Flora and Fauna Impact Assessment Report

Proposed Seniors Housing Development

27 Bellevue Avenue, Avalon Beach NSW 2107

1 March 2021

Report:	Flora and Fauna Impact Assessment Report Proposed Seniors Housing Development 27 Bellevue Avenue, Avalon Beach NSW 2107
Prepared for:	Report prepared by Land Eco Consulting for Construct by Design
Prepared by:	Land Eco Consulting
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ABN: 48 636 918 404

Land Eco Pty Ltd
www.landeco.com.au

Report Certification

Works for this report were undertaken by:

Name	Company / Position	Role
Alana Lindsay	Land Eco Consulting	Senior Ecologist
Kurtis Lindsay	Land Eco Consulting	Principal Ecologist

Document Control

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2.1	Flora and Fauna Assessment – 27 Bellevue Avenue, Avalon	1 March 2021

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Glossary

Acronym/ Term	Definition
BC Act	New South Wales Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
DA	Development Application
DCP	Development Control Plan
Development	The use of land, and the subdivision of land, and the carrying out of a work, and the demolition of a building or work, and the erection of a building, and any other act, matter or thing referred to in section 26 that is controlled by an environmental planning instrument but does not include any development of a class or description prescribed by the regulations for the purposes of this definition (Environmental Planning and Assessment Act 1979).
DPIE	Department of Planning Industry and Environment
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
Ha	Hectares
Km	Kilometre
KTP	Key Threatening Process (as listed in the BC Act)
LEP	Local Environmental Plan
LGA	Local Government Area
Locality	The area within a 10km radius of the Subject site. The same meaning when describing a local population of a species or local occurrence of an ecological community.
M	Metres
Mm	Millimetres
NPWS	NSW National Parks and Wildlife Services
NSW	New South Wales
OEH	Office of Environment and Heritage (now the Department of Planning Industry and Environment)
Proposal	The development, activity or action proposed.
ROTAP	Rare or Threatened Australian Plants
SIS	Species Impact Statement pursuant to s. 5A of the Environmental Planning and Assessment Act 1979
subject site	Location of the proposed ancillary dwelling within the subject property.
subject property	27 Bellevue Avenue, Avalon, NSW 2107 (Lot 33/-/DP11462)
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1, 1A and 2 and *threatened species, population or ecological community* means a species, population or ecological community specified in any of those Schedules.
TPZ	Tree Protection Zone

1. Introduction

1.1 Background and Project Proposal

Land Eco Pty Ltd (Land Eco) was engaged by Julia and Stephen Thomson to deliver a Flora and Fauna Impact Assessment Report (FFA) for a proposed development application (DA) at 27 Bellevue Avenue, Avalon Beach, NSW 2107 (Lot 33/-/ DP11462) (the subject property).

1.1.1 Proposed Development

The proposed development includes the construction of three dwellings across two buildings under the *New South Wales State Environmental Planning Policy (Housing for Seniors or People with a Disability)*(SEPP SL) on the subject property (**Figure 1**). The proposed development includes demolition works, the construction of the senior housing and ancillary site works including car parking, stormwater works and public footpath connections.

1.1.2 Proposed Impact

The proposed development will result in the clearing/alteration of approximately 1330m2 of weed-infested native vegetation including the wholesale removal of 8 locally indigenous trees. The proposed DA will result in the removal of 8 locally indigenous native trees. At least 25 mature, indigenous canopy trees will continue to remain in the subject site and adjoining properties post development.

The clearing of native vegetation will occur from the Subject Land and adjoining roadside verges.

1.1.3 Site Description and Location

The subject site is located on Bellevue Avenue in the suburb of Avalon Beach. The prevailing land use consists of low-density urban residential landholdings. Most landholdings contain a front and extended rear garden with established mature exotic and native trees. There are no native bushland reserves adjoining the subject site. The subject site is within close proximity to shopping village and public school.

The subject site is zoned as R2 – Low Density Residential.

1.1.4 Soils and Geology

The Soil Landscape that underlies the subject property is the 'Erina' Soil Landscape (Chapman and Murphy 1989).

This soil landscape is comprised of undulating to rolling rises and low hills on fine-grained sandstones and claystones of the Terrigal Formation of the Narrabeen Group.

1.1.5 Hydrology

There are no mapped watercourses or riparian corridors in or around the subject property.

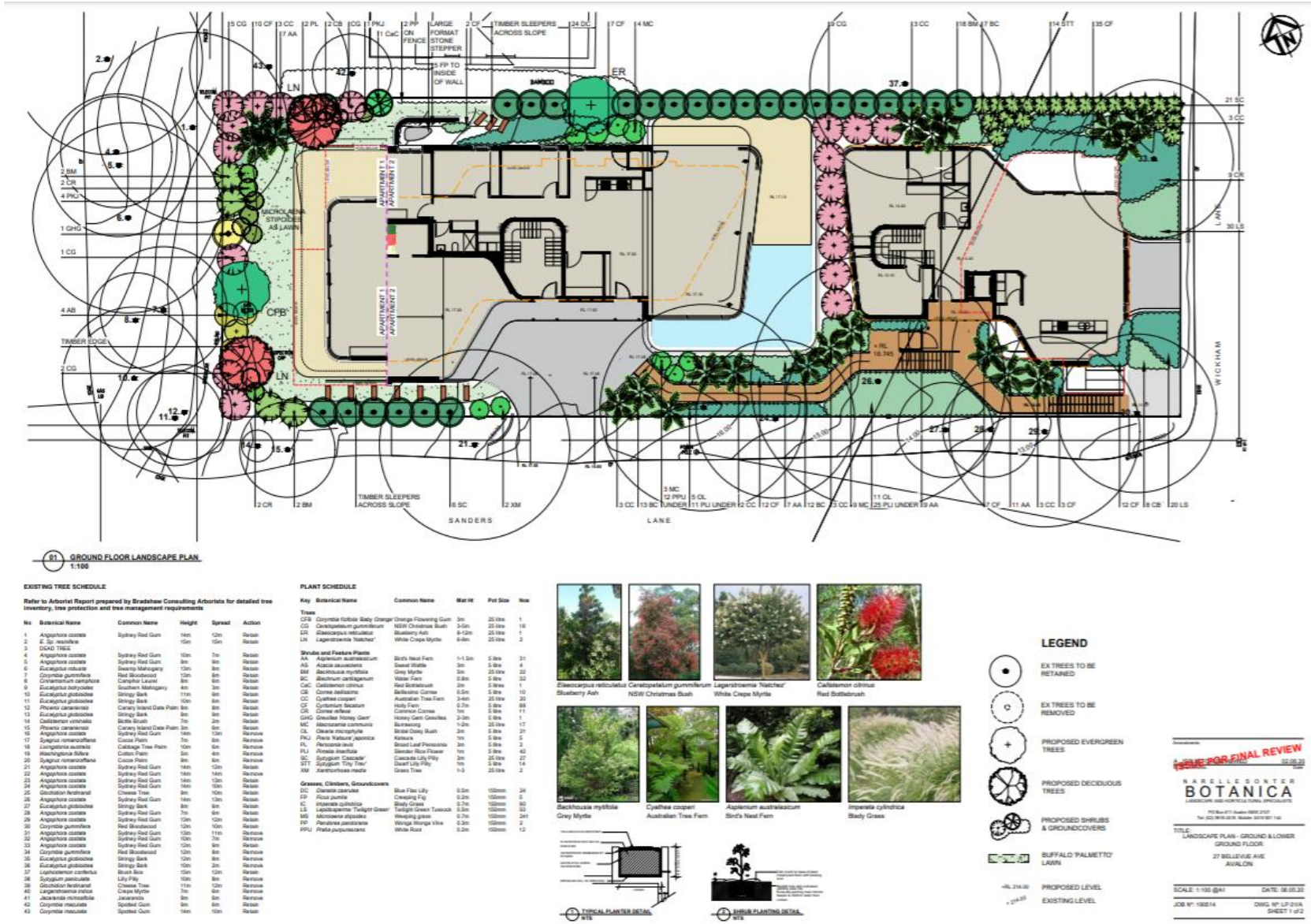

Figure 1. The proposed development at the subject site (Image: Narelle Sonter Botanica 2020)

1.2 Matters for Consideration

The following list of legislation and policy are addressed in this report (**Table 1**).

Table 1. Relevant legislation and policy addressed

Legislation/ Policy	Relevance	Triggered	Action Required
Environmental Planning and Assessment Act 1979 (EP&A Act)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed of impacts to threatened species, populations or communities that are listed under the BC Act.	Yes	This Flora and Fauna Impact Assessment Report includes Test of Significance under section 7.3 of the BC Act, as required for a DA under Part 4 of the EP&A Act.
Pittwater Local Environmental Plan 2014 (LEP)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed under the LEP.	Yes	This Flora and Fauna Impact Assessment Report includes information on how the project meets the requirements of LEP, as required for a DA under Part 4 of the EP&A Act.
Pittwater 21 Development Control Plan 2015 (DCP)	The proposed development is being assessed under Part 4 of the EP&A Act. This requires the development to be assessed under the LEP.	Yes	This Flora and Fauna Impact Assessment Report includes information on how the project meets the requirements of DCP, as required for a DA under Part 4 of the EP&A Act.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	There are Matters of National Significance (MNES) on the subject site.	No	No further action.
Biodiversity Conservation Act 2016 (BC Act)	No important habitat for threatened species or populations will be impacted by the proposed development.	Yes	Test of Significance (5-part Test) in accordance with Section 7.3 of the BC Act were undertaken to assess the impact of the proposed development.
Biosecurity Act 2015 (Bio Act)	There were following Priority Weeds identified on the site: African Olive *Olea europaea subsp. cuspidata*	Yes	Management actions during and post construction will be addressed.
Water Management Act 2000 (WM Act)	The proposed development is not located on or near 'waterfront land'	No	No further action.
State Environmental Planning Policy No 19 - Bushland in Urban Areas (SEPP 19)	SEPP 19 does apply to the proposed development as the Subject site is within Schedule 1 Areas and part areas to which the Policy applies.	No	No further action.
State Environmental Planning Policy (Coastal Management) 2018	State Environmental Planning Policy (Coastal Management) 2018 does not apply to the Subject site. It is not located in the Coastal Zone and contains no mapped Littoral Rainforest or Coastal Wetlands.	No	No further action.
State Environmental Planning Koala Habitat Protection 2020	The Subject site has an area less than 1ha therefore this SEPP does not apply.	No	No further action.

1.3 Pittwater Local Environmental Plan 2014

1.3.1 Zoning

The Subject Property is zoned R2: Low Density Residential.

1 Objectives of zone

- To provide for the housing needs of the community within a low-density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To provide for a limited range of other land uses of a low intensity and scale, compatible with surrounding land uses.

2 Permitted without consent

Home businesses; Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Boarding houses; Boat sheds; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Environmental protection works; Exhibition homes; Group homes; Health consulting rooms; Home-based child care; Home industries; Jetties; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Respite day care centres; Roads; Secondary dwellings; Tank-based aquaculture; Veterinary hospitals; Water recreation structures

4 Prohibited

Any development not specified in item 2 or 3

The proposed development is permitted with consent.

1.3.2 Biodiversity (7.6)

(1) The objective of this clause is to maintain terrestrial, riparian and aquatic biodiversity by—

(a) protecting native fauna and flora, and

(b) protecting the ecological processes necessary for their continued existence, and

(c) encouraging the conservation and recovery of native fauna and flora and their habitats.

(2) This clause applies to land identified as "Biodiversity" on the Biodiversity Map.

(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

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

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

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

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

(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

(b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or

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

The Subject Site is not mapped on the Pittwater 'Terrestrial Biodiversity' map (**Figure 2**).

