis	*Myotis macropus*	V,P		5
Mammalia	Spotted-tailed Quoll	*Dasyurus maculatus*	V, P	E	3
Mammalia	Squirrel Glider	*Petaurus norfolcensis*	V, P		1
Reptilia	Rosenberg's Goanna	*Varanus rosenbergi*	V,P		4

Key for BC Act Status

Status	Status	Status Notes
P	Protected Animal	Fauna not listed in Schedule 11 of the NPW Act 1974. Only shown for species that are listed in the other Acts
V	Vulnerable	Schedule 1, part 3, BC Act 2016, Likely to become endangered unless the circumstances & factors threatening its survival or evolutionary development cease to operate.
E1	Endangered	Schedule 1, part 2, BC Act 1995, Likely to become extinct in nature in NSW unless the circumstances and factors threatening its survival or evolutionary stop, in immediate danger of extinction
E2	Endangered Population	Schedule 1, part 2, division 4, BC Act 2016, Population where, numbers have been reduced to such a critical level, or its habitat has been so drastically reduced, that it is in immediate danger of extinction
3	Category 3 sensitive species	Species are classed as of medium sensitivity, and provision of precise locations would subject the species to medium risk from threats such as collection/deliberate damage.

Key for EPBC Act Status

Code	Description	Definition under the EPBC Act 1999, and Migratory Birds agreement.
C	CAMBA	China-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Australia and the Government of the People's Republic of China for the protection of Migratory Birds and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).
E	Endangered	Refers to a native species is eligible to be included in the endangered category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (Subdivision A of Division 2 of Part 13, Commonwealth EPBC Act 1999).
J	JAMBA	Japan-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).
K	ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Australia and the Government of the Republic of Korea for the protection of Migratory Birds and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).
V	Vulnerable	Refers to a native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (Subdivision A of Division 1 of Part 13, Commonwealth EPBC Act 1999).
X	Extinct	Refers to a native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died (Subdivision A of Division 1 of Part 13, Commonwealth EPBC Act 1999).

2.9 Field Survey

The field survey was carried out on the 7th of December 2020 by four experienced ecologists over 6 person-hours. The weather was warm, sunny, and the temperature was 30ºC. During the field surveys, all sections of the study area and some of the surrounding land were traversed on foot. The study area was searched for the presence of threatened flora and fauna species and their habitats. Endangered Ecological Communities were assessed for likelihood of occurrence.

The field survey involved the following procedures:

- Initial familiarisation with the study area and its extent and surrounding land;
- Assessment of the physical characteristics of the study area and location of the proposal;
- Identification and recording of all flora species using a random meander across the whole of the property;
- Identification of fauna through sightings, calls and potential habitat;
- Search for scats, remains, nests, dreys, bones, feathers, fur, diggings, scratches, tracks, owl white-wash and food sources. Examination of trees for scratchings, sap-feeding notches and hollows;

- Classification of any vegetation into communities according to their structural and floristic attributes;
- Assessment of the habitats within the Study Area;
- Detailed search for targeted Threatened Species;
- Assessment of the extent of disturbance and weed invasion;
- Photography of the study area;

2.9.1 Determining Plant Community Type

The plant community (vegetation) types within, and adjacent to, the Site were classified using a 4-step process that involved online databases (VIS), spatial analysis, correlation of characteristic species lists (floristic analysis) and comparison to structural and environmental parameters from published classifications. The vegetation types were assessed for similarity to threatened ecological community determinations listed in the BC Act, the VIS database and the accompanying descriptions for the most up to date vegetation mapping in the locality.

The vegetation within the study area was classified using structural and floristic indicators and was compared with threatened ecological communities listed in the BC Act 2016 and with the document titled The Native Vegetation of the Sydney Metropolitan Area V3 Volume 2 (OEH 2016) and the Bionet PCT vegetation type database. A detailed description of the method to determine the presence of Threatened Ecological Communities (EEC) within the study area was determined is given in Section 2.1.

2.9.2 Vegetation Integrity Assessment

One Biodiversity Assessment Method (BAM) survey plot was recorded, to quantify vegetation integrity including the following: one 400 m^2 plot (20 m x 20 m), used to assess the composition and structure; one 1000 m^2 (20 m x 50 m) plot, used to assess functional attributes of the site; and five 1 m^2 subplots nested within the 1000m^2 plot were used to assess the average percentage leaf litter cover.

2.9.3 Composition and Structure

The floristic composition and relative cover were surveyed in one 400 m^2 plot. Information for each plant species within each plot was recorded including species name, growth form, and the percent projected foliage cover across the plot for each species rooted in or overhanging the plot. The floristic composition (plant species that occur on the site) is Table 6.

This information was then used to determine the Plant Community Types (PCT) present (or most likely PCTs) and the presence of any endangered ecological communities (EECs) listed in schedule 2 of the BC Act 2016 and the composition and structure of the native vegetation.

2.9.4 Threatened Fauna Habitat Survey

Fauna species were actively searched for by examining rock crevices, searching for tree hollows and looking for animals and/or for signs of use by animals. Elliott, cages or 'harp' traps were not used to reduce any stress to animals. Hollows were investigated internally using an endoscopic camera attached to a pole where necessary.

2.10 Description of the Study Site

The Site is a 1149 m^2 south east sloping block with the access way being a shared driveway from Barrenjoey Road. The study site is currently vacant with no formal landscaping or gardens. There is a patch of mown grass along the western boundary of the site, and access to the eastern part of the site is currently from a wooden staircase. There are large, scattered remnant native trees and boulders throughout the site. There is an exposed pipe along the eastern boundary of the site. The features of the site are shown on Map 5.

2.10.1 Disturbance History

This site has a 100 year history of disturbance to the vegetation as it was originally part of the grounds of Barrenjoey House (the building below to the west). The house had terraced gardens on this property as is evident in the photo below.

Barrenjoey House was originally built in 1920 by Albert Verrills, as a restaurant and guest house for the Resch family. It was the first address in Palm Beach to install a telephone, with the number "1".

By the 1930's accommodation in Palm Beach was sought after, as the area became a popular Summer holiday spot.

The guest house was the choice of many, including a former Prime Minister, Mr Billy Hughes, who enjoyed using the surrounding lawns to practice his golf.

During World War 2, Barrenjoey House became a favoured choice service men and women to enjoy.

In the early 1980's, Barrenjoey House was purchased and restored by the previous owners Robert and Ian Gray. They retained the property until 2001, when Brendon and Jenny Barry purchased and substantially renovated the house.

Barrenjoey House was taken over by The Boathouse Group in June 2018, and after being refurbished, opened in December 2018.

For more information about the history of Barrenjoey House and the Palm Beach area, please see here.

http://www.pittwateronlinenews.com/barrenjoey-house-history.php

There has been more recent disturbance in the form of slashing of the shrub layer and understorey over the entirety of the site as can be seen in photos 1-6. This is likely to have reduced the amount of species recorded and the % cover scores for the vegetation recorded during the field survey.

It is likely all of the plant species removed will regrow within the next year and the vegetation cover will be returned within 2 years.

2.10.2 Fire History

The vegetation on the site shows signs of not having been burnt in decades. There have been no fires recorded on the site in recent history.

2.10.3 Existing Habitat

There are 20 local native and planted trees on the site which provide arboreal foraging and roosting habitat for native birds, habitat for possums, and potential foraging habitat for several Threatened species. Two trees on the site and one tree on the southern boundary contain small to medium hollows suitable for small arboreal mammals, birds and micro-bats. There is a loose rock wall and medium and large boulders scattered throughout which provide suitable habitat for a range of reptile species.

The extant vegetation in the reserve to the south and the National Park to the north of the site is good quality habitat for a range of Threatened and non-threatened fauna and flora. This site itself is likely to be part of a large foraging home range for common and threatened birds, small reptiles, mammals and microbats but does not contain any specific or important habitat for threatened species.

Nearby habitat and bushland areas including National Parks are shown in Maps 2 and 3. The habitat on this site is shown on Maps 1, 4, 5 and 6. Habitat features on the site are shown in Photos 1 - 6.

2.11 Vegetation Integrity Assessment

2.11.1 Function/Habitat Value

The results for tree width diversity, log length, and rock, canopy and ground cover for the 1000 sqm plot are recorded in Table 5.

Table 5: Fauna habitat function summary for plots

Plot 1 Function Results		
Tree Stem Size Class		**Number of large trees (>50 cm)**
Width Class (cm)		10
<5	absent	**Coarse Woody Debris Length Total (m)**
5 to 9	absent	11.13
10 to 19	absent	**% Rock cover**
20 to 29	present	30
30 to 49	present	**Canopy cover (centre of plot)**
50 to 79	present	74%
80+	present	**Avg. Leaf Litter % Cover (5x1m^2 plots)**
		78%

2.11.2 Composition and Structure

A total of 42 plant species were recorded on site, of which 16 (38%) are local native species, 4 (10%) have been planted and the remaining 22 (52%) are weed species. Of the local native species, four were tree species, two were local native ferns, three were shrubs and the rest of the local native species were herbs, sedges or grasses. This number of species is very low and reflects the extensive disturbance history of the site. The list of species is Table 6 which shows each species' scientific name, common name, family, growth form and status.

