
# Flora and Fauna Assessment Report

60 Hudson Parade, Clareville, NSW 2107

Report prepared by Narla Environmental for Brook Lane Property Group Pty Ltd

December 2024

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| **Report:** | Flora and Fauna Assessment Report – 60 Hudson Parade, Clareville, NSW |
| **Prepared for:** | Brook Lane Property Group Pty Ltd |
| **Prepared by:** | Narla Environmental Pty Ltd |
| **Project no:** | BRLA3 |
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# Report Certification

Works for this report were undertaken by:

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# Document Control

| Revision | Document Name | Issue Date | Internal Document Review |
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| Draft v1.0 | Flora and Fauna Assessment Report – 60 Hudson Parade, Clareville, NSW | 18/11/24 | Chris Moore |
| Final v1.0 | Flora and Fauna Assessment Report – 60 Hudson Parade, Clareville, NSW | 03/12/24 | Rebecca Sutton |

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# Glossary

| Acronym/ Term | Definition |
|---|---|
| BAM | Biodiversity Assessment Methodology |
| BC Act | New South Wales Biodiversity Conservation Act 2016 |
| BDAR | Biodiversity Development Assessment Report |
| DA | Development Application |
| DAFF | Department of Agriculture, Fisheries and Forestry |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water |
| DEH | Department of the Environment and Heritage |
| 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) |
| DPE | Department of Planning and Environment (now NDCCEEW) |
| DPI | Department of Primary Industries |
| DPIE | Department of Planning, Industry and Environment (became DPE, now NDCCEEW) |
| EEC | Endangered Ecological Community |
| EP&A Act | Environmental Planning & Assessment Act 1979 |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 |
| FFA | Flora and Fauna Assessment |
| ha | Hectares |
| km | Kilometre |
| LGA | Local Government Area |
| Locality | The area within a 10 km radius of the Subject Property |
| Native Vegetation | Any of the following types of plants native to New South Wales: (a) trees (including any sapling or shrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation) and (d) plants occurring in a wetland. |
| NDCCEEW | NSW Department of Climate Change, Energy, the Environment, and Water (formerly NDCCEEW) |
| NSW | New South Wales |
| OEH | Office of Environment and Heritage (now known as the NDCCEEW) |
| PDCP | Pittwater 21 Development Control Plan 2004 |
| PLEP | Pittwater Local Environmental Plan 2014 |
| PWSGF | Pittwater and Wagstaffe Spotted Gum Forest |
| SEPP | State Environmental Planning Policy |
| Subject Property | 60 Hudson Parade, Clareville, NSW, 2107 (Lot56/-/DP7794) |

| Acronym/ Term | Definition |
|---|---|
| Subject Site | The footprint of the proposed development |
| TEC | Threatened Ecological Community |
| Threatened species, populations and ecological communities | Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016 |
| TPZ | Tree Protection Zone: A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development |
| VRZ | Vegetated Riparian Zone |

# 1. Introduction

## 1.1 Project Background

Narla Environmental Pty Ltd (Narla) were engaged by Brook Lane Property Group Pty Ltd ('the Proponent') to undertake a Flora and Fauna Assessment (FFA) for the proposed development at 60 Hudson Parade, Clareville, NSW, 2107 (Lot56/-/DP7794), hereafter referred to as the 'Subject Property' (**Figure 1**). The proposed development involves the construction of a boat ramp and decking to accommodate access from the existing pathway as well as the removal of one (1) native tree, associated site works and landscaping. All areas associated with the proposed development are hereby referred to as the 'Subject Site.

Narla has produced this report in order to assess any potential impacts associated with the proposed development on terrestrial ecology (biodiversity), particularly threatened species, populations, and ecological communities listed under the Biodiversity Conservation Act 2016 (BC Act) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The report will also recommend appropriate measures to mitigate any potential impacts in line with all relevant State Environmental Planning Policies (SEPP) and local government plans, namely the Pittwater Local Environmental Plan 2014 (PLEP) and the Pittwater 21 Development Control Plan 2004 (PDCP).