After site assessment, it is confirmed that the development is not likely to have—

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

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

This report contains appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

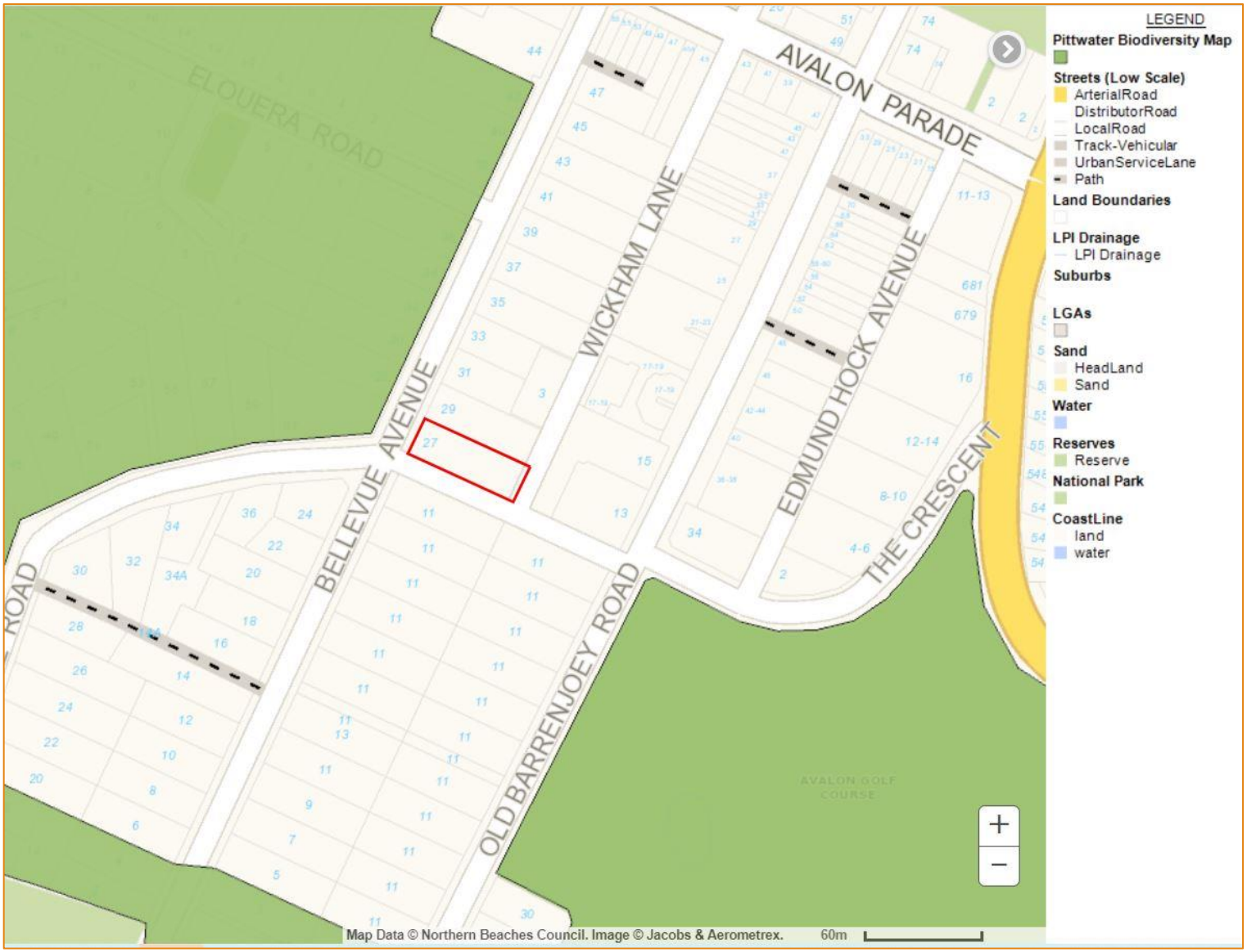

Figure 2. Pittwater Local Environmental Plan Terrestrial Biodiversity Mapping (DPIE 2020a)

1.3.3 Riparian Land and Waterways

No 'Riparian Land and Watercourses' is mapped within the Subject Property under the Pittwater LEP 'Riparian Land Map'. As such, the objectives of the clause do not require further address within this report.

1.4 Pittwater Development Control Plan 2015

1.4.1 Controls Relating to the Natural Environment (B4)

The Subject Site exists within land not mapped on the Biodiversity and Wildlife Corridor Maps. Two controls listed in the Pittwater 21 DCP apply for the subject site (**Table 2.**).

Table 2. Controls Relating to the Natural Environment (Pittwater 21 DCP) that apply to the subject site.

Control Number	Control Name	Does this control apply?	Why?
B4.1	Flora and Fauna Conservation Category 1 Land	No	Does not apply.
B4.2	Flora and Fauna Conservation Category 1 and Wildlife Corridor	No	Does not apply.
B4.3	Flora and Fauna Habitat Enhancement Category 2 Land	Yes	Yes – this control does apply.
B4.4	Flora and Fauna Conservation Category 2 and Wildlife Corridor	No	Does not apply.
B4.5	Landscape and Flora and Fauna Enhancement Category 3 Land	No	Does not apply.
B4.6	Wildlife Corridors	No	Does not apply.
B4.7	Pittwater Spotted Gum Forest – Endangered Ecological Community (EEC)	No	No Pittwater Spotted Gum Forest EEC located near the subject site.
B4.8	Freshwater Wetland Endangered Ecological Community	No	No Freshwater Wetlands EEC located near the subject site.
B4.9	Duffys Forest Endangered Ecological Community	No	No Duffys Forest mapped on or near the subject site.
B4.10	Themeda Grasslands – Endangered Ecological Community	No	No Themeda grasslands located near the subject site.
B4.11	Land Adjoining Bushland	No	No bushland adjoining the subject site.
B4.12	Mangrove Conservation	No	No mangroves located near the subject site.
B4.13	Freshwater Wetlands (non Endangered Ecological Community)	No	No wetlands located near the subject site.
B4.14	Development in the Vicinity of Wetlands	No	No wetlands located near the subject site.
B4.15	Saltmarsh Endangered Ecological Community	No	No saltmarsh located near the subject site.
B4.16	Seagrass Conservation	No	No seagrass habitat located near the subject site.
B4.17	Littoral Rainforest – Endangered Ecological Community	No	No littoral rainforest located near the subject site.
B4.18	Heathland/Woodland Vegetation	Yes	Yes – this control does apply as woodland vegetation is present on subject site.
B4.19	Estuarine Habitat	No	No estuarine habitat located near the subject site.
B4.20	Protection of Estuarine Water Quality	No	No estuarine habitat located near the subject site.
B4.21	Bush-Stone Curlew Habitat	No	No habitat suitable for this species.
B4.22	Preservation of Trees and Bushland Vegetation	Yes	Yes – this control does apply.

1.4.1.1 B4.18 Heathland/Woodland vegetation

Land containing of heathland vegetation - P21DCP-BCMDCP035

Land use to which this control applies

Attached dwelling, Boarding house, Business Development, Development ancillary to residential accommodation, Development of a sector, buffer area or development site in a Release Area, including built form and land subdivision (built form is not limited to residential), Dual occupancy (attached), Dual occupancy (detached), Dwelling house, Earthworks, Exhibition home, Group home, Hospital, Hostel, Industrial Development, Jetty, Multi dwelling housing, Other Development, Residential flat building, Rural industry, Rural worker's dwelling, Secondary dwelling, Semi-detached dwelling, Seniors housing, Shop top housing, Subdivision, Subdivision of a sector, buffer are or development site in a Release Area, Water recreation structure.

Outcomes

- Conservation of intact heathland
- Regeneration and/or restoration of fragmented and / or degraded heathland
- Reinstatement of heathland to link remnants
- Long-term viability of locally native flora and fauna and their habitats in the Pittwater LGA through conservation, enhancement and/or creation of habitats and wildlife corridors
- Long-term sustainability of hanging swamps and other wetlands

Controls

- Development shall retain and enhance habitat and wildlife corridors for threatened species, endangered populations, endangered ecological communities and other locally native species
- Development shall not reduce or degrade habitat for locally native species, threatened species, endangered populations or endangered ecological communities
- Wastewater shall receive tertiary treatment and not be discharged directly into heathland
- Water entering heathland from the development shall be free from pollutants and elevated nutrients
- Caretakers of domestic animals shall prevent them from entering wildlife habitat areas
- Fencing, where permitted, shall allow the safe passage of native wildlife
- Development shall not negatively impact on heathland
- Development shall ensure long-term sustainability of wetlands and must include an appropriate buffer - minimum of 10 metres from wetland edge
- Development shall ensure that at least 80% of any new planting incorporates native vegetation (as per species found on the site or listed in *Native Plants for Your Garden* available on the Pittwater Council website).
- Landscaping works are to be outside areas of bushland and do not include environmental weeds.

Variations

Council may consider variation to this control:

- For those activities listed in adopted Plans of Management.
- Where development is proposed on parts of the site identified as not containing a heathland/woodland providing the development does not impact on heathland/woodland on the site or adjoining properties.
- Where a development is proposed in the area of least impact on heathland/woodland/wetlands and loss of native vegetation is minimal.
- Where fencing is required to contain domestic animals and that fencing is located on up to 20% of the site, and does not impede native fauna from traversing the site.

Information to be included in the Statement of Environmental Effects

An analysis of the proposed development clearly stating the extent of the impact on the natural environment demonstrating that it has been designed to minimise any impact on Heathland Vegetation.

Technical Reports and Supporting Information

Note A: The Information Require to Be Submitted to address this Control is similar to that required for other Controls relating to the Natural Environment (B4.1 to B4.22): Where more than one of these Controls apply, the information to be submitted can be combined into a single set of Plan(s), Document(s) and Report(s) which does not provide duplicated information provided ALL information to be submitted requirements are set out in the various Controls as provided.

(a) Development that disturbs/removes less than 40m2 of vegetation, does not including tree removal/modification and is where habitat for NPWS Threatened species/populations/communities does not occur on the site.

- Nil

or

(b) Development that may impact/remove up to five native trees, including those within 5m of excavation, fill or changes in soil level.

- A tree survey and Arborist Report indicating location, species, health and size of all trees within 5m of proposed development. Clearly indicating all trees that may be impacted on or removed.
- An 7-part test is to be provided where existing native canopy trees are proposed for removal.
- 7-part tests for any NPWS Listed species/populations/communities.

or

(c) Development that disturbs between 40m2 and 500m2 of vegetation and/or more than five native trees and/or installation of an on-site waste-water disposal systems.

The following are the minimum requirements, where trees are proposed for removal/modification an Arborist Report is also required.

- Ecological Site Assessment (ESA)
- Biodiversity Impact Assessment (BIA)
- Ecological Sustainability Plan (ESP)
- or combined report covering all issues.

Minimum requirements of ESA, BIA and ESP - Please contact Council.
or
(d) Development that disturbs more than 500m2 of vegetation and/or the subdivision of land.
The following are the minimum requirements where trees are proposed for removal/modification an Arborist Report is also required. Information required for development types (c) and (d) is the same, however the survey intensity required for developments in category (d) is greater minimum requirements given below.

- ESA
- BIA. Survey intensity required increases with area being disturbed.
- ESP
- or combined report covering all issues.

Minimum requirements of ESA, BIA and ESP - Please contact Council.
or
(e) Other
If the development does not fall into any of the above categories (ad) this control does not apply except for conditioning, (a) the planting two canopy trees or appropriate native vegetation and removal/ control of noxious and environmental weeds.

This DA is proposed in the area of the subject site will include at least 80% of native vegetation in the landscape plan. The DA will also propose adequate fencing that does not impede the movement of fauna species across the landscape. The DA meets the requirements for this control.

1.4.1.2 B4.22 Preservation of Trees and Bushland Vegetation

Land to which this control applies

This control applies to all land, waterways and Bushland covered by the Pittwater Local Environmental Plan 2014

Uses to which this control applies

Tree and/or bushland removal

Outcomes

- To protect and enhance the urban forest of the Northern Beaches.
- To effectively manage the risks that come with an established urban forest through professional management of trees.
- To minimise soil erosion and to improve air quality, water quality, carbon sequestration, storm water retention, energy conservation and noise reduction.
- To protect, enhance bushland that provides habitat for locally native plant and animal species, threatened species populations and endangered ecological communities.
- To promote the retention and planting of trees which will help enable plant and animal communities to survive in the long-term.
- To protect and enhance the scenic value and character that trees and/or bushland vegetation provide.

Controls

1. Authority to clear a tree or other vegetation is regulated in this plan in accordance with State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 i.e. 'Vegetation SEPP'. In particular, Part 2 of the Vegetation SEPP sets out the authority to clear vegetation and Part 3 provides for Council to declare under this DCP when a Vegetation Clearing Permit may be issued for clearing of vegetation.

However a permit under Part 3 of the Vegetation SEPP (clause 10(3)) cannot allow the clearing of vegetation that is or forms part of a heritage item or that is within a heritage conservation area, or that is or forms part of an Aboriginal object or that is within an Aboriginal place of heritage significance, unless the council is satisfied that the proposed activity:

- is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or heritage conservation area, and
- would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or heritage conservation area.

2. A person shall not ringbark, cut down, top, lop, remove, poison, injure, or wilfully destroy tree or bushland vegetation that requires a Vegetation Clearing Permit under the provisions of Part 3 of the Vegetation SEPP. This includes damage to a tree or bushland vegetation by:

- Damaging or tearing live branches and roots;
- Damaging the bark, including attachment of objects using invasive fastenings, the fastening of materials around the trunk of trees which may result in a detrimental impact on tree health;
- Tree topping, where large branches and/or the trunk of the tree is removed from the top of the trees canopy;

- Tree lopping, where branches are removed to reduce the height and spread of the tree.
- Damaging the root zone of a tree by way of compaction, including storage and stockpiling materials;
- Changing of ground levels within the root zone of a tree by way of excavation, trenching, filling or stockpiling;
- Under scrubbing of bushland vegetation;
- Burning of vegetation (not part of a Hazard Reduction Certificate); or
- Any other act or activity that causes the destruction of, the severing of trunks or stems of, or any other substantial damage to, some or all of the native vegetation in an area.

An authority to clear vegetation is not required under the Vegetation SEPP:

i. if it is clearing authorised by development consent i.e. a 'DA' under Part 4 of the Environmental Planning and Assessment Act 1979. Note: However, this authority to clear vegetation without a permit does not extend to clearing merely because it is a part of or ancillary to the carrying out of exempt development (see clause 8(1) of Vegetation SEPP);

ii. if it is clearing of a kind that is an activity authorised by an approval or carried out by a determining authority within the meaning of Part 5 of the Environmental Planning & Assessment Act after compliance with that Part; or

iv. if the clearing was an emergency firefighting act or emergency bush fire hazard reduction work within the meaning of the Rural Fires Act 1997 (the 'Act'), or bush fire hazard reduction work to which section 100C(4) of the Act applies or vegetation clearing work under section 100R of the Act.

3. A Vegetation Clearing Permit is required for:

a) Removal or cutting down of any tree over five (5) metres in height;

b) Pruning of more than ten percent (10%) of a tree canopy; or

c) The removal or cutting down of vegetation in "Bushland".