The tree canopy is dominated by *Corymbia maculata* with some *Glochidion ferdinandi, Phoenix canariensis* and *Pittosporum undulatum* trees scattered throughout.

Table 6. Plant Species on the Sit

1110 Barenjoey Rd, Palm Beach

10 December 2020

by Nicholas Skelton, GIS Environmental Consultants

GIS Environmental Consultants
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Species Richness Inside Plots and Additional Species Within the Site, Summarised by Growth Form and Status

Row Labels	Additionals Local Native Species	Additionals Planted	Additionals Weed	Plot 1 Local Native Species	Plot 1 Planted	Plot 1 Weed	Total
Fern				1		1	**2**
Fork Fern				1			**1**
Grass		1	3	2		1	**7**
Herb	1	1	5	3			**10**
Palm						1	**1**
Sedge			2				**2**
Shrub			6	3			**9**
Tree		1	1	4	1	1	**8**
Vine			**1**	**1**			**2**
Total	**1**	**3**	**18**	**15**	**1**	**4**	**42**

Cover % of Native Plants in each Growth Form Within Plot

Fern	0.1
Fork Fern	0.1
Grass	0.8
Herb	1.1
Palm	
Sedge	
Shrub	1.1
Tree	72
Vine	0.1
Total	**75.3**

Plot	% cover	Genus and Species	Family	Habit	Order	Common Name	Status
Plot 1		Araucaria cunninghammia	ARAUCAREACEAE	Tree	DICOTYLEDON	Hoop Pine	Planted
Plot 1	0.5	Breynia oblongifolia	EUPHORBIACEAE	Shrub	DICOTYLEDON	Breynia	Local Native Species
Plot 1	0.1	Cayratia clematidea	VITACEAE	Vine	DICOTYLEDON	Slender Grape	Local Native Species
Plot 1		Cinnamomum camphora	LAURACEAE	Tree	DICOTYLEDON	Camphor Laurel	Weed
Plot 1	0.5	Commelina cyanea	COMMELINACEAE	Herb	MONOCOTYLEDON	Creeping Christian	Local Native Species
Plot 1	45	Corymbia maculata	MYRTACEAE	Tree	DICOTYLEDON	Spotted Gum	Local Native Species
Plot 1	0.7	Cynodon dactylon	POACEAE	Grass	MONOCOTYLEDON	Common Couch	Local Native Species
Plot 1	0.1	Davallia pyxidata	DAVALLIACEAE	Fern	FERN	Hares Foot Fern	Local Native Species
Plot 1	0.5	Dichondra repens	CONVOLVULACEAE	Herb	DICOTYLEDON	Kidney Weed	Local Native Species
Plot 1		Ehrharta erecta	POACEAE	Grass	MONOCOTYLEDON	Ehrharta	Weed
Plot 1	2	Ficus rubiginosa	MORACEAE	Tree	DICOTYLEDON	Port Jackson Fig	Local Native Species
Plot 1	23	Glochidion ferdinandi var. ferdinandi	EUPHORBIACEAE	Tree	DICOTYLEDON	Cheese Tree	Local Native Species
Plot 1	0.5	Hibiscus heterophyllus spp. Heterophyllus	MALVACEAE	Shrub	DICOTYLEDON	Native Rosella	Local Native Species
Plot 1		Nephrolepis cordifolia	DAVALLIACEAE	Fern	FERN	Fishbone Fern	Weed
Plot 1	**0.1**	Notelaea ovata	OLEACEAE	Shrub	DICOTYLEDON	Mock Olive	Local Native Species
Plot 1	0.1	Oplismenus aemulus	POACEAE	Grass	MONOCOTYLEDON	Basket Grass	Local Native Species
Plot 1		Phoenix canariensis	ARECACEAE	Palm	MONOCOTYLEDON	Canary Island Palm	Weed
Plot 1	2	Pittosporum undulatum	PITTOSPORACEAE	Tree	DICOTYLEDON	Sweet Pittosporum	Local Native Species
Plot 1	0.1	Psilotum nudum	PSILOTACEAE	Fork Fern	FORK FERN		Local Native Species
Plot 1	0.1	Viola hederacea	VIOLACEAE	Herb	DICOTYLEDON	Native Violet	Local Native Species
Additional		Oxalis sp.	OXALIDACEAE	Herb	DICOTYLEDON		Local Native Species
Additional		Acacia saligna	FABACEAE	Shrub	DICOTYLEDON	Golden Wreath Wattle	Weed
Additional		Agapanthus praecox	AMARYLLIDACEAE	Herb	MONOCOTYLEDON	Agapanthus	Planted
Additional		Asparagus aethiopicus	ASPARAGACEAE	Herb	MONOCOTYLEDON	Asparagus Fern	Weed
Additional		Bidens pilosa	ASTERACEAE	Herb	DICOTYLEDON	Cobbler's Pegs, Pitchforks	Weed
Additional		Carduus sp.	ASTERACEAE	Herb	DICOTYLEDON	Thistle	Weed
Additional		Cyperus brevifolius	CYPERACEAE	Sedge	MONOCOTYLEDON	Mullumbimby Couch	Weed
Additional		Cyperus congestus	CYPERACEAE	Sedge	MONOCOTYLEDON		Weed
Additional		Ipomea indica	CONVOLVULACEAE	Vine	DICOTYLEDON	Morning glory	Weed

Plot	% cover	Genus and Species	Family	Habit	Order	Common Name	Status
Additional		Ligustrum sinense	OLEACEAE	Shrub	DICOTYLEDON	Privet - narrow leaved	Weed
Additional		Mangifera indica	ANACARDIACEAE	Tree	DICOTYLEDON	Mango	Planted
Additional		Morus alba	MORACEAE	Tree	DICOTYLEDON	White Mulberry	Weed
Additional		Ochna serrulata	OCHNACEAE	Shrub	DICOTYLEDON	Ochna, Mickey Mouse Plan	Weed
Additional		Paspalum dilatatum	POACEAE	Grass	MONOCOTYLEDON	Paspalum	Weed
Additional		Pennisetum clandestinum	POACEAE	Grass	MONOCOTYLEDON	Kikuyu	Planted
Additional		Senna floribunda	CAESALPINIOIDEAE	Shrub	DICOTYLEDON	Cassia	Weed
Additional		Setaria palmifolia	POACEAE	Grass	MONOCOTYLEDON	Palm Grass	Weed
Additional		Sida rhombifolia	MALVACEAE	Herb	DICOTYLEDON	Paddy's Lucerne	Weed
Additional		Sonchus oleraceus	ASTERACEAE	Herb	DICOTYLEDON	Sow Thistle	Weed
Additional		Stenotaphrum secundatum	POACEAE	Grass	MONOCOTYLEDON	Buffalo Grass	Weed
Additional		Strelitzia reginae	MUSACEAE	Shrub	DICOTYLEDON	Strelizea	Weed
Additional		Toxicodendron succedaneum	ANACARDIACEAE	Shrub	DICOTYLEDON	Rhus tree	Weed

Photo 1: In the centre of the western side of the property, looking east

Photo 2: Mid-site, looking east

Photo 3: Southern boundary of site, looking east

Photo 4: Midway along the southern side, looking west

Photo 5: Mid-site, looking north

Photo 6: Mid-site, looking west

2.12 Non-threatened Fauna

During the field survey evidence was found of the following fauna species using the study area:

Table 7: Non-threatened Fauna Found

Common Name	Scientific Name	Evidence
Birds		
Australian King Parrot	*Alisterus scapularis*	Observed
Common Gull	*Larus canus*	Observed
Noisy Miner	*Manorina melanocephala*	Observed
Rainbow Lorikeet	*Trichoglossus haematodus*	Observed
Sulphur-crested Cockatoo	*Cacatua galerita*	Observed
Mammals		
Long-nosed Bandicoot	*Perameles nasuta*	Diggings
Reptiles		
Garden Skink	*Lampropholis guichenoti*	Observed

2.13 Threatened Species

No local threatened flora or fauna species were observed on the site. The extant vegetation beyond the southern boundary is considered to be good habitat for a range of species. It is likely that wide ranging threatened fauna species that occur in the locality use the site on occasion, however, the proposal will not harm any important habitat such as breeding hollows and the habitat on the site is only foraging habitat or a corridor. The likelihood of targeted Threatened flora and fauna species occurring on the study area and potential impacts to the target Threatened flora and fauna species is assessed in Tables 8 and 9.

2.14 Habitat Trees

Two trees within the property and one tree on the neighbouring property at the southern boundary were found to contain hollow small to medium sized hollows. It is not likely that these trees will be impacted by the proposal. This report contains recommendations to retain all hollows on site where possible.