## 1.2 Site Description and Location

The Subject Property is located at 60 Hudson Parade within the locality of Clareville in the Northern Beaches Local Government Area (LGA). The site boundary was defined by cadastral boundaries provided on the NSW Government Land and Property Information Spatial Information Exchange map viewer (NSW SixMaps 2024) and the site plans (Bennett Murada Architects 2024) (**Appendix A**).

The Subject Property covers an area of approximately 0.13ha and contains a dwelling and carport, as well as areas of hardstand and landscaping. The surrounding residential area is dominated by dwellings in a mixed urban/ bushland landscape. The Subject Site is located in the western boundary of the Subject Property, bordering Clareville Beach, which feeds into the broader Pittwater. The Subject Site is approximately 0.02ha.

## 1.3 Topography, Geology and Soil

The Subject Property has a west facing slope with elevation ranging from approximately 14m asl in the east, down to approximately 2m asl in the west.

The Subject Property is situated on the 'Watagan' soil landscape as described in the Soil Landscapes of the Sydney 1:100,000 sheet (Chapman et al. 2009). This soil landscape is categorised by rolling to very steep hills on fine-grained Narrabeen Group sediments. Mostly interbedded laminite and shale with quartz to lithic quartz sandstone. Minor red claystones occur north of the Hawkesbury River. Clay pellet sandstone occurs south of the Hawkesbury River.

## 1.4 Hydrology

No mapped or unmapped watercourses occur within the Subject Property. The Subject Property's western boundary extends to the foreshore of Pittwater.

## 1.5 Scope of Assessment

The objectives of this FFA were to:

- Establish the likelihood of occurrence of migratory species, threatened species, endangered populations, and threatened ecological communities as listed under the BC Act and/or the EPBC Act;
- Assess any potential impacts to species and/or communities listed under the BC Act and EPBC Act;
- Identify and map the distribution of vegetation communities within the Subject Property;
- Record presence and the extent of any known or potential fauna habitat features such as nests, dreys, caves, crevices, culverts, pools, soaks, flowering trees, fruiting trees, or hollow-bearing trees and provide recommendations for on-going management of these habitat features and any fauna present;
- Record presence and the extent of any priority weeds or weed infestations and provide recommendations for on-going management; and
- Recommend any controls or additional actions to be taken to protect or improve environmental outcomes of the proposed development.

## 1.6 Study Limitations

This study was not intended to provide a complete inventory of all flora and fauna species with potential to occur on the Subject Property. The species list provided for the Subject Property within this report was restricted to what was observed during the site assessment by the Narla Ecologist. The timing of the survey may not have coincided with emergence times of some species of flora and fauna, such as seasonally flowering herbs, seasonal migratory fauna, or nocturnal fauna.

To account for those species that could not be identified during the field survey, detailed habitat assessments were combined with desktop research and local ecological knowledge to establish an accurate prediction of the potential for such species to occur on or adjacent the Subject Site.


Figure 1. Components of the Subject Property.

## 1.7 Relevant Legislation and Policy

The legislation and policy that are addressed in this report are listed in **Table 1.**

**Table 1. Relevant legislation and policy addressed**

| Legislation/Policy | Relevant Ecological Feature on Site | Triggered | Action Required |
|---|---|---|---|
| **Environmental Planning and Assessment Act 1979 (EP&A Act)** | All threatened species, populations, and ecological communities and their habitat that occur or are likely to occur on the Subject Property during a part of their lifecycle. | Yes. | This Flora and Fauna Assessment and all subsequent recommendations relevant to the planning process under 'Part 4 Development assessment and consent'. |
| **Biodiversity Conservation Act (BC Act) (New South Wales)** | One (1) BC Act listed Threatened Ecological Community, was present within the Subject Property:<br>▪ Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion.<br>No threatened BC Act listed flora or fauna were identified within or surrounding the Subject Site; however, suitable habitat for various threatened flora and fauna species was found | Yes. | This FFA, particularly the likelihood tables for threatened fauna and flora species occurring or potentially occurring within the Subject Property, as well as severity of potential impacts.<br><br>An assessment of significance of impact from the proposed DA on the BC Act listed Endangered Ecological Community Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (Assessment of Significance [5-part Test]) was conducted (**Appendix D**).<br><br>A Test of Significance (5-part test) was undertaken in accordance with the BC Act to assess potential impacts from the proposed activity on listed threatened shorebird species (**Appendix E**). |
| **Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth)** | EPBC Act threatened species have the potential to occur within the Subject Property. No EPBC Act listed threatened species or ecological communities were observed within the Subject Property during the site assessment. | Yes. | This FFA, particularly the likelihood tables for threatened fauna and flora species occurring or potentially occurring within the Subject Property, as well as severity of potential impacts.<br><br>An Assessment of Significant Impact Criteria was undertaken in accordance with the EPBC Act to assess potential impacts from the proposed activity on listed Migratory and Threatened Shorebirds (**Appendix F** - **Appendix H**). |