For the purpose of this clause "Bushland" means land on which there is vegetation which is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation (as defined by the Local Government Act 1993).

Note: A description of native vegetation types or communities which constitute "Bushland" is provided in the adopted Warringah Natural Area Survey: Vegetation Communities and Plant Species - August 2005.

4. In applying for a Vegetation Clearing Permit, the applicant must demonstrate that any tree to be removed as part of a Vegetation Clearing Permit meets one or more of the criteria of the Removal of Tree Test in Appendix 16 (P21DCP) and the Tree Retention Assessment in Appendix 17 (P21DCP). An arborist report may be required to satisfy this requirement.

Requirements for other Development Applications

When a DA required for clearing vegetation the following requirements apply:

5. Development is to be sited and designed to minimise the impact on remnant native vegetation, including canopy trees and understorey vegetation, and on remnant native ground cover species.

6. Where the applicant demonstrates that no reasonable alternative design exists and a tree must be removed, suitable compensatory tree planting is required. Details including proposed species and the location of replacement planting are to be provided.

7. Development must also avoid any impact on trees on public land.

8. For development applications involving the construction of new buildings and works containing Classes 2-9 (BCA), the information contained in Appendix 18 (P21DCP) is to be submitted.

9. Where trees proposed to be retained may be affected by the construction of new buildings and works of Classes 1 and 10, a Tree Protection Plan as per Appendix 19 (P21DCP) is to be submitted.

This DA is proposed in the area of the Subject Property that will incur least impact on native vegetation by using the current footprint of the existing structures and aiming to retain as many trees where possible.

An Ecological Site Assessment and Biodiversity Impact Assessment have been undertaken and detailed in this present report.

The proposed DA will result in the removal of 8 locally indigenous native trees. At least 25 mature, indigenous canopy trees will be retained and protected in the subject site and adjoining properties post development.

No trees or vegetation will be removed from adjoining lots or public land.

1.4.1.3 Flora and Fauna Habitat Enhancement Category 2 Land (B4.3)

Land to which this control applies

Areas of habitat mapped as Flora and Fauna Conservation Areas-Category 2 that are not included in other Natural Environment Controls - P21DCP-BCMDCP062

Uses to which this control applies

- Attached dwelling
- Boarding house
- Business Development
- Development ancillary to residential accommodation
- Dual occupancy (attached)
- Dual occupancy (detached)
- Dwelling house
- Earthworks
- Exhibition home
- Group home
- Hospital
- Hostel
- Industrial Development
- Jetty
- Multi dwelling housing
- Other Development
- Residential flat building
- Rural industry
- Rural worker's dwelling
- Secondary dwelling
- Semi-detached dwelling
- Seniors housing
- Shop top housing
- Subdivision
- Water recreation structure

Outcomes

Conservation, enhancement and/or creation of habitats for locally native flora and fauna to ensure the long-term viability of locally native flora and fauna and their habitats. (En)

Controls

Development shall retain and enhance habitat for threatened species, endangered populations, endangered ecological communities and other locally native species.

Development shall provide flora and fauna habitat by active restoration, regeneration, and / or creation.

Development shall not result in a significant onsite loss of canopy cover or a net loss in native canopy trees.

Development shall ensure that at least 60% of any new planting incorporates native vegetation (as per species listed in Native Plants for Your Garden available on the Pittwater Council website). Landscaping is to be outside areas of core bushland and not include environmental weeds.

Caretakers of domestic animals shall prevent them from entering bushland.

Fencing, where permitted, shall be passable by native wildlife.

Variations

Council may consider variation to this control:

- for those activities listed in adopted Plans of Management for public reserves, where development is proposed on parts of the site identified as not containing native vegetation providing the development does not impact on bushland on the site or adjoining properties.
- where development is proposed in the area of least impact on native vegetation and where there will be no net loss of native vegetation.
- where fencing is required to contain a domestic animals and is located on a part of the site that does not impede native fauna from traversing the site.

Information to be included in the Statement of Environmental Effects

An analysis of the proposed development clearly stating the extent of the impact on the natural environment demonstrating that it has been designed to minimise any impact on flora and fauna.

Technical Reports and Supporting Information

Note A: The Information Require to Be Submitted to address this Control is similar to that required for other Controls relating to the Natural Environment (B4.1 - B4.16): Where more than one of these Controls apply, the information to be submitted can be combined into a single set of Plan(s), Document(s) and Report(s) which does not provide duplicated information provided ALL information to be submitted requirements are set out in the various Controls as provided.

(a) Development that disturbs/removes less than 40m2 of vegetation, does not including tree removal/modification and is where habitat for NPWS Threatened species/populations/communities does not occur on the site.

Nil

or

(b) Development that may impact/remove up to five native trees, including those within 5m of excavation, fill or changes in soil level.

A tree survey and Arborist Report indicating location, species, health and size of all trees within 5m of proposed development. Clearly indicating all trees that may be impacted on or removed.

An 7-part test is to be provided where existing native canopy trees are proposed for removal.

7-part tests for any NPWS Listed species/populations/communities.

or

(c) Development that disturbs between 40m2 and 500m2 of vegetation and/or more than five native trees and/or installation of an on-site waste-water disposal systems.

The following are the minimum requirements, where trees are proposed for removal/modification an Arborist Report is also required.

-
- Ecological Site Assessment (ESA)
- Biodiversity Impact Assessment (BIA)
- Ecological Sustainability Plan (ESP)
- or combined report covering all issues.

Minimum requirements of ESA, BIA and ESP - Please contact Council.

or

(d) Development that disturbs more than 500m2 of vegetation and/or the subdivision of land.

The following are the minimum requirements where trees are proposed for removal/modification an Arborist Report is also required. Information required for development types (c) and (d) is the same, however the survey intensity required for developments in category (d) is greater minimum requirements given below.

- ESA
- BIA. Survey intensity required increases with area being disturbed.
- ESP
- or combined report covering all issues.

Minimum requirements of ESA, BIA and ESP - Please contact Council.

or

(e) Other

If the development does not fall into any of the above categories (ad) this control does not apply except for conditioning,

(a) the planting two canopy trees or appropriate native vegetation and removal/ control of noxious and environmental weeds.

The proposed development has been designed to allow the Conservation, enhancement and/or creation of habitats for locally native flora and fauna. The development will retain and enhance habitat for threatened species other locally native species as detailed in the Landscape Plan (Narelle Sonter Botanica 2021).

There is no threatened ecological community in the subject site, however, all components of threatened ecological communities located outside of the subject site will be retained unharmed during and post development (Bradshaw Consulting Arborist 2021).

The majority of native trees in the subject site will be retained during and post development. Native palms will be retained and/or translocated. Only 8 indigenous native trees will be removed to facilitate the development. A total of 25 indigenous native trees in and immediately adjacent the subject site will continue to remain during and post development. Development will not result in a significant onsite loss of canopy cover or a net loss in native canopy trees.

The development will shall ensure that at least 60% of any new planting incorporates native vegetation. Landscaping is outside areas of core bushland and will not include environmental weeds (Narelle Sonter Botanica 2021).

Caretakers of domestic animals will prevent them from entering bushland.

Fencing, where permitted, shall be passable by native wildlife.

1.4.1.4 Wildlife Corridors (B4.6)

The subject site is not situated within a mapped wildlife corridor (**Figure 3**).

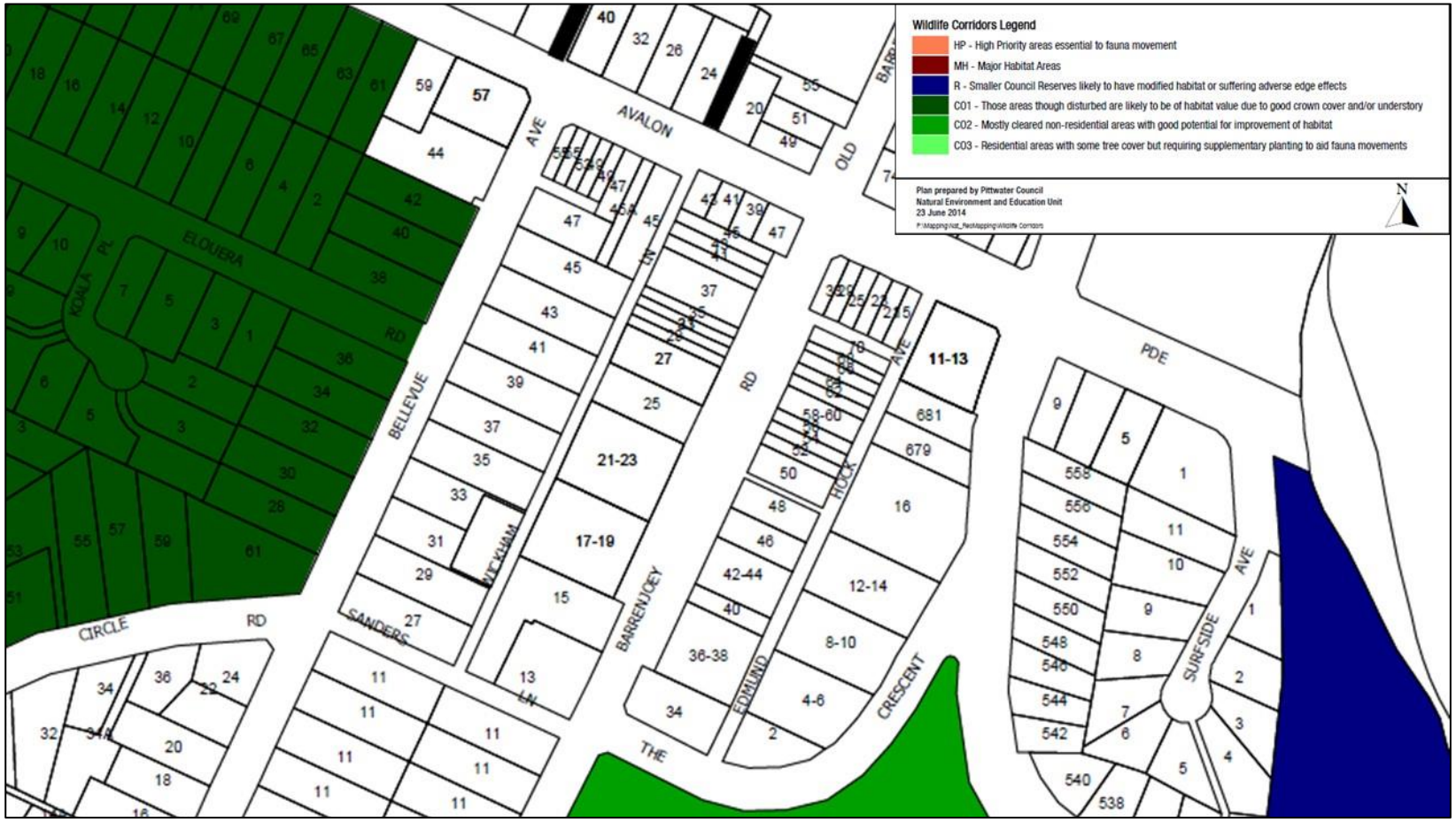

Figure 3. Excerpt of the Pittwater 21 DCP Habitat Corridors Map (23 June 2014)

1.5 State Environmental Planning Policies

1.5.1 Koala Habitat Protection SEPP 2020

The subject property is smaller than one hectare in size, therefore Koala Habitat Protection SEPP 2020 does not apply. Three species of Koala feed trees were identified in the subject site (**Table 3**). Whilst feed trees are present on site, Koalas are thought to be extinct from the area and it is unlikely that they would forage or breed on the subject site due to its location in an urban area.

Table 3. Koala feed trees identified on the subject site

Tree Number to be removed	Species	Documented Use
16, 22, 31, 32	*Angophora costata*	Low
35, 36	*Eucalyptus umbra*	Irregular
34	*Corymbia gummifera*	Significant

1.5.2 SEPP (Coastal Management) 2018

The Subject Site is not located within any area of 'Coastal Environment Protection' (**Figure 4**). This SEPP does not apply to the DA.

1.5.3 SEPP No. 19 Bushland in Urban Areas

The Subject Site is not located within or adjacent to any 'urban bushland areas' therefore this SEPP does not apply to the DA.