The other *Corymbia maculata, Glochidion ferdinandi, Phoenix canariensis* and *Pittosporum undulatum* trees on the site are in good condition and fauna may utilise the site for foraging as a part of a larger home range.

2.15 Ecological Communities Present on the Site

2.15.1 Method for determining the Plant (vegetation) Community Types (PCT) on the Site

A 4-step process was used to determine the Plant (vegetation) Community Types (PCT) on the Site:

- **Step 1: Application of the DPIE/EES Vegetation Information System (VIS)**

  https://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx

  Classification using IBRA region, Keith (2004) vegetation formation and/or class, vegetative structure and dominant species are used to make a short list. This list is then refined using the following methods.

- **Step 2: Spatial (GIS) Analysis - Previous mapped Vegetation Types**

Spatial analysis using the best available mapped data including but not limited to: vegetation mapping, topography, hydraulic features and soils. See Maps 3 and 4. The field verified vegetation boundaries were extrapolated using spatial patterns of environmental features. Map 2 shows the distribution and the amount of the vegetation types that have been mapped (Vegetation of the Sydney Metropolitan Area, 2016) in the locality. Environmental habitat features such as soil type, topography and drainage are also shown on Map 3. Vegetation mapping has inherent errors such as classification accuracy which is limited due to the amount of field verification that was carried out when they were made, the spatial accuracy of the mapping and how old the mapping is. There are often different classification interpretations and the newest is not necessarily the best. Vegetation maps do not provide a sufficient level of spatial accuracy for the assessment of the impact at the scale of this proposal but are useful in determining the ecological communities that are likely to occur in the vicinity. These maps are based on aerial photography and normally little local field verification. They were produced for regional planning and are often not of an appropriate scale to be relied on for a DA proposal. Fieldwork is necessary to determine the Site-specific accurate vegetation mapping. The SMCMA mapping was also used to determine the amount of Endangered Ecological Communities within the 100 ha and 1000 ha localities around the site.

- **Step 3: Classification using 'Vegetation of the Sydney Metropolitan Area' 2016**

  Classification using positive diagnostic plant species, description of the environmental requirements and the recognised distribution. If the Site is outside of the mapping extent of the Sydney Metropolitan Area and the vegetation does not fit any of the communities described in the document than any descriptions that accompany the most relevant vegetation mapping will be used.

- **Step 4: Correlation and Comparison to EEC determinations**

  The similarity of the vegetation on the Site to the description of the Threatened Ecological communities in the Determinations was assessed by correlation with the listed characteristic species and comparison to the environmental descriptors in the relevant determinations. The NSW BC Act lists Threatened Ecological Communities (TECs) that are likely to become extinct in nature unless the circumstances and factors threatening their survival cease to operate. The Threatened communities that have been mapped in the locality are shown on Map 4. These factors were used to determine Threatened Ecological Communities and species to target during the field survey.

  Correlation: Correlations between the species that occur in the Study Area and the listed characteristic species for the Endangered Ecological Community listed in the Final Determinations for the TEC.

  Comparison: Comparison of the ecological features on the Site to the environmental description in the legal definition of the Threatened Ecological Community in the Final Determination in BC Act and the EPBC Act (1999). This comparison is essential when determining if the type of ecological community that occurs within a study area is an endangered community. Not all the sections of the determinations need to apply to the Study Area the earlier sections are more important and should be given more weight (Preston and Adams).

2.15.2 Result of Step 1, Application of the DPIE/EES Vegetation Information System (VIS)

The dominant species, IBRA region and the Keith (2004) vegetation formation were entered into the VIS database.

The PCTs that mostly likely fit with the vegetation at that will be impacted:

1214 - Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion

Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin (hereafter PWSGF) is in the Southern Lowland Wet Sclerophyll Forests class, within the Wet Sclerophyll Forests (Grassy sub-formation). The site is currently mapped as "Cleared" on the NSW Extant Native Vegetation Map (V2, Keith and Simpson 2006) and the vegetation on site does not meet the description of either the class or formation.

The vegetation in the central part of the property is mapped as PWSGF community (S_WSF11, PCT 1214) on the Native Vegetation of the Sydney Metropolitan Area Map (V3.1, OEH 2016). A small section of the eastern end of the site is mapped as "Urban Exotic/Native".

2.15.3 Result of Step 2, Spatial (GIS) Analysis

The site is currently mapped as "Cleared" on the NSW Extant Native Vegetation Map (V2, Keith and Simpson 2006). The vegetation in the central part of the property is mapped as Pittwater Spotted Gum Forest (S_WSF11, PCT 1214) on the Native Vegetation of the Sydney Metropolitan Area Map (V3.1, OEH 2016). A small section of the eastern end of the site is mapped as "Urban Exotic/Native".

2.15.4 Result of Step 3, Classification using 'Vegetation of the Sydney Metropolitan Area' 2016

The potential PCTs at the Site that were obtained using the VIS were compared to the vegetation community profiles in the Vegetation of the Sydney Metropolitan Area V3.1 (2016). The vegetation in the central part of the property is mapped as PWSGF (S_WSF11, PCT 1214). A small section of the eastern end of the site is mapped as "Urban Exotic/Native". The site has had a long history of disturbance and as result the structure of the native vegetation has been altered and many of the native species have been replaced by garden species and weeds.

The positive diagnostic test for the candidate communities is outlined below. There were not enough native species with the plot for the positive diagnostic tests to be informative.

PCT	Number of Native Species Required	Number of Positive Diagnostic Species Required	Number of Natives in at the site	Number of Positive Diagnostic at the site	Result
1214	38	21	15	5	Uninformative

2.15.5 Result of Step 4, Correlation and Comparison to EEC determinations

Pittwater Spotted Gum Forest is characterised by underlying Narrabeen sediments and exposed sandstone rock that is prevalent at this site. The Final Determination for Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin by the NSW Scientific Committee contains 14 sections, of which Point 8 is the most useful: *"The structure of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion was originally open-forest however, it now exists outside of reserves as woodland or remnant trees with few large stands remaining."*

The vegetation on site has low floristic similarity with PWSPF however given Point 8 of the Final Determination and the high number of *Corymbia maculata* trees on the site, the vegetation at the site is likely to be Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion.

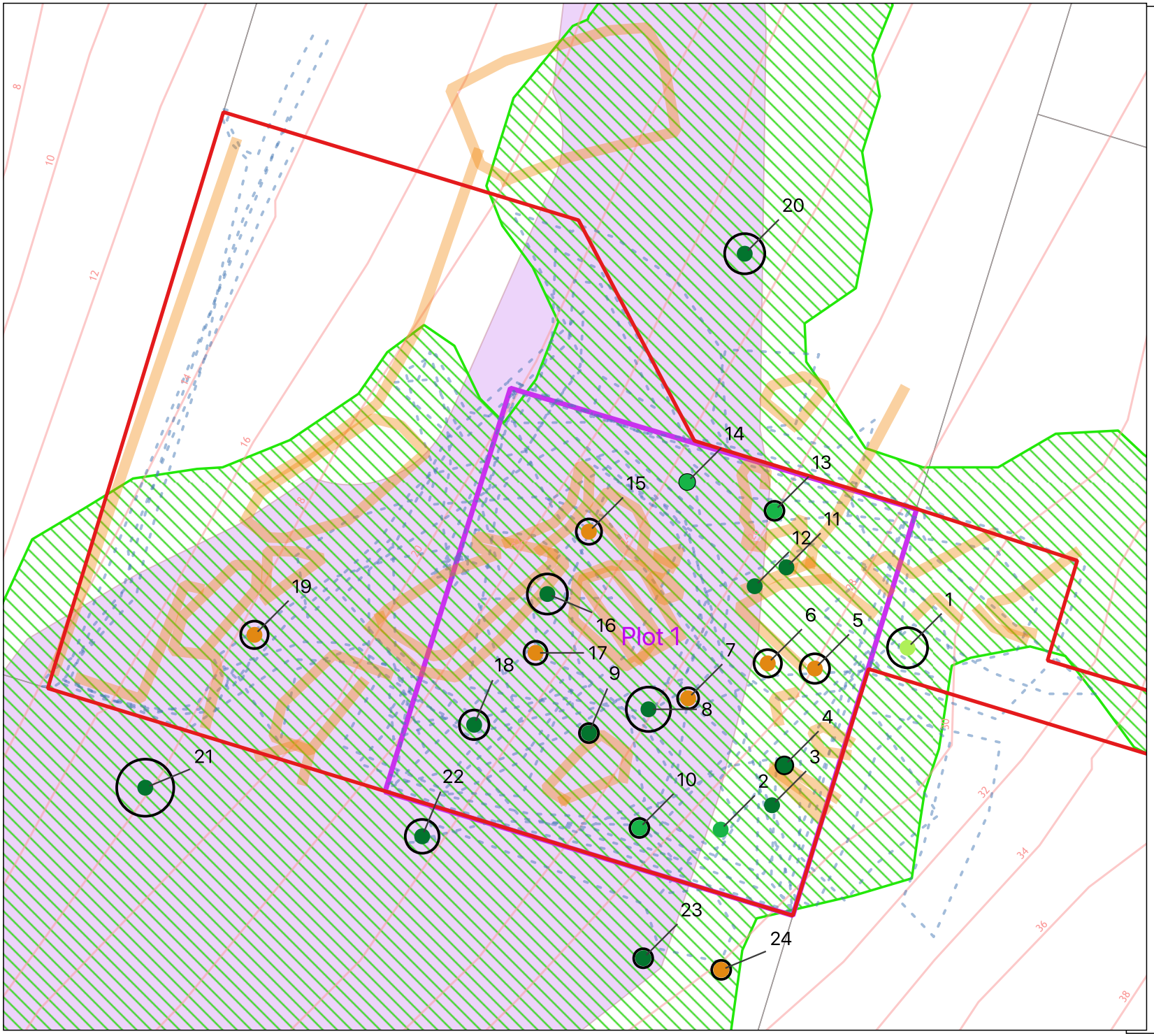
2.15.6 Conclusion -Vegetation Type on the Site