| Legislation/Policy | Relevant Ecological Feature on Site | Triggered | Action Required |
|---|---|---|---|
| **Biosecurity Act 2015 (Bio Act)** | Three (3) priority weeds for the Greater Sydney region were identified within the Subject Property:<br>▪ Anredera cordifolia (Madeira Vine);<br>▪ *Cestrum parqui* (Green cestrum); and<br>▪ *Dolichandra unguis-cati* (Cat's claw creeper) | Yes. | Priority weeds must be managed in accordance with the Biosecurity Act. |
| **State Environmental Planning Policy (Resilience and Hazards) 2021 - Chapter 2 Coastal Management** | Although the Subject Property does not contain areas mapped as 'Coastal Wetlands', 'Littoral Rainforest', or proximity to either, it does contain areas mapped as 'Coastal Environment Area' and 'Coastal Use Area'; therefore, Chapter 2 of the SEPP (Resilience and Hazards) 2021 applies. | Yes. | The applicable clauses of the SEPP have been addressed in this FFA (see **section 1.9**) |
| **State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 4 Koala Habitat Protection 2021** | Although Chapter 4 of the Biodiversity and Conservation SEPP (2021) applies to land within the Northern Beaches LGA, the Subject Property does not encompass an area larger than 1ha; therefore, this chapter of the SEPP does not apply. | No. | None. |
| **Water Management Act 2000** | The Subject Property is within close proximity to a mapped a fourth order watercourse (Pittwater Harbour). | Yes. | A vegetation management plan may be required for the Subject Property. |

## 1.8 Biodiversity Assessment Pathway

The requirements of the BC Act 2016 and Biodiversity Conservation Regulation 2017 are mandatory for all Development Applications (DA) assessed pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) submitted in the Northern Beaches LGA.

The Biodiversity Values (BV) Map (NDCCEEW 2024a) identifies land with high biodiversity values that are particularly sensitive to impacts from development and clearing. The map forms part of the Biodiversity Offsets Scheme Entry Threshold which is one of the triggers for determining whether the Biodiversity Offset Scheme (BOS) applies to a clearing or development proposal. The map has been prepared by the NSW Department of Climate Change, Energy, Environment, and Water (NDCCEEW) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act). The Subject Site does not contain any areas mapped on the BV Map (NDCCEEW 2024a).

The BC Act and its regulations stipulate clearing 'area threshold' values (**Table 2**) that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The minimum lot size prescribed by the PLEP to the Subject Property is 700m$^2$. To avoid triggering the Biodiversity Offset Scheme, the proponent must avoid the clearing/management of native vegetation in excess of 0.25ha. The entire Subject Property covers an area of approximately 0.13 ha.

Therefore, as the Subject Site does not contain land mapped as 'Biodiversity Values' within the Biodiversity Values Map (NDCCEEW 2024a) and the threshold for clearing is greater than the areas impacted by the proposed

development, the BOS is not triggered. As such, a standard Flora and Fauna Assessment Report (this report) has been produced to assess the impact of the proposed DA.

**Table 2. Biodiversity offset scheme entry thresholds. Bold indicates the threshold relevant to this report.**

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

## 1.9 State Environmental Planning Policy Resilience and Hazards) 2021 - Chapter 2 Coastal Management

### 1.9.1 Development on Land within the Coastal Environment Area

The Subject Property contains land mapped as 'Coastal Environment Area' (**Figure 2**). As such, development consent must not be granted unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

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

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

- The development is designed, sited, and will be managed to avoid an adverse impact as outlined above;
- If that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact; or
- If that impact cannot be minimised—the development will be managed to mitigate that impact.