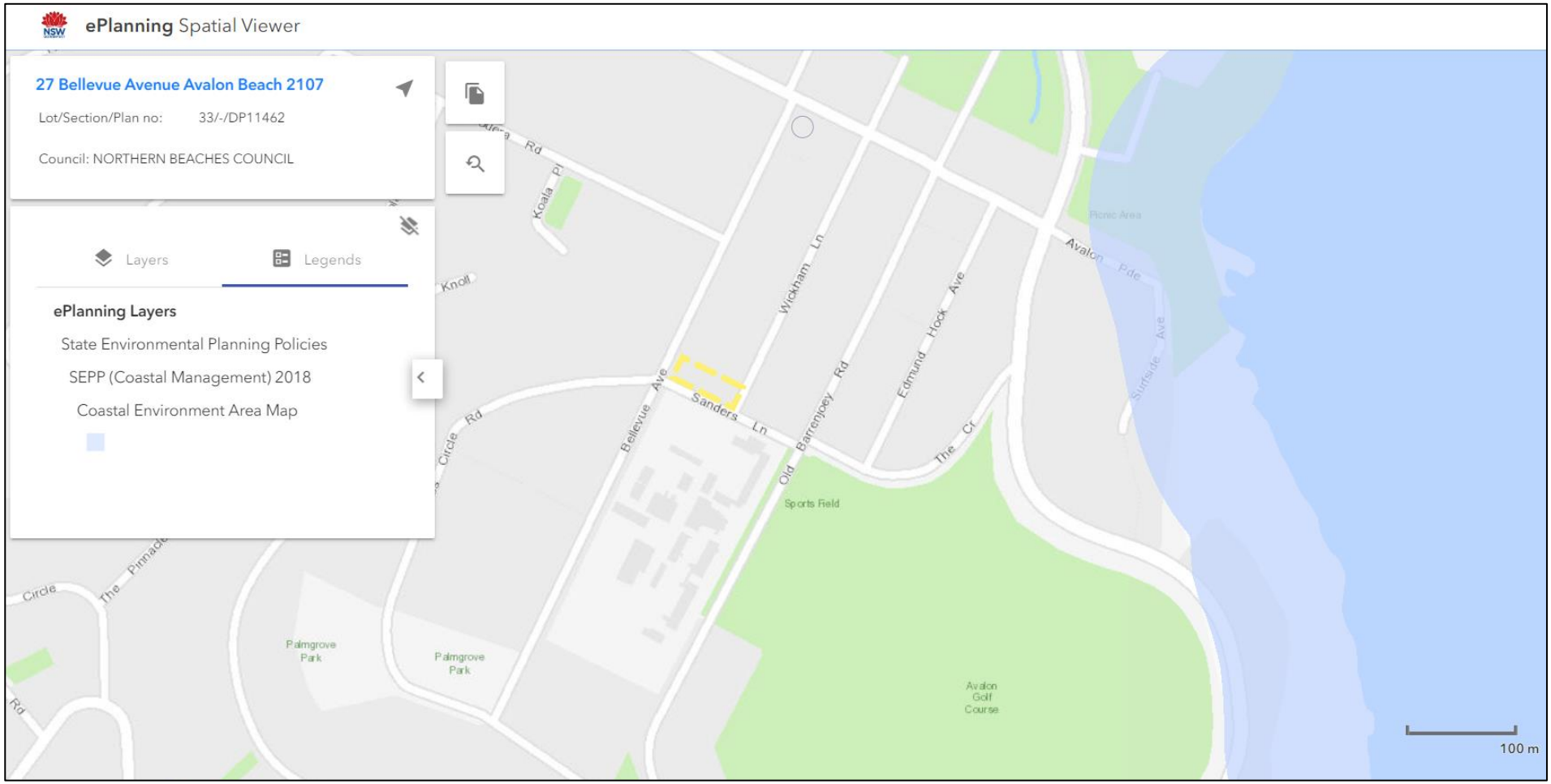

Figure 4. SEPP (Coastal Management) 2018 Mapping Relative to the Subject Site

1.6 Qualifying for the NSW Biodiversity Offset Scheme

The requirements of the BC Act and Biodiversity Conservation Regulation 2017 are mandatory for all development applications assessed pursuant to Part 4 of the EP&A Act submitted in the Pittwater ward of the Northern Beaches Local Government Area.

The BC Act and its regulations stipulate native vegetation clearing 'area threshold' values that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for native vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). Vegetation clearing includes all lopping, felling, slashing, or mowing of native trees, shrubs, or groundcover for the purpose of construction, landscaping, excavation or bushfire Asset Protection Zone (APZ) works.

The minimum lot size prescribed by Pittwater Local Environmental Plan 2014 to the Subject Site is 0.07ha. To avoid triggering the Biodiversity Offset Scheme the proponent must avoid the clearing/management of native vegetation in excess of 0.25ha (**Table 4**).

Developments that trigger the Biodiversity Offset scheme will require a 'Biodiversity Development Assessment Report' (BDAR) that addresses the Biodiversity Assessment Method and the purchasing of Biodiversity Credits.

Table 4. Biodiversity Offset Scheme Entry Thresholds

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

The Subject Site has not been mapped as containing biodiversity values within the Biodiversity Values Map (NSW DIPE 2019) (**Figure 5**).

In this instance, the area of native vegetation to be removed for the proposed DA falls under the required threshold, therefore:

- the BOS is not triggered,
- the BAM calculator does not apply,
- an Accredited Assessor is not required to prepare this BDAR, and
- no offset credit calculations are required.

A standard Flora and Fauna Impact Assessment Report (this report) has been produced to assess the impact of the proposed DA.

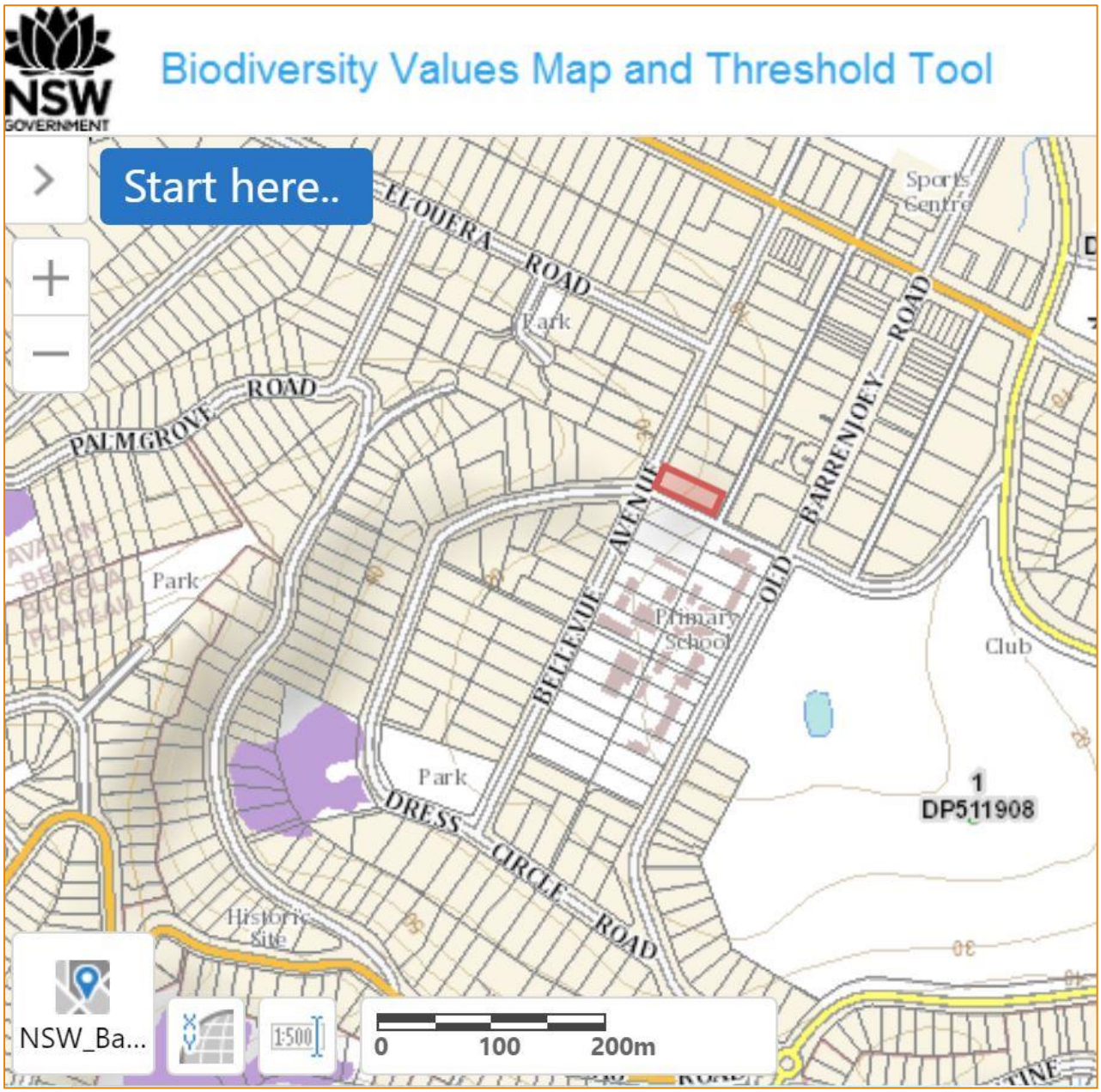

Figure 5. The Subject Property in relation to mapped biodiversity values (DPIE 2020b)

2. Methods

2.1 Sources of Information Used

A thorough literature review of local information relevant to the locality and the Pittwater council Local Government Area (LGA) was undertaken. Relevant literature that was reviewed in preparation of this report included:

- Relevant State and Commonwealth Databases
    - Protected Matters Search Tool (Commonwealth of Australia 2020)
    - NSW Bionet. The website of the Atlas of NSW Wildlife (DPIE 2020c)
    - Atlas of Living Australia Spatial Portal (ALA 2020)
- Vegetation and Landscape Mapping
    - The Native Vegetation of the Sydney Metropolitan Area. (OEH 2016a;2016b)
    - Sydney 1:100 000 Geological Map (Herbert 1983)
    - Soil Landscapes of the Sydney 1:100000 Sheet (Chapman & Murphy 1989)
    - Descriptions of Mitchell landscapes (Mitchell 2002)
- Council Documents
    - Pittwater Local Environmental Plan (LEP) 2014
    - Pittwater Development Control Plan (DCP) 2015
    - Weeds declared in the Greater Sydney Region (DPI 2020)

Preparation of this Flora and Fauna Assessment Report involved the review of accompanying project documents including:

- Shed Architects (2021) Site Plans
- Bradshaw Consulting Arborists (2021) Arboricultural Impact Assessment

Online databases and literature review were utilised to gain an understanding of the natural environment and ecology of the Subject site and its surrounds to an area of approximately 10 km². Searches utilising NSW Wildlife Atlas (DPIE 2020c) and the Commonwealth Protected Matters Search Tool (Commonwealth Department of the Environment 2020) were conducted to identify current threatened and migratory flora and fauna records within a 10km² search area centred on the Subject site. This data was used to assist in establishing the presence or likelihood of any such ecological values as occurring on or adjacent the Subject site and helped inform our Ecologist on what to look for during the site assessment.

Soil landscape and geological mapping was examined to gain an understanding of the environment on the Subject site and assist in determining whether any threatened flora or ecological communities may occur there (Herbert 1983, Chapman & Murphy 1989).

2.2 Ecological Site Assessment

The following sections of this report detail the site assessments undertaken by Land Eco including the survey methods and the weather conditions experienced in the lead-up and during each assessment.

2.2.1 General Survey

Site assessment was undertaken by Land Eco Consulting Ecologist on 7th March 2020. During the site assessment, the following activities were carried-out:

- Identifying and recording the vegetation communities present on the Subject site, with focus on identifying any threatened ecological communities (TEC);
- Searching for threatened species, species diagnostic of threatened ecological communities and priority weeds;
- Recording opportunistic sightings of any fauna species seen or heard on or within the immediate surrounds of the Subject site;
- Identifying and recording the locations of threatened fauna habitat such as important nesting, roosting or foraging microhabitats;
- Targeting the habitat of any threatened and regionally significant fauna including:
    - Tree hollows (habitat for threatened large forest owls, parrots, cockatoos and arboreal mammals);
    - Caves and crevices (habitat for threatened reptiles, small mammals and microbats);
    - Termite mounds (habitat for threatened reptiles and the echidna);
    - Soaks (habitat for threatened frogs and dragonflies);
    - Wetlands (habitat for threatened fish, frogs and water birds);
    - Drainage lines (habitat for threatened fish and frogs);
    - Fruiting trees (food for threatened frugivorous birds and mammals);
    - Flowering trees (food for threatened nectarivores mammals and birds);
    - Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals), and
    - Any other habitat features that may support fauna (particularly threatened) species.
- Assessing the connectivity and quality of the vegetation within the Subject site and surrounding area.

- Identifying the species and habitat values of all trees proposed to be removed.

2.2.2 Microbat Survey

Land Eco deployed Anabat Express for ten nights between 4-14 December 2020. The device was deployed in the centre of the subject site erected four metres above ground in a mature *Acmena smithii* tree.

The data was analysed by microbat acoustics expert Greg Ford (Balance! Environmental 2021).

Plate 1. Anabat Express deployed in the Subject Land in December 2020

2.2.3 Vegetation Community Assessment

Land Eco examined local satellite imagery, geological mapping, soil landscape mapping and topographic mapping, in addition to existing vegetation mapping (Sydney Metropolitan Vegetation Mapping [OEH 2016a; 2016b]) in order to stratify the Subject site and guide the site assessment survey efforts.

The vegetation community was determined based on desktop and field analysis of the geomorphology and geology of the Subject site, in addition to a quantitative analysis of the 'positive diagnostic' flora species (OEH 2016b) identified within the Subject site.

This data was compared against a suite of Sydney Metropolitan Vegetation Mapping 'positive diagnostic tests' (OEH 2016a; 2016b) to determine the vegetation community occurring within the Subject site against a suite of possible/candidate communities.

3. Native Vegetation

3.1 Historical Vegetation Mapping

Historical mapping by Office of Environment and Heritage NSW (OEH 2016a; 2016b) *Native Vegetation of the Sydney Metropolitan Area* indicates the presence of one vegetation community within the Subject Site (**Figure 6**). The historical mapping describes the community as *PCT 1214: Pittwater Spotted Gum Forest*. PCT 1214 *constitutes part of the Pittwater and Wagstaffe Spotted Gum Forest Endangered Ecological Community* (EEC) (NSW Scientific Committee 2013).