The vegetation at the site has been historically disturbed however given the high number of *Corymbia maculata* trees on the site, the vegetation at the site is likely to be Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion. **A 5-part Assessment of Significance is required for this Endangered Ecological Community**.

Map 6 shows the extent of native vegetation canopy at the Site in a green stripe and the 220 m^2 area that will have the canopy thinned (orange solid colour) and the 17m^2 area that will have the native vegetation canopy removed (Red solid colour).

Map 7 shows the extent of the PWSGF EEC on the Site and in a magenta stripe and the 46 m^2 area that will have the canopy thinned (orange solid colour) and the 79 m^2 area that will have the PWSGF EEC removed (Red solid colour).

The PWSGF EEC that will not be disturbed by the proposal is shown by the magenta hatching on site (Map 7).



Legend

1110 Barrenjoey Rd, Palm Beach

Tree Status

PWSGF EEC Characteristic Species

Local Native

Not Local Native

Weed of Regional Concern

Tree Trunk x4

Rock

Search Path

Plot

Contour

2 metre

Native Vegetation From Aerial

Northern Beaches

Cadastre

Biodiversity Values Map

Biodiversity Values V11 Nov 2020

Biodiversity Values added in the last 90 days

Map 5
Site Ecological Features and Field Survey

GIS Environmental Consultants
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Date: 21/12/2020
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Version 1
Projection: GDA 94 MGA 56

0 4 8 m

3 Impact Assessment

3.1 Avoidance and Minimisation of Impact

The Biodiversity Conservation Act 2016 requires that all developments "Avoid" then "Minimise" ecological impacts. Once all possible impact minimisation and avoidance has been undertaken, then offsetting can be used to offset the remaining impacts of the proposal (see Map 6) on the environment.

The main ecological constraints that have been identified on the site are the native and PWSGF EEC *Corymbia maculata* trees which are characteristic species of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Endangered Ecological Community, and fragmentation of habitat and loss of connectivity with the nearby bushland reserve. These trees occur in the central part of the site as can be seen on Maps 6 and 7. The architect has designed the proposal to avoid trees, however placing the house to avoid the central ecological constraint is difficult as can be seen in Maps 6 and 7.

The proposal will remove native vegetation and PWSGF EEC on the site. The construction will result in the removal of 14 trees, of which 7 are local native species of which 4 are characteristic PWSGF EEC characteristic species (*Corymbia maculata*). The extent and location of the impact of this native and PWSGF EEC canopy removal can be seen on Maps 6 and 7 respectively.

The second dwelling, driveway and pool do not require the removal of any native trees.

Due to the slope of the site, particular attention will need to be paid to sediment control during construction and for the life of the development. This will need to ensure that sediment, nutrients, or exotic plant seeds do not leave the site and harm the adjacent ecological values.

3.2 Description of Impacts

3.2.1 Vegetation and Tree Loss

There is currently no shrub layer or groundcover currently existing on the site. The impact to native and PWSGF EEC is only in the tree canopy.

The PWSGF EEC that will not be disturbed by the proposal is shown by the magenta hatching on site (Map 7).

The proposal will remove native vegetation and PWSGF EEC on the site. The construction will result in the removal of 14 trees, of which 7 are local native species of which 4 are characteristic PWSGF EEC characteristic species (*Corymbia maculata*). The extent and location of the impact of this native and PWSGF EEC canopy removal can be seen on Maps 6 and 7 respectively.

The second dwelling, driveway and pool do not require the removal of any native trees.

The Arborist report describes 19 trees identified by the surveyor on the site, and five in the adjacent lots to the north and south.

The arborist report (Rain Tree Consulting 2020) recommends the removal of 14 trees:

- 7 that are pest species that are exempt from requiring permission to be removed in the Northern Beaches Council area (Trees 5, 6, 7, 10, & 15, 17 and 19) (1 x *Pittopsporum undulatum Sweet pittosporum a local native tree,* 5 x *Phoenix canariensis Canary Island Date Palms,* 1 x *Cinnamomum camphora, Camphor Laural*) and
- 7 trees that will need to be removed to accommodate the proposal (Trees 2, 3, 4, 11, 12, 13, 14). These are local native species (4 x *Corymbia maculata Spotted Gum* and 3 x *Glochidion ferdinandi Cheese Tree*).
- Trees 1, 8, 9, 16 and 18 (1x Araucaria heterphylla, Norfolk Island Pine, 4 x *Corymbia maculata Spotted Gum* are within the property and are to be retained.

The arborist report determines that there are no trees listed as being of Significant or Heritage importance.

The location of the trees to be removed and retained are shown on Map 6.

3.2.2 Impact on Wildlife Corridor

The site has low wildlife corridor value as it is at the end of the corridor. The native vegetation at the site is connected to the native vegetation in McKay Reserve to the south through the vegetation in the properties to the south. There is little native vegetation to the west, north and east of the site. The proposal will result in the removal of 14 of the 20 trees identified by the arborist on site. There are extensive tree canopies and native vegetation in the properties to the south of the site. It is unlikely that the proposal will impact the movement of species that currently use the site as part of their home range and as a wildlife corridor including birds and bats, as these are all highly mobile species.

3.2.3 Loss of Tree Hollows

No tree hollows will be lost.

3.2.4 Potential Indirect Impacts

The change in soil moisture levels may impact the viability of trees to be retained, in the future.

3.2.5 Impact to Threatened Species

The site does not contain any important habitat for Threatened species that occur in the locality. The site contains potential foraging habitat for highly mobile species with large home ranges such as large forest owls and microbats.

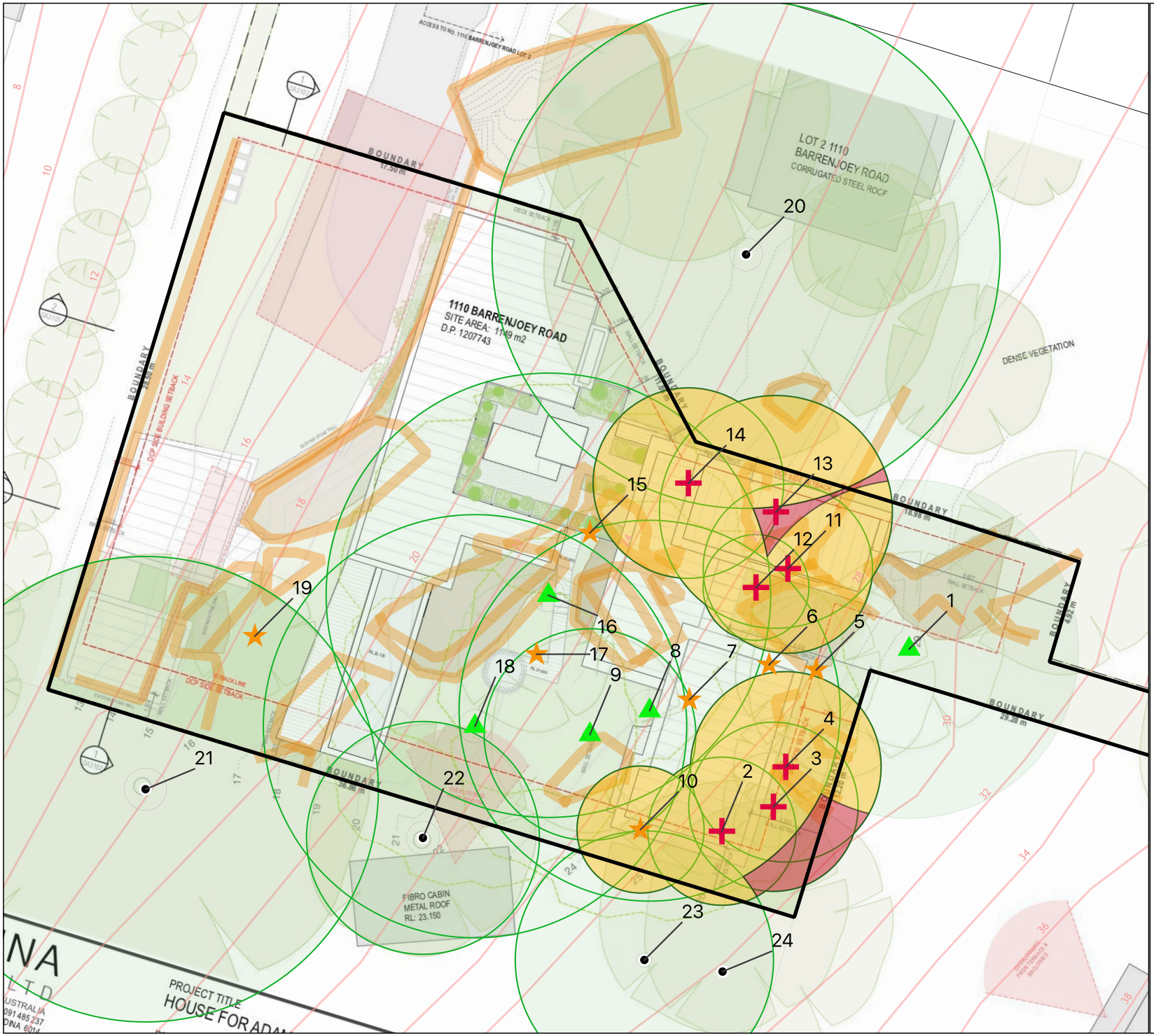
See Tables 5 and 6 below for the assessment of potential impacts to other Threatened flora and fauna species.