3.2 Confirmed Vegetation

Upon examining the species assemblage, Land Eco identified the vegetation community assemblage within the subject site *PCT 1181: Coastal Enriched Sandstone Dry Forest*. This was identified from the presence of a canopy dominated *Angophora costata* with associated *Eucalyptus umbra* and *Livistonia australis* on sandstone. No Spotted Gum *Corymbia maculata* or Grey Ironbark *Eucalyptus paniculata* were found on the subject site and further to this, *PCT 1214* typically is found of shale-derived soils. Suite of other characteristics are listed in the Final Determination (NSW Scientific Committee 2011) and these are absent from the Subject Site (**Table 5**).

An assessment of the vegetation along the entirety of Bellevue Avenue between Sanders Lane and Avalon Parade revealed all of this vegetation is dominated by *Angophora costata* with associated *Eucalyptus umbra* and *Corymbia gummifera* on sandstone derived soils (see **Plate 2**,**Plate 3**).

Northern Beaches Council (2020) state:

> *"Whilst the extant canopy layer on the subject site does appear to be dominated by Sydney Red Gum (Angophora costata), it is noted that at least four Spotted Gums were recorded on the adjoining property by a Council Tree Services Officer in May 2018. The submitted arborist report also identifies two Spotted Gums (Trees 42 and 43) on the neighbouring property at the time of inspection in February 2019. These two trees are assessed as being of a similar age to dominant canopy trees on the subject site, suggesting that all trees in this area are part of the same remnant cohort. Thus it is considered that vegetation on the site may represent a transitional community between Pittwater Spotted Gum Forest (PCT 1214) and Coastal Enriched Sandstone Dry Forest (PCT 1181).*
> *It is acknowledged that the subject site is located on the periphery of the historically mapped patch (Figure 1). Notwithstanding this, and the fact that vegetation on the subject site may be transitional, this canopy layer is still generally contiguous with vegetation that clearly aligns with the EEC (e.g. Elouera Road). As such, removal of at least 12 native trees from this contiguous patch of vegetation is considered likely to have at least an indirect impact upon the EEC through edge effects and loss of wildlife/pollinator habitat. In accordance with the precautionary principle, it is considered that this impact should be addressed through a test of significance, regardless of whether vegetation on the subject site meets the EEC determination or instead exists as a transitional form intergrading into the nonthreatened PCT."*

Northern Beaches Council identify the site as a possible 'transitional community' between Coastal Enriched Dry Forest and Pittwater Spotted Gum Forest, however Land Eco note that 'transitional communities' are not included in the Final Determination (NSW Scientific Committee 2013). In acknowledging the potential for the development to incur localised indirect impacts to patches of Pittwater Spotted Gum Forest EEC located outside of the Subject Land, Land Eco has assessed these indirect impacts of the development in a Test of Significance pursuant to section 7.3 of the BC Act (**Appendix 3**).

It was concluded that the construction of the proposed buildings will not cause a significant effect to a local occurrence of Pittwater Spotted Gum Forest EEC.

Table 5. Final Determination of Pittwater and Wagstaffe Spotted Gum Forest Ecological Community

Endangered Ecological Community Final Determination Criteria (NSW Scientific Committee 2011)	Subject Site
Pittwater and Wagstaffe Spotted Gum Forest is the accepted name for the Ecological Community that occurs on shale-derived soils from Narrabeen series geology …	The geology and soil profiles observed on the subject site are sandstone-derived soils associated with the Erina Soil Landscape. This soil landscape is described as 'undulating to rolling rises and low hills on fine-grained sandstones and claystones of the Narrabeen Group' (Chapman and Murphy 1989).
It has the structural form predominantly of open forest…	The trees exist in a fragmented open forest due to the low-density residential housing dominating the local area.
The Pittwater and Wagstaffe Spotted Gum Forest Ecological Community has been reported to occur in the Pittwater and Gosford Local Government Areas (LGA)…	The subject site is in the Pittwater Local Government Area.
Typical canopy species: • ***Corymbia maculata*** • ***Eucalyptus paniculata*** **Associated with:** • ***Angophora costata*** • ***Corymbia gummifera*** • ***Eucalyptus umbra*** • ***Eucalyptus punctata*** • ***Syncarpia glomulifera*** • ***Eucalyptus botryoides*** • ***Angophora floribunda***	The subject land supports no typical *Pittwater and Wagstaffe Spotted Gum Forest* canopy species. Three 'associated' canopy species are present at the subject site, however, these this assemblage of canopy species is more characteristic of the *Coastal Enriched Sandstone Dry Forest* ecological community which has been identified at the subject site.
Pittwater and Wagstaffe Spotted Gum Forest Ecological Community is characterised by an extensive assemblage of vascular plant species (n=65) as listed in the final determination. In any site not all of the assemblage listed (in the Final Determination) may be present. ***At any one time, seeds of some species may only be present in the soil seedbank with no above ground individuals present. The species composition of the site will be influenced by the size of the site and by its recent disturbance history. The number of species and the above ground composition of species will change with time.***	A total of 13 of the 65 the listed *Pittwater and Wagstaffe Spotted Gum Forest* 'characteristic species' were recorded within the subject land. Whilst some of these species are associated with this ecological community, the lack of characteristic dominant canopy species (*C. maculata* and *E.paniculata*) is a strong indication of the lack of *Pittwater and Wagstaffe Spotted Gum Forest* .
Conclusion	Owing to the incongruence between the vegetation on the Subject Site and the criteria in the Final Determination, Land Eco confirms that the vegetation on the Subject Land does not qualify to be assessed as Pittwater Wagstaffe Spotted Gum Forest. Instead the vegetation is a more common, non-threatened vegetation community called "Coastal Enriched Sandstone Dry Forest".

Plate 2. View from corner of Bellevue Ave and Sanders Lane looking North. Vegetation dominated by *Eucalyptus umbra* and *Corymbia gummifera* (east) and *Angophora costata* (west)

Plate 3. View from 35 Bellevue Ave looking south. Vegetation dominated by mature *Angophora costata*.

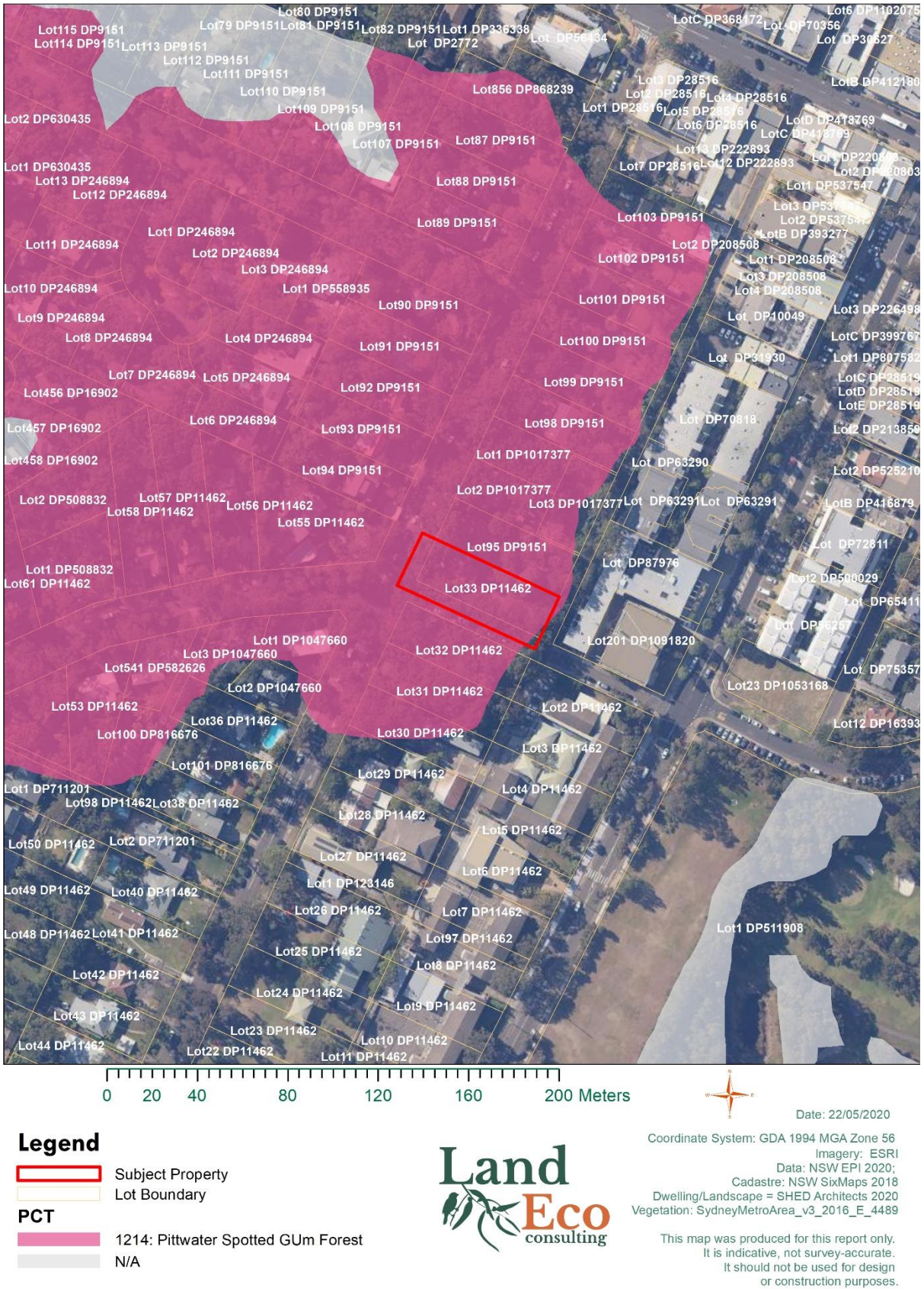

Figure 6. Historical Desktop Vegetation Mapping of the Subject Site

Figure 7. Vegetation Mapping of the Subject Site by Land Eco Consulting

4. Threatened Species

No threatened fauna or flora species were found on the subject site during the site assessment by Land Eco.

4.1 Threatened Flora

The NSW Wildlife Atlas online survey tool (DPIE 2020c) was used to obtain a list of threatened flora previously recorded within a10km radius of the subject site. The habitat requirements of each species were assessed (DPIE 2021d) in order to determine the likelihood of species occurrence and/or impact from the proposed development. Due to lack of remnant native vegetation within the site, no threatened flora species were identified in the desktop assessment as having potential to occur on the Subject Site (**Table 6**).

Table 6. List of threatened flora that may occupy the Subject site at some stage of their lifecycles as identified by BioNet (DPIE 2021d)

Species	BC Act	EPBC Act	Likelihood of Occurrence within the Subject site	5-Part Test Required?
Callistemon linearifolius	Vulnerable	-	Unlikely. The habitat for this species does not occur on the Subject site. A targeted search was undertaken however no individuals were identified, the only species of any resemblance observed were planted cultivars.	No
Chamaesyce psammogeton	Endangered	-	Unlikely. This species only occurs on sandy beaches and dunes, neither landform occur in or near the Subject Site.	No
Eucalyptus nicholii	Vulnerable	Vulnerable	Unlikely. The habitat for this species does not occur on the Subject site.	No
Genoplesium baueri	Endangered	Endangered	Unlikely. The habitat for this species does not occur on the Subject site. The site is heavily degraded and is largely comprised of planted garden beds. The nearest known populations are on sandstone ridgeland in Ku-ring-0gai Chase National Park.	No
Boronia umbellata	Vulnerable	Vulnerable	Unlikely. Only occurs naturally in northern NSW.	No
Asterolasia elegans	Endangered	Endangered	Unlikely. The nearest known populations are north of The Pittwater near the upper reaches of the estuary.	No
Persoonia hirsuta	Endangered	Endangered	Unlikely. The habitat for this species does not occur on the Subject site. The site is heavily degraded and is largely comprised of planted garden beds. A targeted search was undertaken however no individuals were identified.	No
Rhodamnia rubescens	Critically Endangered	-	Unlikely. The habitat for this species does not occur on the Subject site. The site is heavily degraded and is largely comprised of planted garden beds. A targeted search was undertaken however no individuals were identified.	No
Syzygium paniculatum	Endangered	Vulnerable	Unlikely. The habitat for this species does occur on the Subject site. A targeted search was undertaken however no individuals were identified, the only species of any resemblance observed was *Acmena smithii*.	No

4.2 Threatened Fauna

No threatened fauna or evidence thereof were identified within the subject site by Land Eco during the one (1) day site assessment.

Targeted microbat surveys revealed the presence of two vulnerable microbat species (Balance! Environmental 2021):

- *Chalinolobus dwyeri (*Large-eared Pied Bat)
- *Miniopterus australis* (Little Bent-winged Bat)

These two microbats are specialist cave-breeding bats. As there was no suitable cave, culvert or bridge habitat in the subject site it is not expected that these species would be breeding in the subject site. Further to this, the low number of recordings of each species were distributed sporadically over the recording period between 4014 December 2020. Only 8 calls of Large-eared Pied Bat were recorded, all from the last four days of the recording period, with a maximum of two calls per day. Little Bent-winged Bat was only recorded once, with one call detected on the 6th December 2020 (Balance! Environmental 2021).

The pattern of call detection suggests that the Little Bent-winged Bat was only passing through (or over) the site when the call was detected. Similarly, it is expected that the Large-eared Pied Bat was recorded during foraging bouts which were being carried-out over the last four days of the recording period. The nearest known breeding population of these two vulnerable species is at 'St Michaels Cave' which is a sea-side cave situated 1.4 km north-east of the subject site.

A single 'unresolved' recording of *Myotis macropus* is more likely to be a call of the non-threatened *Scotorepens orion* for which the habitat is considered more suitable (Balance! Environmental 2021).

Desktop analysis revealed a suite of threatened fauna species as having the potential to utilise habitat on the Subject site during part of their lifecycles (**Table 7**) (DPIE 2020c; 2021d)

The Subject site lacked important habitat features including native shrubby understorey, rock outcrops/crevices, waterbodies, soaks, hollow-bearing trees, coarse woody debris and dense leaf litter. Subsequently, all threatened fauna known to occur within 10km of the subject site could be discounted.

Native trees identified in the Subject Site may provide potential foraging habitat for locally resident and nomadic fauna, including:

- *Pteropus poliocephalus* (Grey-headed Flying Fox)
- *Glossopsitta pusilla* (Little Lorikeet)
- *Lathamus discolor* (Swift Parrot)
- *Ninox connivens* (Barking Owl)
- *Ninox strenua (*Powerful Owl)
- *Tyta novaehollandiae* (Masked Owl)
- *Anthochaera Phrygia* (Regent Honeyeater)
- *Saccolaimus flaviventris* (Yellow-bellied Sheathtail Bat)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)

The Grey-headed Flying Fox is highly mobile and known to forage over 50km in one foraging bout. It is not likely that any of the trees on the subject site provide important foraging or roosting resources for a local viable population of this species. The closest known Grey-headed Flying-fox camp in the locality is the Cannes Reserve Flying-fox Camp. No roost camps will be impacted therefore, it is not expected that the proposed development will significantly impact upon the Grey-headed Flying-fox or a viable local population of the species (**Appendix 3**) The presence of mature nectar-bearing trees may provide forage for Grey-headed Flying-fox and threatened nectarivorous birds, in particular *Lathamus discolor* (Swift Parrot) and *Glossopsitta pusilla* (Little Lorikeet). These birds are mobile and not likely to breed or depend on vegetation in the Subject Land. The Swift Parrot only nests in Tasmania while Little Lorikeet only nest in larger remnants such as National Parks.

Suitable roost habitat occurs across the Subject Land for vulnerable microbats, the most notable habitat features are the old buildings including the existing house and backyard shed (microbats like to roost in building cavities) and the dense fronds of *Livistonia australis and Washingtonia spp.* palms. The entire subject site is likely to be used as foraging space for vulnerable microbats, such as *Micronomus nofolkensis, Falsistrellus tasmaniensis, Scoteanax rueppellii, Miniopterus orianae oceanensis, Miniopterus australis, Chalinolobus dwyeri* and *Saccolaimus flaviventris.*

The trees in the Subject Site are likely to attract the prey of vulnerable nocturnal birds. *Ninox strenua* (Powerful Owl), *Ninox connivens* (Barking Owl), and *Tyto novaehollandiae* (Masked) may forage in the Subject Site for prey species including possums, gliders, rats and birds. Dense trees may be used as temporary roosts. Breeding is not likely as there are no suitable large tree hollows.

Table 7. List of threatened fauna that may occupy the Subject site at some stage of their lifecycles as identified by BioNet (DPIE 2019)

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Vulnerable	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Pseudophryne australis	Red-crowned Toadlet	Vulnerable	-	Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. 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.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Litoria aurea	Green and Golden Bell Frog	Endangered	Vulnerable	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	-	Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat.	Low. No connectivity and development is located in an urban area..	No
Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	-	Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. They feed entirely on fruit from vines, shrubs, large trees and palms, and are thought to be locally nomadic as they follow the ripening of fruits.	Moderate. Some suitable foraging or breeding habitat was located within the Subject site. This species is a vagrant only likely to pass through on occasion.	No
Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	-	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.	Moderate. Some suitable foraging or breeding habitat was located within the Subject site. This species is a vagrant only likely to pass through on occasion.	No
Hirundapus caudacutus	White-throated Needletail	Vulnerable	-	Fly in large flocks predominantly on the uplift of storms, bushfires or air pressure systems. They are non-breeding migrants to Australia and forage on insects at a height. Highly mobile and capable of moving over huge distances during foraging bouts. Rarely descends to trees/land.	Likely. May forage-over the Subject Land not likely to utilise the habitat itself.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Botaurus poiciloptilus	Australasian Bittern	Endangered	Endangered	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.).	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Ixobrychus flavicollis	Black Bittern	Vulnerable	-	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	-	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	Low. No suitable foraging or breeding habitat was located within the Subject site. May fly over on occasion.	No
Hieraaetus morphnoides	Little Eagle	Vulnerable	-	Occupies open eucalypt forest, woodland or open woodland. Sheoak or *Acacia* woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Low. No suitable foraging or breeding habitat was located within the Subject site. May fly over on occasion.	No
Lophoictinia isura	Square-tailed Kite	Vulnerable	-	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	Low. No suitable foraging or breeding habitat was located within the Subject site. May fly over on occasion.	No
Pandion cristatus	Eastern Osprey	Vulnerable	-	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. May fly over on occasion.	No
Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	-	Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide for foods such as limpets and mussels.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Numenius madagascariensis	Eastern Curlew		Critically Endangered	A non-breeding migrant to Australia it forages on intertidal mudflats often with beds of seagrass. This species prefers sheltered coastal habitats such as estuaries, mangroves, bays and lagoons.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	-	Broad-billed Sandpipers favour sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayment, lagoons, saltmarshes and reefs as feeding and roosting habitat. Occasionally, individuals may be recorded in sewage farms or within shallow freshwater lagoons. Broad-billed Sandpipers roost on banks on sheltered sand, shell or shingle beaches.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. This species is vagrant.	No
Callocephalon fimbriatum	Gang-gang Cockatoo population in the Hornsby and Pittwater Local Government Areas	Vulnerable	-	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Found in the Hornsby and Ku-ring-gai Local Government Areas.	Unlikely. This species is presumed to be locally extinct.	No
Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	-	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Feeds almost exclusively on the seeds of several species of she-oak (Casuarina and Allocasuarina species), shredding the cones with the massive bill.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Glossopsitta pusilla	Little Lorikeet	Vulnerable	-	Forages primarily in the canopy of open *Eucalyptus* forest and woodland, yet also finds food in *Angophora, Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards	High. Suitable foraging or breeding habitat was located within the Subject site. No suitable breeding habitat.	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Lathamus discolor	Swift Parrot	Endangered	Critically Endangered	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Following winter they return to Tasmania where they breed.	Moderate. Suitable foraging habitat was located within the Subject site. No breeding habitat.	Yes
Neophema pulchella	Turquoise Parrot	Vulnerable	-	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Nests in tree hollows, logs or posts, from August to December.	Unlikely. This species is a woodland species that require large areas of remnant bushland with abundant small hollows to nest.	No
Polytelis swainsonii	Superb Parrot	Vulnerable	Vulnerable	Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. Feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. This species is a vagrant to Sydney.	No
Ninox connivens	Barking Owl	Vulnerable	-	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile riparian soils. Requires very large permanent territories in most habitats due to sparse prey densities. Requires large hollows for nesting.	Moderate. No suitable breeding habitat was located within the Subject site. May hunt for bird on site, on occasion.	Yes
Ninox strenua	Powerful Owl	Vulnerable	-	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	Moderate. No suitable breeding habitat was located within the Subject site. May hunt for possums on site, on occasion.	Yes
Tyto novaehollandiae	Masked Owl	Vulnerable	-	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	Moderate. No suitable breeding habitat was located within the Subject site. May hunt for bird on site, on occasion.	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	-	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Hollows in standing dead or live trees and tree stumps are essential for nesting.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. No known local populations.	No
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Critically Endangered	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands.	Low . Some suitable foraging habitat but no suitable breeding habitat was located within the Subject site. Population extremely small and confined to only a few areas in the state. Any birds that appear in the vicinity of the Subject Site would be short-term passage vagrants.	No
Dasyornis brachypterus	Eastern Bristlebird	Endangered	Endangered	This species prefers dry, coastal vegetation. It is a shy species but has an easily identifiable call. Prefers habitat with a dense, healthy understorey and feeds on insects.	Low. No suitable foraging or breeding habitat was located within the Subject site. Thought to be extinct from the area.	No
Daphoenositta chrysoptera	Varied Sittella	Vulnerable	-	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland.Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. No known local populations in vegetation that connects with the Subject Site.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	-	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. The dominance of Noisy Miner render this site unsuitable.	No
Petroica boodang	Scarlet Robin	Vulnerable	-	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site. The dominance of Noisy Miner render this site unsuitable.	No
Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Endangered	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Endangered	They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. Males have a home range of approximately 5-20 hectares whilst females forage over smaller areas of about 2-3 hectares.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable	Inhabit eucalypt woodlands and forests.	Unlikely. Two feed known tree species *E.umbra* and *C.gummifera* are found on the subject site. It is thought that the local population of Koalas is now extinct.	No
Phascolarctos cinereus population Pittwater Local Government Area	Koala population Pittwater Local Government Area	Endangered Population	Vulnerable	Inhabit eucalypt woodlands and forests.	Unlikely. Two feed known tree species *E.umbra* and *C.gummifera* are found on the subject site. It is thought that the local population of Koalas is now extinct.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	-	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) 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; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Petaurus australis	Yellow-bellied Glider	Vulnerable	-	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Very mobile and occupy large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food resources.	Unlikely. No suitable foraging or breeding habitat was located within the Subject site.	No
Petaurus norfolcensis	Squirrel Glider	Vulnerable	-	In Pittwater, important food sources are likely to be the winter flowering Coast Banksia (Banksia integrifolia) and Spotted Gum (Corymbia maculata) and the summer flowering Old Man Banksia (B. serrata) and Grey Ironbark (Eucalyptus paniculata). Other likely food sources include Angophora costata, Banksia spinulosa, Corymbia gummifera, Eucalyptus botryoides, E. punctata, E. robusta, Melaleuca quinquernervia, mistletoes and Xanthorrhoea species.	Unlikely. Two feed known tree species *E.umbra* and *C.gummifera* are found on the subject site. It is thought that the local population of Squirrel Glider is now extinct.	No
Petaurus norfolcensis Barrenjoey Peninsula	Squirrel glider population Barrenjoey Peninsula	Endangered Population	-	In Pittwater, important food sources are likely to be the winter flowering Coast Banksia (Banksia integrifolia) and Spotted Gum (Corymbia maculata) and the summer flowering Old Man Banksia (B. serrata) and Grey Ironbark (Eucalyptus paniculata). Other likely food sources include Angophora costata, Banksia spinulosa, Corymbia gummifera, Eucalyptus botryoides, E. punctata, E. robusta, Melaleuca quinquernervia, mistletoes and Xanthorrhoea species.	Unlikely. Two feed known tree species *E.umbra* and *C.gummifera* are found on the subject site. It is thought that the local population of Squirrel Glider is now extinct.	No
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km.	High. Suitable foraging habitat found within the subject site. There is no roosting on site and the nearest roost site is at Cannes Reserve, Avalon.	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	-	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Low. May forage amongst canopy on occasion. Not detected during targeted surveys in December 2020.	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	-	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.Roost maily in tree hollows but will also roost under bark or in man-made structures.	Low. May forage amongst canopy on occasion. Not detected during targeted surveys in December 2020.	Yes
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Vulnerable	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. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features.	Present. Large-eared Pied Bat was recorded during a targeted survey where an AnabatExpress was deployed in the subject site for 10 nights. Only a small number of calls were detected, and these were only recorded on the final four nights of recording. Numbers of recordings were low with a maximum of two detections per day. This indicates Large-eared Pied Bat were recorded either passing through or foraging over the subject site. The low number of recordings and lack of suitable breeding habitat prove this species does not breed or shelter on the subject site.	Yes
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	-	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Low. May forage amongst canopy on occasion. Not detected during targeted surveys in December 2020.	Yes
Myotis macropus	Southern Myotis	Vulnerable	-	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Low. Not likely to forage or roost as no proximal open water sources.	No

Scientific Name	Common Name	BC Act	EPBC Act	Habitat Required (OEH Species Profiles)	Likelihood of Occurrence within the Subject Site	5-Part Test Required?
Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	-	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	Low. May forage amongst canopy on occasion. Not detected during targeted surveys in December 2020.	Yes
Miniopterus australis	Little Bent-winged Bat	Vulnerable	-	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Present. Little Bent-winged Bat was recorded during a targeted survey where an AnabatExpress was deployed in the subject site for 10 nights. Only one call was detected on the 6th Decembet 2020. This indicates the Little Bent-winged Bat was only passing through or foraging over the subject site. The low number of recordings and lack of suitable breeding habitat prove this species does not breed or shelter on the subject site.	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	-	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Hunt in forested areas, catching moths and other flying insects above the treetops.	Low. May forage amongst canopy on occasion. Not detected during targeted surveys in December 2020.	No

5. Impacts and Mitigation Measures

This section of the report provides a summary of impacts to biodiversity as a result of the proposed development. It further provides recommended efforts to avoid and minimise impact on biodiversity values associated with the proposed development. Measures to be implemented before, during and post construction to avoid and minimise the impacts of the project are summarised in **Table 9**.

5.1 Vegetation Impacts

The proposed development will result in the clearing/modification of a maximum of approximately 1330m^2 of native vegetation including the removal of 8 locally indigenous trees. A total of 25 locally indigenous canopy trees will continue to remain on the subject site, and adjacent Council-land and private property. These trees will be retained and protected during construction. Protections will be enabled under the guidance of Project Arboriculturist (Bradshaw Consulting Arborists 2021).