3.2.6 Indirect Impacts and potential impacts during occupation

The indirect impacts of the proposal include;

- Increased weed and exotic growth due to absence of weed control and inappropriate planting at the site or clearing of native vegetation.

Recommendations are made in the report to help reduce the spread of weeds and impacts during ongoing management at the property.



Legend

- 1110 Barrenjoey Rd, Palm Beach
- Native Tree Trunks DBH x4

Native Vegetation Impact

- Canopy Removed 17 sqm
- Canopy Thinned 220 sqm
- Canopy Unchanged
- Canopies of Native Trees Only

Tree Impact All Trees

- Stay
- Stay, Outside Property
- Remove, Exempt from needing approval
- Remove, Due to Proposal
- Rock Outline or Wall

Contour

- 2 metre

Map 6
Site, Proposal and Impacts

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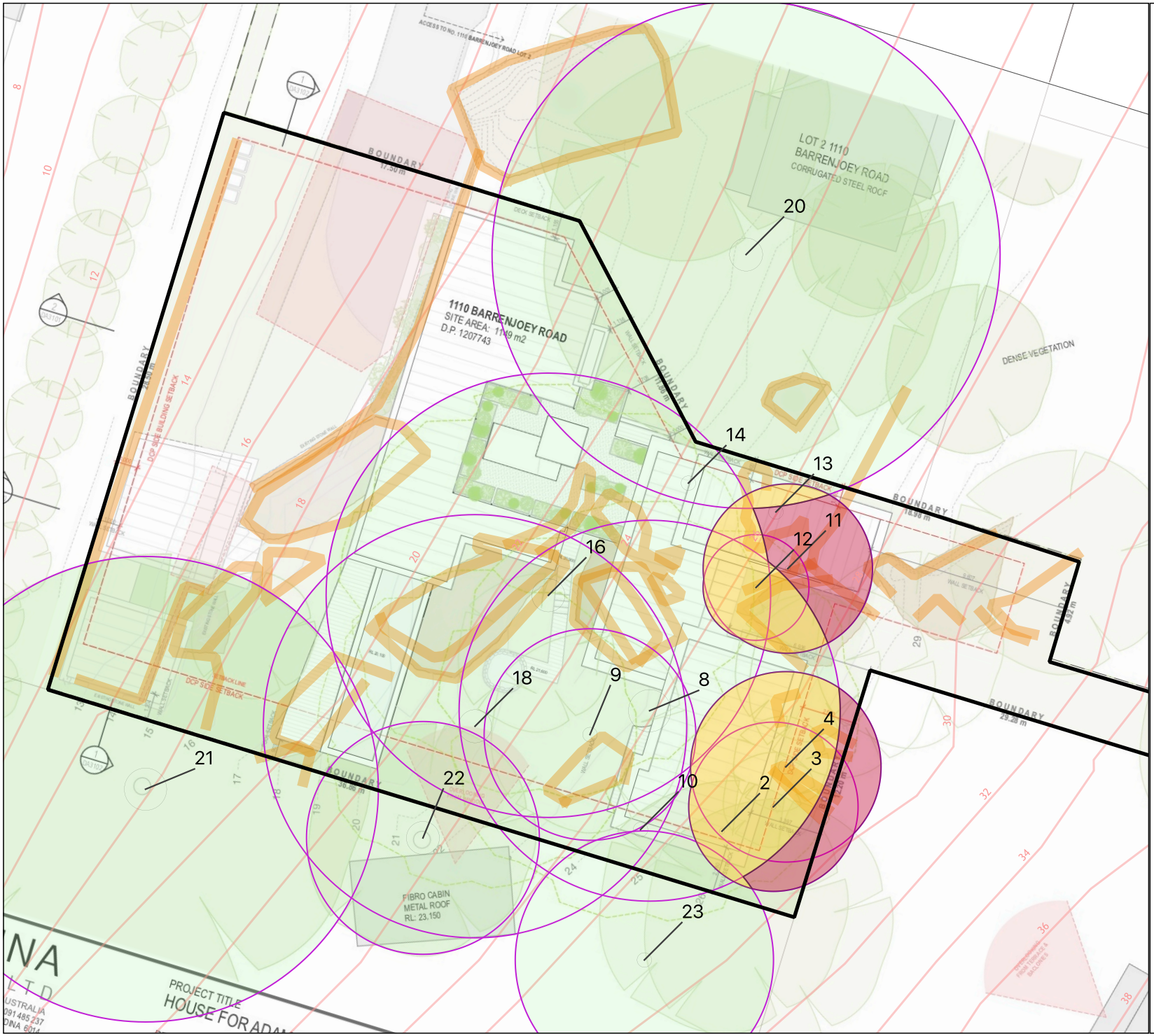

Legend

- 1110 Barrenjoey Rd, Palm Beach

PWSGF EEC Vegetation Impact

- PWSGF Canopy Removed 46 sqm
- PWSGF Canopy Thinned 79 sqm
- PWSGF Canopy Unchanged
- Canopy of PWSGF EEC Tree

Native Tree Trunks DBH x4

- Rock Outline or Wall

Contour

- 2 metre
- Cadastre

Map 7
Site, PWSGF Impacts

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3.3 Flora

3.3.1 Assessment of likely occurrence and impacts to Threatened Flora Species (determining candidate species)

The likelihood of targeted threatened flora species occurring on the study area is assessed in the table below.

Table 8: Habitat Suitability for Targeted Threatened Flora Species

Scientific Name	Habitat Preference	Likelihood of Occurrence
Callistemon linearifolius	This species is mainly confined to Hawkesbury Sandstone, however isolated specimens have been observed between Sydney and Nelson Bay. Found in damp places in woodland and sclerophyll forest usually in gullies. (Warringah Pittwater Bush Fire Management Plan, 2000).	**Historic Records:** No records within 1 km of the site. **Local Occurrence**: Low likelihood. Not found during survey. Site was adequately searched. **Habitat Value**: Low quality habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Cryptostylis hunteriana	Known from a range of communities, including swamp-heath and woodland. Also occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black She Oak (*Allocasuarina littoralis*). Prefers open areas in the understorey and is often found in association with the Large Tongue Orchid (*C. subulata*) and the Tartan Tongue Orchid (*C. erecta*). Cryptic and seasonal.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Low likelihood. Not found during survey. Site was adequately searched. **Habitat Value:** Low quality habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Rhodamnia rubescens	Prefers littoral, warm temperate and subtropical rainforest and wet sclerophyll forest, usually on volcanic and sedimentary soils.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Low likelihood. Not found during survey. **Habitat Value**: No suitable habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Syzygium paniculatum	Grows on gravels, sands, silts and clays in riverside gallery rainforests, as well as remnant littoral and subtropical rainforest communities. It occurs in widely separated localities between Bulahdelah and Jervis Bay. Records from Thornleigh, Chatswood and Seaforth. Also, often planted.	**Historic Records:** Four recent records within 1 km of the Site. **Local Occurrence**: Very obvious species. Not found during survey. **Habitat Value**: Low quality habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.