All of the vegetation proposed to be impacted consists of a predominantly remnant, native canopy with scattered, historically planted or self-sown exotic elements. The understorey and ground layer is predominantly exotic weed with scattered native shrub and groundcover species.

Some of these trees/shrubs are historically planted. Five of the trees are listed as 'Exempt' under the '*Pittwater 21 Development Control Plan*' (DCP), they are *Washingtonia filifera, Largerstroemia indica*, *Jacaranda mimosifolia* and *Syagrus romanzoffiana*. These trees can be removed without the need for an application. One tree a *Livingtstonia australis* Cabbage Tree Palm is within 2 metres on an existing property and does not require application for removal (Bradshaw Consulting Arborists 2021).

Table 8. Tree Removal Schedule

Tree Number	Species Name	Status	Comment
16	*Angophora costata*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
17	*Syagrus romanzoffiana*	Exotic Exempt	Remove.
18	*Livingstonia australis*	Native	Translocate. If this fails, replace with locally indigenous tree per Landscape Plan.
19	*Washingtonia filifera*	Exotic Exempt	Remove.
20	*Syagrus romanzoffiana*	Exotic Exempt	Remove.
22	*Angophora costata*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
31	*Angophora costata*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
32	*Angophora costata*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
34	*Corymbia gummifera*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
35	*Eucalyptus botryoides* (Land Eco identified as *Eucalyptus umbra)*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
36	*Eucalyptus botryoides* (Land Eco identified as *Eucalyptus umbra)*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
38	*Syzygium smithii*	Native	Remove and replace with locally indigenous tree per Landscape Plan.
40	*Largerstroemia indica*	Exotic	Remove.
41	*Jacaranda mimosifolia*	Exotic Exempt	Remove.

5.2 Threatened Species Impacts

Impacts to habitat for threatened fauna and flora are negligible. The proposed DA will cause no long-term of loss of important habitat for any species of threatened fauna or flora.

A Test of Significance pursuant to section 7.3 of the BC Act was undertaken for the indirect impacts to 'Pittwater Spotted Gum Forest EEC' as well as the threatened Grey-headed Flying-fox, threatened nectivorous bird species, threatened bat species and threatened owl species that may utilise the habitat in the Subject Site on occasion. It was concluded that the proposed development will not incur a significant impact to the species or any viable local population of these threatened entities (**Appendix 3**).

Table 9. Measures to be implemented before, during and after construction to avoid and minimise the impacts of the project

Action	Outcome/Measure	Timing	Responsibility
Project Location and Design	The location of the proposed development is largely within the footprint of an existing dwelling and exotic dominant rear yard. The location of the proposed development was selected due to its location within - dominated groundcover with the least impact on surrounding tree species. The development requires the removal of 8 indigenous native trees (Bradshaw Consulting Arborists 2021). Land Eco is satisfied that the proposed development has been positioned in order to avoid and minimise potential impacts on biodiversity values within the Subject site, provided the following mitigation measures are followed.	Pre-construction phase	▪ Proponent
Engage Project Ecologist	The applicant should engage a suitable qualified Project Ecologist to ensure that all of the impact mitigation strategies relating to biodiversity are upheld. In particular a pre-clear survey and supervision of tree clearing to capture and relocate any displaced fauna. A suitably qualified and experience Ecologist with a minimum of a tertiary degree in a relevant discipline, and license under the NSW Department of Planning Industry and Environment should be engaged	Pre-construction phase	▪ Proponent
Undertake Pre-clearing Survey and Clearing Supervision	Project Ecologist to undertake a pre-clearing survey of the subject site. The Ecologist should search all building crevices equipped with an ultrasonic bat detector and a hollow scope to detect roosting microbats. An extendable hollow scope should be extended amongst palm fronds to check for roosting microbats prior to tree felling or demolition. All felling of native trees and any palm trees should be supervised by an Ecologist who will be available on site to capture, treat/relocate any displaced fauna.	Pre-construction phase Construction phase	▪ Project Ecologist
Tree Protections and Clearing	Works will be avoided within the TPZ of any trees located outside of the development site that require retention. This includes trees on neighbouring properties. Appoint project Arboriculturalist.. Minimum AQF Level 5 with 5 years' experience. TPZ will be designated by the Project Arboriculturalist. Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on development sites. It is an area isolated area from construction disturbance so that the tree remains viable. Tree removal should be conducted by an Arborist with a minimum (Australian Qualification Framework) AQF level 3. Work must be undertaken as per the Code of Practice Amenity Tree Industry 1998.	Pre-construction phase	▪ Arborist under guidance of Project Arboriculturalist.
Erosion and Sedimentation	Appropriate erosion and sediment control must always be erected and maintained during construction. As minimum such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004).	Construction phase	▪ Construction Contractor
Storage and Stockpiling (Soil and Materials)	All storage, stockpile and laydown sites will be established away from any native vegetation that is planned to be retained. Never stockpile under the 'drip zone' of a tree. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site.	Construction phase	▪ Construction Contractors
Weed eradication and continued suppression	Weeds should be eradicated across all areas of the Subject site including retained garden beds. All priority weeds must be eradicated and continuously supressed. The *Olea europaea subsp. Cuspidate (African Olive)* should be removed, and where possible, replaced with a locally indigenous fruit-bearing tree or tall shrub. Common environmental weeds must remain below 2% cover within the subject site. Where possible, exotic	Construction phase Post-construction phase	▪ Project Ecologist ▪ Landscape Contractor

Action	Outcome/Measure	Timing	Responsibility
	garden plants should be replaced with locally indigenous plant species indigenous to the area to improve the overall biodiversity value of the Subject site.		
Landscaping and Revegetation	The landscaping proposed will constitute at least 80% cover of locally indigenous native species (trees and/or shrubs and/or groundcovers). The landscaping effort will reduce net loss of locally indigenous native flora, including feed trees/shrubs. See Landscape Plan (Narelle Sonter Botanica 2020).	Post-construction phase	▪ Project Ecologist ▪ Landscape Contractor
Stormwater	Areas of landscaped open space are to be maximised for natural infiltration of water. Rainwater tanks will also be present on the subject site for the collection of stormwater.	Post-construction phase	▪ Proponent ▪ Construction Architect
Sewerage	The proposed development will result in increases in sewage. The sewage will be piped into the existing sewage system associated with the current welling. The development is unlikely to result in significant changes to local sewage such that biodiversity would be impacted.	Post-construction phase	▪ Proponent ▪ Construction Architect
Fencing	As per Pittwater DCP D1.16 Fencing in Category 1 and 2 area	Construction phase	▪ Proponent ▪ Construction Architect

6. Conclusion

Land Eco Consulting Pty Ltd assessed the significance of impact of the proposed development upon threatened species, populations and communities listed under New South Wales and Commonwealth Legislation.

No threatened ecological communities occur on the Subject Land. Elements of Pittwater Spotted Gum Forest EEC may occur on adjacent land parcels. A Test of Significance (5-part test) was undertaken to assess the effects of the proposed development in accordance with Section 7.3 of the NSW Biodiversity Conservation Act 2016. It was concluded that the proposed development will not significantly affect any local occurrence of Pittwater Spotted Gum Forest EEC.

Habitat for threatened fauna occurs on the Subject Land and this habitat will be affected as a result of the proposed development. A Test of Significance (5-part test) was undertaken to assess the effects of the proposed development in accordance with Section 7.3 of the NSW *Biodiversity Conservation Act 2016*. It was concluded that the proposed development will not significantly affect any locally occurring threatened species or populations.

Land Eco Consulting Pty Ltd is satisfied that all Pittwater Council planning controls relevant to biodiversity will be met in accordance with the Pittwater Local Environment Plan 2015 and Pittwater Development Control Plan 2016. Land Eco Consulting Pty Ltd supports the proposed development and recommends its approval subject to implementation of the recommendations.

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Appendices

Appendix 1. Flora species identified within the Subject Site

Species List	Exotic	Canopy	Midstorey	Groundcover
Acacia floribunda			x	
Acacia suaveolens			x	
Acmena smithii			x	
Agapanthus praecox	x			x
Agave sp.	x			x
Ageratina adenophora	x			x
Anagallis arvensis	x			x
Angophora costata		x		
Asparagus aethiopicus	x			x
Bidens pilosa	x			x
Breynia oblongifolia			x	
Carex breviglumis	x			x
Carex inversa				x
Cenchrus clandestinus	x			x
Chlorophytum comosum	x			x
Cinnamomum camphora	x	x		
Commelina cyanea				x
Conyza bonariensis	x			x
Corymbia gummifera		x		
Crassula sp.				x
Cryptocarya sp.			x	
Delairea sp.				x
Dianella cerulea var. producta				x
Dichondra repens				x
Digitaria didactyla				x
Digitaria ramularis				x
Erharta erecta	x			x
Eucalyptus umbra		x		
Euphorbia sp.	x			x
Eustrephus latifolius				x
Gamochaeta spp.	x			x
Geranium homeanum				x
Gladiolus sp.	x			x
Glochidion ferdinandi		x		
Hedera helix	x			x
Hypochaeris radicata	x			x
Isolepis nodosa				x
Juncus sp.				x
Leontodon saxatilis	x			x
Ligustrum lucidum	x		x	

Species List	Exotic	Canopy	Midstorey	Groundcover
Ligustrum sinense	x		x	
Livistonia australis		x		
Lomandra longifolia				x
Microlena stipoides				x
Monstera deliciosa	x			x
Nephrolepis cordifolia	x			x
Nerium oleander	x		x	
Ochna serrulata	x		x	
Oplismenus aemulus				x
Oplismenus imbecilis				x
Oxalis corniculata	x			x
Oxalis debilis	x			x
Oxalis perennans				x
Paspalum urvillei	x			x
Passiflora edulis	x			x
Phyllostachys sp.	x			x
Pittosporum undulatum			x	
Rumex crispus	x			x
Senna pendula var. glabrata	x		x	
Setaria pumila	x			x
Sida rhombifolia	x		x	
Sonchus oleraceus	x			x
Sporobolus africanus	x			x
Stenotaphrum secundatum	x			x
Stephania japonica				x
Verbena bonariensis	x			x
Veronica plebeia				x
Viola hederacea				x
Washingtonia robusta	x	x		

Appendix 2. Fauna species identified during survey of Subject Site

Class	Scientific Name	Common Name	BC Act Status
Aves	*Dacelo novaeguinaea*	Laughing Kookaburra	Protected
Aves	*Manorina melanocephala*	Noisy Miner	Protected
Aves	*Trichoglossus haematodus*	Rainbow Lorikeet	Protected

Aves	*Hirundo neoxena*	Welcome Swallow	Protected
Reptilia	*Lampropholis guichenoti*	Common Garden Skink	Protected
Mammalia	*Rattus rattus*	Black Rat	Feral Pest
Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	Vulnerable
Mammalia	*Chalinolobus gouldii*	Gould's Wattled Bat	Protected
Mammalia	*Scotorepens orion*	Eastern Broad-nosed Bat	Protected
Mammalia	*Miniopterus australis*	Little Bent-wing Bat	Vulnerable
Mammalia	*Austronomus australis*	White-striped Mastiff Bat	Protected

Appendix 3. Biodiversity Conservation Act 2016 – Test of Significance (5 Part Test)

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion **Status: Endangered Ecological Community**		
Ecology **(DPIE 2021d)**	Occurs entirely within the Pittwater Local Government Area, on the Barrenjoey Peninsula and Western Pittwater Foreshores. Remnants are typically small and on private property, however there are a few remnants in Council reserves and one remnant within Ku-ring-gai Chase NP. Occurs in association with shale derived soils with high rainfall on lower hillslopes on the Narrabeen Group - Newport Formations on the Barrenjoey Peninsula and western Pittwater Foreshores. General structural form is open-forest but may now exist as woodland or remnant trees. The tree canopy layer is characterised by Spotted Gum Corymbia maculata and Grey Ironbark Eucalyptus paniculata and is associated with Smooth-barked Apple Angophora costata, Red Bloodwood Corymbia maculata, Broad-leaved White Mahogany E. umbra, Grey Gum E. punctata, Turpentine Syncarpia glomulifera, Bangalay E. botryoides, and Rough-barked Apple Angophora floribunda.	
Habitat Impacted by this Activity/Development	The subject site contains no Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. It is alleged by Northern Beaches Council (2020) that property to the north of the subject site (29 Bellevue Avenue) contains two *Corymbia maculata* trees in its front yard, however, Land Eco could not confirm whether these trees are indeed *Corymbia maculata* and not simply misidentified *Angophora costata* or historically planted *Corymbia citridora*. This is because the trees are located on private property which Land Eco could not gain access to. Assuming these trees are *Corymbia maculata* and representative of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC they would form a small 'micro-unit' of this EEC as they surrounded by a much more homogenous patch of the more common, non-threatened 'Coastal Enriched Sandstone Dry Forest'. All of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC present in the locality will be retained unimpacted by the proposed development. A total of 8 indigenous native trees will be removed (Bradshaw Consulting Arborists 2021). These trees form part of 1330m2 of weed-infested native vegetation proposed to be removed. None of these trees form part of the Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC. The proposed development is of low profile and not likely to cause shading to the Corymbia maculate trees in the adjoining property. Appropriate tree protection measures have been proposed (Bradshaw Consulting Arborists 2021) which will ensure these two Spotted Gum trees will be retained and protected during and post construction.	
(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,	NA	
(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**	The proposed development will not cause any adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction. No extent of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion will be cleared or impacted for this development.
	(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,	The proposed development will not substantially and adversely modify the composition of any occurrence of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion such that its local occurrence is likely to be placed at risk of extinction. The only local occurrence of this community consists of two tentatively identified *Corymbia maculata* trees situated on 29 Bellevue Avenue. These two trees will be protected and retained post development (Bradshaw Consulting Arborists 2021).
(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**	No extent of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion will be removed or modified. A total of 1330m2 of Coastal Enriched Sandstone Dry Forest will be removed or modified. These trees form part of a patch of native vegetation which is continuous with the two alleged *Corymbia maculata* trees which occur on the adjacent property (29 Bellevue)

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion **Status: Endangered Ecological Community**		
	(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	No area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity. The two tentative *Corymbia maculata* trees that occur on 29 Bellevue Ave (adjacent to the subject property) are surrounded by locally common, non-threatened vegetation. These trees are isolated from other *Corymbia maculata* trees in the locality. They will continue to remain during and post development. Their propagules will continue to remain available to pollinate other *Corymbia maculata* trees in the Avalon area.
	(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,	No habitat to be removed/modified is not important to the long-term survival of the ecological community in the locality. The presence of two tentatively identified *Corymbia maculata* trees on the adjacent property will continue to remain post development. No habitat will be fragmented or isolated.
(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),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	
(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.	The proposed development will increase the impact of a key threatening process (KTP). The only KTP relevant to the proposed development is: • Clearing of native vegetation	
Conclusion The proposed development will not significantly impact upon a local occurrence of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion, therefore no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.		