3.4 Fauna

3.4.1 Assessment of Likely Occurrence Threatened Fauna Species (Candidate Species Assessment)

The likelihood of targeted threatened fauna species occurring on the study area is assessed in the table below.

Table 9: Habitat Suitability for Targeted Threatened Fauna Species

Name	Habitat Preference	Likelihood of Occurrence
Amphibians		
Red-crowned Toadlet *Pseudophryne australis*	Occurs in open forests. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	**Historic Records:** One recent record within 1 km of the Site. **Local Occurrence**: Low likelihood. **Habitat Value**: No suitable habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Aves		
Barking Owl *Gang Ninox connivens*	Nests in large tree hollows. Inhabits eucalypt woodland, open forest, swamp woodlands along watercourses. Roosts along creek lines, usually in tall understorey trees with dense foliage such as Acacia and Casuarina species, or the dense clumps of canopy leaves in large Eucalypts. Feeds on a variety of prey, with invertebrates predominant for most of the year, and birds and mammals such as smaller gliders, possums, rodents and rabbits becoming important during breeding.	**Historic Records:** Two recent records within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: No suitable roosting or nesting habitat onsite. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Proposal does not extend beyond the property boundary to the south and is unlikely to impact the habitat in the Reserve beyond. Site is likely to be part of a larger home range. **Conclusion**: No further assessment required.
Gang- gang Cockatoo *Callocephalon fimbriatum*	In spring and summer found in tall mountain forests and woodlands. Move to lower altitudes and drier more open eucalypt forests in autumn and winter. Favours old growth forest and woodlands for nesting and roosting. Nests in hollows >10 cm in diameter and 9 m above the ground.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Low likelihood. **Habitat Value**: No suitable habitat occurs within study site. No suitable roosting or nesting hollows on site. No food trees on site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Glossy Black-Cockatoo *Calyptorhynchus lathami*	Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of She-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Low quality habitat occurs within study site. No suitable roosting or

Name	Habitat Preference	Likelihood of Occurrence
	Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites.	nesting hollows on site. No food trees on site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Conclusion**: No further assessment required.**
Little Eagle *Hieraaetus morphnoides*	Found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. Occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.	**Historic Records:** One recent record within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Medium quality habitat occurs within study site. **Direct and Indirect Impacts**: Unlikely. Proposal does not extend beyond the property boundary to the south and is unlikely to impact the habitat in the Reserve beyond. Site is likely to be part of a larger home range. **Conclusion**: No further assessment required.
Little Lorikeet *Glossopsitta pusilla*	Distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. 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. Forages high in treetops and nests in small tree hollows.	**Historic Records:** Two recent record within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Conclusion**: No further assessment required.**
Masked Owl *Tyto novaehollandiae*	Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. Hunts tree-dwelling and ground mammals, especially rats along the edges of forests, including roadsides.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: High likelihood. **Habitat Value**: Low quality habitat occurs within study site. No suitable roosting or nesting habitat onsite. Part of a large home range. **Direct and Indirect Impacts**: Unlikely. Proposal does not extend beyond the property boundary to the south and is unlikely to impact the habitat in the Reserve beyond. Site is likely to be part of a larger home range. Conclusion**: No further assessment required.**
Powerful Owl *Ninox strenua*	Nests in large tree hollows. Inhabits large tracts of forest in a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Roosts along creek lines. Feeds on medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: High likelihood. **Habitat Value**: Low quality habitat occurs within study site. No suitable roosting or nesting habitat onsite. Part of a large home range.

Name	Habitat Preference	Likelihood of Occurrence
		Direct and Indirect Impacts: Unlikely. Proposal does not extend beyond the property boundary to the south and is unlikely to impact the habitat in the Reserve beyond. Site is likely to be part of a larger home range. Conclusion**: No further assessment required.**
Scarlett Robin *Petroica boodang*	Lives in dry eucalypt forests and woodlands, occasionally occurring in mallee or wet forest communities. Prefers and open understorey, with abundant fallen logs and timber. Nests are built in the fork of a branch, usually 2 m above ground.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Low likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Superb Fruit-Dove *Ptilinopus superbus*	Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees. Part of the population is migratory or nomadic. Nests usually 5-30 metres up in rainforest and rainforest edge tree and shrub species. Feeds on a diverse range of tree and vine fruits.	**Historic Records:** No recent records within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Medium quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Swift Parrot *Lathmus discolor*	Migrate from Tasmania to the south-east mainland from Feb to Oct. Occur mainly in areas where eucalypts are flowering profusely. Preferred feed trees include *Eucalyptus robusta, Corymbia maculata, C. gummifera, E. tereticornis, E. sideroxylon,* and *E. albens.*	**Historic Records:** One recent record within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Medium quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: 2 feed trees to be removed. Unlikely. **Conclusion**: No further assessment required.
Turquoise Parrot *Neophema pulchella*	Inhabits the edges of eucalypt woodlands and adjoining clearings, timbered ridges and creeks in farmland. Forages on the ground for food. Nests in tree hollows, logs or posts.	**Historic Records:** One recent record within 1 km of the Site. **Local Occurrence**: Low likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Mammalia		
Eastern Freetail-bat	Occurs in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts mainly in tree hollows but will also	**Historic Records**: One recent record within 1 km of the Site. **Local Occurrence**: Low likelihood.

Name	Habitat Preference	Likelihood of Occurrence
Mormopterus norfolkensis	roost under bark or in man-made structures. Solitary and probably insectivorous.	**Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Four suitable hollows on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Eastern Pygmy-possum ***Cercartetus nanus***	Found in a broad range of habitats from rainforest through sclerophyll forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, possum dreys or thickets of vegetation.	**Historic Records**: One recent record within 1 km of the Site. **Local Occurrence**: Low likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Unlikely. Four suitable hollows on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Greater Broad-nosed Bat *Scoteanax rueppellii*	Dependent on mature forest on soils of high fertility with preference for moist gully forests. Roosts in tree hollows (chiefly eucalypts) and in the roof spaces.	**Historic Records**: Two recent records within 1 km of the Site. **Local Occurrence**: Medium likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Unlikely. Four suitable hollows on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Grey-headed Flying-fox Pteropus poliocephalus	Roosting camps are generally located within 20 km of a regular food source and in gullies, close to water, in vegetation with a dense canopy.	**Historic Records**: Twenty recent records within 1 km of site. **Local Occurrence:** High likelihood **Habitat value**: Medium quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. No roosts occur on site. Likely to forage or fly over. No food trees present on site. **No further assessment required.**
Koala *Phascolarctos cinereus*	Feeds on the foliage of more than 70 Eucalypt species and 30 other species. No scats or individuals found during survey.	**Historic Records**: No recent records within 1 km of site. **Local Occurrence:** Low likelihood **Habitat value**: Low quality habitat occurs within study site. No food trees present on site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **No further assessment required.**

Name	Habitat Preference	Likelihood of Occurrence
Large-eared Pied Bat *Chalinolobus dwyeri*	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Found in well-timbered areas containing gullies in low to mid-elevation dry open forest and woodland. Roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Hirundo ariel*). Probably forages for small, flying insects below the forest canopy.	**Historic Records**: Four recent records within 1 km. **Local Occurrence**: Low likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Unlikely. Four suitable hollows on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Little Bent-winged Bat	Inhabits moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Roost in caves, tunnels, tree hollows, abandoned mines, storm water drains, culverts, bridges and buildings during the day, and forage at night for insects.	**Historic Records**: No recent records within 1 km. **Local Occurrence**: Low likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. Unlikely. Four suitable hollows on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Southern Brown Bandicoot (eastern) *Isoodon obesulus obesulus*	Usually found in heath or open forest with a dense understorey on sandy or friable soils. Feeds on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogenous (underground-fruiting) fungi.	**Historic Records**: One recent record within 1 km. **Local Occurrence**: High likelihood. **Habitat Value**: High quality habitat occurs within study site. Bandicoot diggings observed during site survey. **Direct and Indirect Impacts**: Possible **Conclusion**: Further assessment in the form of a 5-part test required.
Southern Myotis *Myotis macropus*	Needs caves, mines, stormwater pipes, road culverts, tree hollows and similar sites for roosting and breeding. Southern Myotis known to use abandoned fairy martin nests. Forage over streams and pools, catching insects and small fish on the water surface.	**Historic Records**: Two recent records within 1 km. **Local Occurrence**: Medium likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. One suitable hollow on site that will not be impacted by the proposal. **Conclusion**: No further assessment required.
Spotted-tailed Quoll *Dasyurus maculatus*	Occurs across a range of habitat types including rainforest, open forest, woodland and coastal heath. Use hollow-bearing trees, fallen logs, small caves and rock outcrops as den sites. Female home ranges up to 750 hectares and males up to 3500 hectares.	**Historic Records**: No recent records within 1 km. **Local Occurrence**: Medium likelihood. **Habitat Value**: Low quality habitat occurs within study site. Site is likely to be part of

Name	Habitat Preference	Likelihood of Occurrence
		a larger home range. No scats or evidence of dens found during survey. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Squirrel Glider *Petaurus norfolcensis*	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 heathy understorey in coastal areas.	**Historic Records**: No recent records within 1 km. **Local Occurrence**: Low likelihood. **Habitat Value**: No suitable habitat occurs within study site. Site is likely to be part of a larger home range. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.
Reptilia		
Rosenberg's Goanna *Varanus rosenbergi*	Found in heath, open forest and woodland. Associated with termites; mounds are a critical habitat component. Requires large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows.	**Historic Records**: No recent records within 1 km. **Local Occurrence**: Medium likelihood. **Habitat Value**: Medium - good quality habitat occurs within study site. Site is likely to be part of a larger home range. No termite mounds onsite. **Direct and Indirect Impacts**: Unlikely. **Conclusion**: No further assessment required.