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Grey-headed Flying-fox **(*Pteropus poliocephalus*)** **Status: Vulnerable**		
Ecology **(DPIE 2021d)**	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feeds on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.	
Habitat Impacted by this Activity/Development	The site contains tree species that may form potential foraging habitat for Grey-headed Flying Fox. The Grey-headed Flying Fox is highly mobile and known to forage over 50km in one foraging bout. It is not likely that any of the trees on the subject site provide important foraging resources for a local viable population of this species. The closest known Grey-headed Flying-fox camp in the locality is the Cannes Reserve Flying-fox Camp which is not adjoining the Subject Site. A total of 8 indigenous native trees will be removed (Bradshaw Consulting Arborists 2021). These trees form part of 1330m2 of weed-infested native vegetation proposed to be removed.	
(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,	The Grey-headed Flying-fox occurs as a single population across its distribution. Individuals are capable of flying up to 50km in a foraging bout. It is unlikely that the loss of 8 potential feed trees from an urban area will 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,	
(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**	NA
	(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,	NA
(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**	A total of 1330m2 and 8 potential feed trees will be removed. These trees provide temporary foraging habitat when they are flowering/fruiting.
	(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	The Grey-headed Flying Fox is highly mobile and known to forage over 50km in one foraging bout. It is not likely that removal of any of the trees from the Subject Site could result in isolation or fragmentation.
	(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,	The habitat proposed to removed/ modified is not important to the long-term survival of the species in the locality.

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016	
Grey-headed Flying-fox (***Pteropus poliocephalus***) **Status: Vulnerable**	
(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),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.
(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.	The proposed development will increase the impact of a key threatening process (KTP). The only KTP relevant to the proposed development is: • Clearing of native vegetation
Conclusion The proposed development will not significantly impact a viable local population of Grey-headed Flying-fox, therefore no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.	

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Nectivorous Bird Species • ***Glossopsitta pusilla* (Little Lorikeet)[1]** • ***Lathamus discolor* (Swift Parrot)[2]** • ***Anthochaera phrygia* (Regent Honeyeater)[3]** **Status: [1]Vulnerable, [2]Endangered, [3]Critically Endangered**		
Ecology **(DPIE 2021d)**	The Regent Honeyeater, Sift Parrot and Little Lorikeet are all nomadic nectarivores birds which travel across New South Wales following food availability. The main sources of food are nectar from flowering Eucalyptus/Corymbia and lerp (psyllid bug exudate) on Eucalyptus/Corymbia/Angophora leaves. The Little Lorikeet nests anywhere there is suitable habitat within its distribution however, mostly in coastal floodplains. It typically nests in a small tree hollow high in a smooth-barked Eucalyptus/Angophora/Corymbia spp. The Swift Parrot is migratory and only nests in Tasmania. The Regent Honeyeater formerly nested in multiple locations across NSW, however, in modern times it only nests in select locations, Capertee Valley, lower/mid Hunter Valley, Burragograng Valley, Severn River Valley and the Bundarra-Barraba area.	
Habitat Impacted by this Activity/Development	The site contains tree species that may form potential foraging habitat for these three nectarivores bird species. No suitable nesting habitat is present. A total of 8 indigenous native trees (potential feed trees) will be removed (Bradshaw Consulting Arborists 2021). These trees form part of 1330m2 of weed-infested native vegetation proposed to be removed.	
(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,	All of these species are highly mobile and form single populations across New South Wales. It is unlikely that the loss of 8 trees from an urban area will constitute a significant adverse effect to any of these species such that a viable local population of the species is likely to be placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	NA
	(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,	NA
(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**	A total of 1330m2 and 8 trees will be removed. These trees provide temporary foraging habitat when they are flowering/fruiting.
	(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	These three bird species are highly mobile and known to forage and breed across states. It is not likely that 8 feed trees in an urban area on the Subject Site provide important foraging resources for a viable population of this species.
	(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,	The habitat proposed to be removed/modified is not important to the long-term survival of the three bird species in the locality.

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016	
Nectivorous Bird Species • ***Glossopsitta pusilla* (Little Lorikeet)[1]** • ***Lathamus discolor* (Swift Parrot)[2]** • ***Anthochaera phrygia* (Regent Honeyeater)[3]** **Status: [1]Vulnerable, [2]Endangered, [3]Critically Endangered**	
(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),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.
(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.	The proposed development will increase the impact of a key threatening process (KTP). The only KTP relevant to the proposed development is: • Clearing of native vegetation
Conclusion The proposed development will not significantly impact a viable local population of Little Lorikeet, Swift Parrot and Regent Honeyeater. Therefore, no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.	

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Large Owl Species • ***Ninox connivens* (Barking Owl)** • ***Ninox strenua* (Powerful Owl)** • ***Tyta novaehollandiae* (Masked Owl)** **Status: Vulnerable**		
Ecology **(DPIE 2021d)**	The Powerful Owl, Barking Owl and Masked Owl are all large, hollow-nesting predatory birds which typically roost during the daylight hours and hunt for vertebrate prey at night. All of these species require large tree hollows with entrances >15cm in diameter. Such hollows need to be located in areas of vegetation away from human disturbance, therefore it is not likely that a suburban yard would constitute a breeding site. These three birds are known to travel multiple kilometres in a night to hunt. They hunt flying-foxes, possums, rabbits, rats, large mice and birds. Hunting can occur in any environment the birds can access, including vegetated urban areas. During the breeding season, roosting takes place in dense tree canopy near the nest hollow. During the non-breeding season, these birds may roost anywhere there is suitable, dense tree canopy albeit areas of disturbance such as suburban yards are less favourable.	
Habitat Impacted by this Activity/Development	The site contains trees that may form potential foraging habitat for these three owl species. No suitable nesting habitat is present. A total of 8 indigenous native trees (potential feed trees) will be removed (Bradshaw Consulting Arborists 2021). These trees form part of 1330m2 of weed-infested native vegetation proposed to be removed.	
(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,	It is unlikely that the proposed development 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.	
(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**	NA
	(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,	NA
(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**	A total of 1330m2 and 8 locally indigenous trees will be removed. These trees provide temporary roost habitat, or shelter/food for prey species. It is unlikely that these owl species would breed in the habitat proposed to be removed/modified.
	(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	It is unlikely that an area of habitat will become fragmented or isolated from other areas of habitat as a result of the proposed development or activity.
	(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,	The habitat proposed to be removed/modified is not important to the long-term survival of the three owl species in the locality. It is likely that these owls will continue to forage in the subject land post completion of the new development, as prey items in the form of possums, rats and birds will continue to exist.

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016	
Large Owl Species • ***Ninox connivens* (Barking Owl)** • ***Ninox strenua* (Powerful Owl)** • ***Tyta novaehollandiae* (Masked Owl)** **Status: Vulnerable**	
(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),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.
(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.	The proposed development will increase the impact of a key threatening process (KTP). The only KTP relevant to the proposed development is: • Clearing of native vegetation
Conclusion The proposed development will not significantly impact a viable local population of Barking Owl, Powerful Owl and Masked Owl. Therefore, no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.	

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Microbats • ***Saccolaimus flaviventris* (Yellow-bellied Sheathtail Bat)** • ***Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)** • ***Chalinolobus dwyeri* (Large-eared Pied Bat)** • ***Falsistrellus tasmaniensis* (Eastern False Pipistrelle)** • ***Scoteanax rueppellii* (Greater Broad-nosed Bat)** • ***Miniopterus australis* (Little Bent-winged Bat)** • ***Miniopterus orianae oceanensis* (Large Bent-winged Bat)** **Status: Vulnerable**		
Ecology	All of these microbats forage in, around and over tree canopies of invertebrate prey. Some fly fast and high over the canopy, while others forage amongst or beneath the canopy. All of these microbat species roost in tree hollows for shelter, and some of these species prefer to breed in tree hollows. In particular the Yellow-bellied Sheath-tail Bat, Eastern Coastal Free-tailed Bat, Eastern False Pipistrelle and Greater Broad-nosed Bat. The other three species, including the Large-eared Pied Bat, Little Bent-winged Bat and Large Bent-winged Bat may temporarily roost in tree hollows or bark crevices but typically only breed in rock caves. The Bent-winged Bats and Large-eared Pied Bat only breed in caves and cave-like structures with specific habitat attributes, no suitable breeding habitat occurs for these species in or around the Subject Site.	
Habitat Impacted by this Activity/Development	A passive ultrasonic survey identified the presence of two vulnerable microbat species in the subject land: 1. Little Bent-winged Bat 2. Large-eared Pied Bat These two microbats are specialist cave-breeding bats. As there was no suitable cave habitat in the subject site and the number of recordings of each species was sporadic and low, it is expected that these species were present as foraging individuals and were not likely to be roosting in the subject site. A total of 8 indigenous native trees (potential feed trees) will be removed (Bradshaw Consulting Arborists 2021). These trees form part of 1330m2 of weed-infested native vegetation proposed to be removed. All of these trees are likely to attract insects that these microbats may forage upon. Only a small number of these trees provide any form of roosting habitat for vulnerable microbats. The palm trees proposed to be removed have dense fronds which tree-roosting microbats may shelter and even breed under. A large termite mound supporting a hollow occurs in a large, native tree in the northern corner of the Subject Site. Building structures may provide temporary bat roost habitat. Targeted surveys carried-out in December 2020 revealed no indication of any breeding by a threatened microbat species in the subject land.	
(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,	All of these microbats are mobile and capable of flying over 100 metres in a night. It is unlikely that the limited habitat available for forage and shelter that is proposed to be removed would be important to the life cycle of any of these species. Targeted surveys carried-out in December 2020 revealed no indication of any breeding by a threatened microbat species in the subject land. It is not likely that the development could 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.	
(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**	NA
	(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,	NA

Test of Significance (Five Part Test) s.7.3 of the Biodiversity Conservation Act 2016		
Microbats • ***Saccolaimus flaviventris* (Yellow-bellied Sheathtail Bat)** • ***Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)** • ***Chalinolobus dwyeri* (Large-eared Pied Bat)** • ***Falsistrellus tasmaniensis* (Eastern False Pipistrelle)** • ***Scoteanax rueppellii* (Greater Broad-nosed Bat)** • ***Miniopterus australis* (Little Bent-winged Bat)** • ***Miniopterus orianae oceanensis* (Large Bent-winged Bat)** **Status: Vulnerable**		
(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**	A total of 1330m2 and 8 indigenous native trees will be removed. It is unlikely that these microbat species would breed in the habitat proposed to be removed/modified. Two old buildings will be demolished, these buildings may provide roosting habitat for microbats. Targeted surveys during December 2020 revealed no evidence of breeding by a threatened microbat in the subject site.
	(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	All of these microbats are mobile and capable of flying over the entire extent of the Subject Land in one flight. The loss of the 8 remnant native trees will remove habitat connectivity for these microbats, but is not likely to form fragmentation as the tree canopy will continue to occur across the landscape allow microbats to continue foraging as per present conditions. The proposed buildings are not likely to create an obstacle to movement of microbats significantly above the existing 'obstacle' posed by the existing building. Further, all potentially occurring microbat species will likely be able to fly over the proposed buildings during their foraging bouts.
	(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,	The habitat proposed to be removed/modified is not important to the long-term survival of these microbat species in the locality.
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	The development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value, directly or indirectly.	
(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.	The proposed development will increase the impact of a key threatening process (KTP). The only KTP relevant to the proposed development is: • Clearing of native vegetation	
Conclusion The proposed development is not likely to cause a significant effect upon a viable local population of Yellow-bellied Sheathtail Bat, Eastern Coastal Free-tailed Bat, Large-eared Pied Bat, Eastern False Pipistrelle, Greater Broad-nosed Bat, Little Bent-winged Bat and Large Bent-winged Bat. Therefore, no further impact assessment, such as a Biodiversity Development Assessment Report (BDAR) is necessary for this project to proceed.		

Land Eco consulting

www.landeco.com.au

Ph: 0408 765 832