3.5 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) would only become relevant if it was considered that an impact on a Matter of National Environmental Significance (MNES) were likely, thus providing a trigger for referral of the proposal to the Department of the Environment and Water Resources.

A Protected Matters search was conducted within a 10km radius of the site. A Protected Matters search is a broad scale assessment that includes World Heritage Properties, National Heritage Places, Wetlands of International Importance, Great Barrier Reef Marine Park, Commonwealth Marine Areas, Listed Threatened Ecological communities, Listed Threatened Species and Listed Migratory Species. The only relevant categories to this report are Threatened species, Threatened Ecological Communities and Migratory species.

The report lists the following ecologically relevant items:

- 2 Threatened Ecological Communities
- 48 Threatened species
- 32 Migratory Species

Most of the migratory and aquatic bird species, as well as the fish, sharks and marine mammals are not assessed in this report. This report addresses terrestrial species, which are likely to have potential habitat on the site.

Eleven of the species from the targeted species are listed as Endangered or Vulnerable in the Federal EPBC Act. These species have been assessed under TSC Act criteria in this Flora and Fauna Impact Assessment report. The assessments concluded that no significant impacts are likely to occur to those

species as a result of the proposal and a similar conclusion was also reached after consideration of the Commonwealth criteria. It is recommended that this proposal (see Map 6) does not need to be referred to Environment Australia.

3.6 Pittwater LEP 2014 Assessment

3.6.1 7.6 Biodiversity

(3) 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

Response: The main ecological values at the site are the large rocks and boulders, and the remnant *Corymbia maculata* trees scattered throughout the site. The site provides some suitable habitat for native fauna species and potential foraging habitat for highly mobile Threatened species with large home ranges such as the Masked Owl. The proposal will result in the removal of 17 m^2 and the thinning of a further 220 m^2 of native vegetation (Map 6).

The proposal includes the removal of 14 trees including two *Corymbia maculata*, which are characteristic species of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. This community can exist as scattered remnant trees. The proposal will result in the removal of 46 m^2 and the thinning of a further 79 m^2 of PWSGF EEC on or immediately adjacent to the site. (Map 7).

Given the small amount of the EEC to be removed and low number of native species on the site, it is unlikely the proposal will have an adverse impact on the flora and fauna on the land.

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

Response: The site provides some suitable habitat for native fauna species and potential foraging habitat for highly mobile Threatened species with large home ranges such as the Masked Owl.

The proposal will unlikely change the importance of this vegetation to the habitat and survival of native fauna. This report recommends weed control and planting local native species.

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

Response: The site currently contains highly disturbed vegetation and areas of exposed sandstone rock that provides habitat for native plants and potential habitat for local fauna. The proposal will have a small impact to the habitat at the site and therefore is not likely to further impact the biodiversity structure, function and composition of the land. Recommendations have been made to improve some of the habitat value at the site.

(iv) any adverse impact on the habitat elements providing connectivity on the land, and

Response: The site has low wildlife corridor value. The native vegetation at the site is connected to the native vegetation in McKay Reserve to the south through the vegetation in the properties to the south. The footprint of the proposal will be contained within the site boundary and will not impact the vegetation to the south of the site. There is little native vegetation to the west, north and east of the site. The proposal will result in the removal of 14 of the 20 trees identified by the arborist on site. There are extensive tree canopies and native vegetation in the properties to the south of the site. It is unlikely that the proposal will impact the movement of species that currently use the site as part of their home range and as a wildlife corridor including birds and bats, as these are all highly mobile species.

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

Response: The proposal is the construction of two dwellings and a garage which will encompass the majority of the site. The construction will result in the removal of 14 trees, of which two are characteristic PWSGF species (*Corymbia maculata*). The location of the proposed dwelling cannot be moved to avoid the removal of these trees due to the size of the dwelling.

Recommendations have been made to improve some of the habitat value at the site.

(4) 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

Response: The proposal is the construction of two dwellings and a garage which will encompass the majority of the site. The construction will result in the removal of 14 trees, of which two are characteristic PWSGF species (*Corymbia maculata*). The location of the proposed dwelling cannot be moved to avoid the removal of these trees due to the size of the dwelling.

Recommendations have been made to improve some of the habitat value at the site.

(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

Response: Recommendations have been made to minimise ecological impact during construction. See section 7.

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Response: Recommendations have been made to improve some of the habitat value at the site. See section 7.

3.7 Assessment of Significance 5-Part Test

The vegetation on the site meets the description of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion Endangered Ecological Community.

No Threatened flora or Fauna species were found during the field survey.

No important habitat for other Threatened species was identified during the survey.

A 5-part test of significance is conducted for the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion Endangered Ecological Community. This is provided in Appendix A.

3.7.1 5-part Tests of Significance Conclusions

The proposed development shown on Map 6 and described in this report is unlikely to have a significant impact on this EEC if the recommendations of this report are followed, due to the small amount of habitat loss. Further assessment in the form of a Biodiversity Development Assessment Report (BDAR) is not recommended in relation to this proposal. These conclusions are reliant on the assumptions stated in this report.

3.8 Biodiversity Conservation Act BAM Threshold Assessment

The part of the site that is likely to be disturbed is shown on Map 6.

This proposal (see Map 6) is **not** considered to meet the BC Act threshold as;

1) The amount of disturbance to native vegetation by this proposal is below the threshold limit for this size of lot. There are no other lots involved in the DA. Therefore, this proposal does not trigger this threshold limit, **and**
2) The *Biodiversity Conservation Regulation 2017,* Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The Biodiversity Offsets Scheme applies to all local developments, major projects or

the clearing of native vegetation where the *State* Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the Biodiversity Offsets Scheme if they occur on land mapped on the Biodiversity Values Map. The area of impact is **not** mapped on the "Biodiversity Values" Map as having high biodiversity value as can be seen on Maps 3 and 5, There is within "90 days" mapping across the site **and**

3) There is **not** likely to be a significant affect (5-part assessment of significance test Section 7.3, BC Act) on Threatened species or ecological communities or their habitats as has determined by this report. See Appendix A of this report for the 5-part test.

Therefore, the proposal **does not require a BAM assessment report (BDAR)** but does need a Flora and Fauna Report to address Council legislation and development controls and section 79C of the EP&A Act.

The Biodiversity Assessment Method (BAM) has been used as guide for the field survey and vegetation assessment in this report, however no offsetting is required.

3.9 Biodiversity Impact Conclusions

The ecological values on the site are shown in Map 5.

Map 6 shows the extent of native vegetation canopy at the Site in a green stripe and the 220 m^2 area that will have the canopy thinned (orange solid colour) and the 17m^2 area that will have the native vegetation canopy removed (Red solid colour).

The proposal includes the removal of 14 trees including two *Corymbia maculata*.

Map 7 shows the extent of the PWSGF EEC on the Site and in a magenta stripe and the 46 m^2 area that will have the canopy thinned (orange solid colour) and the 79 m^2 area that will have the PWSGF EEC removed (Red solid colour).

Corymbia maculata are characteristic species of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. This community can exist as scattered remnant trees. The proposal will result in the removal of 46 m^2 and the thinning of a further 79 m^2 of PWSGF EEC on or immediately adjacent to the site. The PWSGF EEC that will not be disturbed by the proposal is shown by the magenta hatching on site (Map 7).

It is unlikely that the proposal will impact the movement of species that currently use the site as part of their home range and as a wildlife corridor including birds and bats, as these are all highly mobile species.

The proposal (see Map 6) described in this report not likely to have a significant effect to any threatened species, population or ecological community and none of the BC Act thresholds are met, therefore a Biodiversity Development Assessment Report (BDAR) is not recommended in relation to this proposal. It must be noted that this conclusion only applies to the proposal described in this report, the assumptions made in this report and the development shown on the Maps in this report. The recommendations below should be followed to further reduce the impact of the proposal on the ecological values within the study area.

The ecological impact of the proposal is not likely to be an unacceptable impact by itself under Section 4.55 of the EPA Act or to have a significant impact under part 5A.

The proposal is not considered to be a 'matter of National Environmental Significance (NES)' EPBC Act referral of the proposal to the Department of the Environment and Water Resources is not considered necessary.

It is considered that the proposal generally meets the requirements and objectives of the Pittwater LEP and DCP.

We recommend that ameliorative conditions and management recommendations in this report be followed to reduce disturbance during construction and to improve ecological outcomes.

4 Ameliorative Conditions & Recommendations

4.1 Prior to Construction

Action	Outcome	Timing	Responsibility

Sediment controls are to be installed prior to the start of construction and establishment of the building footprint, monitored and only removed when the area has been stabilised	Reduce sediment run off during construction	Installed prior to construction and maintained during construction	Project manager/ Builder
Tree protection measures are to be implemented as per the Arboricultural Impact Assessment.	Protect trees from harm due to construction	Installed prior to construction and maintained during construction	Project manager/ Builder
The general care duty in the Biosecurity Act (2015) requires that weeds should be controlled on all land in NSW. Therefore, all weeds should be removed from the property and controlled in the long-term	Reduction of weeds on the site	Prior to, during and after construction and ongoing management	Property manager and Bush regeneration contractor

4.2 During Construction

Action	Outcome	Timing	Responsibility
Sediment control measures, monitored and only removed when the area has been stabilised	Reduce sediment run off during construction	Installed prior to establishment of building footprint and construction and maintained during construction	Project manager/ Builder
All weeds are to be removed from the site. There is to be ongoing weed control every 6-months during construction. Weed level control is achieve a percentage foliage cover of less than 5% in the ground layer and 0% in the shrub and tree layers. No soil should be left bare following weed removal.	Weeds reduce habitat value and can cause health problems for humans. There are currently not many weeds at the site. Disturbances can cause weeds to spread. Regular weed control ensures that weeds do not spread in the long-term	During construction	Bush regeneration contractor or Owner
Areas of bare soil should be planted with suitable local native species	To prevent soil erosion and improve habitat value	During Construction	Bush regeneration contractor or Owner/Landscaper
There is to be no machinery access, clearing native vegetation or dumping fill outside of development footprint shown on Map 6.	Protect adjacent habitat values during construction	During construction	Builder
All material brought on site must be certified weed and disease free.	To protect the adjacent bushland and creek against Phytophora infection	During construction	Project manager and builder

4.3 Ongoing Ecological Management

Action	Outcome	Timing	Responsibility

Weeds are to be effectively controlled on the whole of the property in the long-term using industry standard techniques and qualified bush regenerators	Reduction of weeds on the site	After construction and ongoing management	Property manager and Bush regeneration contractor
No Environmental weeds are to be planted on the property. It is recommended that any future planting is to be with Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion characteristic species.	Avoid introduction of weeds and exotic species.	During construction and after construction	Landscaper/bush regeneration contractor and property manager with assistance from the Ecologist
No pesticides, fertilizers or insecticides are to be used on the within the Development Site	Reduce impact to native vegetation and fauna in the site	Before, during and after construction	Owner and bush regeneration contractor
Automatic motion sensing LED lights should be used in outdoor lighting. No direct lights should be faced into adjacent native vegetation.	Avoid impact to nocturnal fauna in adjacent vegetation	During construction and after construction	Builder and Property manager

5 General References

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6 Appendix A: 5-part Tests of Significance

6.1 Definitions (DEEC 2006)

Direct impacts *- Are those that directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.*

Indirect impacts - O*ccur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.*

Life cycle*: The series or stages of reproduction, growth, development, ageing and*

death of an organism.

Viable*: The capacity to successfully complete each stage of the life cycle under normal conditions.*

Local population*: The population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions.*

- *The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.*
- *The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.*
- *The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time. In cases where multiple populations occur in the study area, each population should be assessed separately.*

Risk of extinction: *The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.*

Local occurrence*: The ecological community that occurs within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.*

Risk of extinction*: Similar to the meaning set out in factor (a), this is the likelihood that the local occurrence of the ecological community will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the ecological community, and includes changes to ecological function.*

Composition*: Both the plant and animal species present, and the physical structure of the ecological community. Note that while many ecological communities are identified primarily by their vascular plant composition, an ecological community consists of all plants and animals as defined under the BC and FM Acts that occur in that ecological community.*

Habitat*: The area occupied, or periodically or occasionally occupied, by any threatened species, population or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycles.*

Extent: *The physical area removed and/or to the compositional components of the habitat and the degree to which each is affected.*

Importance: *Related to the stages of the species' life cycles and how reproductive success may be affected.*

Locality: *The same meaning as ascribed to local population of a species or local occurrence of an ecological community.*

*"**likely**" with respect to "significant affect" the term "likely" in the context of s 78A(8)(b) of the EPA Act means a "**real chance or possibility**". It does not mean "more probable than not". Case law*

*"**significant**" qualifying the verb "**affect**" means "**important**", "**notable**", "**weighty**" or "**more than ordinary**". Case law*

6.2 Assessment of Significance (5-Part Test) for Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion Endangered Ecological Community

1) **The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:**

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,

Response:

Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC (hereafter PWSGF) is an endangered ecological community and not a threatened species, therefore this question is not applicable

(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***

*(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**,*

Response:

The proposal includes the removal of 14 trees including two *Corymbia maculate*, which are characteristic species of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. This community can exist as scattered remnant trees. The proposal will result in the removal of 46 m^2 and the thinning of a further 79 m^2 of PWSGF EEC on or immediately adjacent to the site.

The site has been recently slashed which has removed the mostly weedy shrub and herb vegetation, as can be seen in the photographs and is reflected in the cover abundance scores and species richness.

Given the small amount of the EEC to be removed it is unlikely the proposal will have an adverse impact on the community such that its local occurrence is likely to be placed at risk of extinction.

Given the already low number of native species on the site the proposal is unlikely to further substantially and adversely modify the composition of the community.

This report makes recommendations for the planting of locally native species

(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*

Response:

The proposal includes the removal of 14 trees including two *Corymbia maculate*, which are characteristic species of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. This community can exist as scattered remnant trees. The proposal will result in the removal of 46 m^2 and the thinning of a further 79 m^2 of PWSGF EEC on or imediately adjacent to the site.

The site has been recently slashed which has removed the mostly weedy shrub and herb vegetation, as can be seen in the photographs and is reflected in the cover abundance scores and species richness.

The change in the extent of the habitat on site is of a scale that is not likely to lead to a significant reduction in the extent of the EEC, such that it is placed at risk of extinction.

*(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*

Response:

The footprint of the proposal will be contained within the site boundary and will not impact the vegetation to the south of the site. There is little native vegetation to the west, north and east of the site. The proposal will result in the removal of 14 of the 20 trees identified by the arborist on site. There are extensive tree canopies and native vegetation in the properties to the south of the site. Therefore, the habitat on the site is unlikely to become fragmented or isolated from other areas of habitat as a result of the proposal.

(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,

Response:

The site has been recently slashed which has removed the mostly weedy shrub and herb vegetation, resulting in few native species below the canopy layer. The proposal will result in the removal of 46 m^2 and the thinning of a further 79 m^2 of PWSGF EEC on or immediately adjacent to the site. This is a small loss of habitat given the large number of trees on the site, on surrounding properties and in the nearby Reserve.

(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),

Response:

The site is not mapped or defined as an Area of Outstanding Biodiversity Value. The proposal will unlikely directly or indirectly impact any Area of Outstanding Biodiversity Value.

(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.

Response:

Key Threatening Processes that are listed in the Biodiversity Conservation Act 2016 and the NSW Recovery Plan for the Large Forest Owls: Powerful Owl (*Ninox strenua)*, Sooty Owl (*Tyto tenebricosa)* and Masked Owl (*Tyto novaehollandiae)* (Department of Environment and Conservation 2006) that are relevant to this site include:

Clearing of Native Vegetation

The site is highly disturbed and is dominated by weed species in the mid and ground strata. There will be minimal loss of habitat on the site. This report makes recommendations for weed control and the planting of local native species which will improve the habitat on site.

Removal of dead wood and dead trees

The site is within a designated "10/50" bushfire vegetation management area, and the removal of the dead tree is necessary to comply with the legislative requirements for an APZ within designated BAL-FZ (NSW RFS 2019). This is a small loss of habitat given the large number of trees on the site, on surrounding properties and in the nearby Reserve.

Conclusion to the 5-part test of significance for the impact of the proposed development on the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion Endangered Ecological Community

The proposed development shown on Map 6 and described in this report is unlikely to have a significant impact on this EEC if the recommendations of this report are followed, due to the small amount of habitat loss. Further assessment in the form of a Biodiversity Development Assessment Report (BDAR) is not recommended in relation to this proposal. These conclusions are reliant on the assumptions stated in this report.