The proposed development should not adversely impact coastal environmental values with the recommended planting remediation to accommodate the development. It is not deemed likely that the proposed development will have any impact on coastal processes.

### 1.9.2 Development on Land within the Coastal Use Area

The Subject Property contains land mapped as 'Coastal Use Area' (**Figure 2**). Development consent must not be granted to development on land that is within the coastal use area unless the consent authority

- Has considered whether the proposed development is likely to cause an adverse impact on the following:
    - Existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability;
    - Overshadowing, wind funnelling and the loss of views from public places to foreshores;
    - The visual amenity and scenic qualities of the coast, including coastal headlands;
    - Aboriginal cultural heritage, practices and places;
    - Cultural and built environment heritage; and
- Is satisfied that:
    - The development is designed, sited and will be managed to avoid an adverse impact on the factors listed above;
    - If that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact; or
    - If that impact cannot be minimised—the development will be managed to mitigate that impact; and
- Has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development. The proposed development will have negligible impact to the coastal environment.

The proposed development should not adversely impact access and scenic qualities of the foreshore. It is deemed not likely that the proposed development will impact coastal processes.


Figure 2. Coastal Use and Coastal Environmental Area within the Subject Property.

## 1.10 Pittwater Local Environmental Plan 2014 (PLEP)

### 1.10.1 Zoning

The Subject Property is zoned 'E4: Environmental Living'. The Pittwater LEP requires that the development satisfies the zone objectives which are:

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

The proposed development satisfies the objectives of Zone 'E4: Environmental Living' as it will not have a significant impact on ecological values present within the site. The proposed development will impact one (1) native Spotted Gum but will aim to enhance the foreshore vegetation by planting one (1) Spotted Gums to offset the impact.

### 1.10.2 Biodiversity

This clause applies to land identified as 'Biodiversity' on the Terrestrial Biodiversity Map. As the Subject Property occurs within areas identified as 'Biodiversity', this clause applies to the proposed development (Figure 3). The objective of this clause is to maintain terrestrial biodiversity by:

- Protecting native fauna and flora;
- Protecting the ecological processes necessary for their continued existence; and
- Encouraging the conservation and recovery of native fauna and flora and their habitats.

Before determining a development application for development on land to which this clause applies, the consent authority must consider:

- Whether the development is likely to have:
    - Any adverse impact on the condition, ecological value and significance of the fauna and flora on the land; and
    - Any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna; and
    - Any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land; and
    - Any adverse impact on the habitat elements providing connectivity on the land; and
- Any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

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

- The development is designed, sited and will be managed to avoid any significant adverse environmental impact; or
- 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
- If that impact cannot be minimised—the development will be managed to mitigate that impact.

The development footprint is situated predominately on the site of the existing dwelling and further to the east on areas of exiting hardstand/landscaped areas. A total of one native (1) tree is proposed for removal to facilitate the development (Arcadia 2023 and Martin Peacock Tree Care 2022). Many of the existing canopy trees will be maintained and no hollow-bearing trees will be removed. The ground layer was dominated by exotic garden species with negligible biodiversity value.


Figure 3. Terrestrial Biodiversity within the Subject Property.

## 1.11 Pittwater 21 Development Control Plan 2004 (PDCP)

### 1.11.1 Part B4.7 Pittwater Spotted Gum Forest – Endangered Ecological Community

The desired outcomes of Part B4.7 of the Pittwater DCP are:

- Conservation of intact Pittwater Spotted Gum Forest EEC;
- Regeneration and/or restoration of fragmented and/or degraded Pittwater Spotted Gum Forest EEC;
- Reinstatement of Pittwater Spotted Gum Forest to link remnants; and
- Long-term viability of locally native flora and fauna and their habitats through conservation, enhancement and/or creation of habitats and wildlife corridors.

The following controls apply to land containing or adjoining Pittwater Spotted Gum Forest:

- Development shall not have an adverse impact on Pittwater Spotted Gum Endangered Ecological Community;
- Development shall restore and/or regenerate Pittwater Spotted Gum Endangered Ecological Community and provide links between remnants;
- Development shall be in accordance with any Pittwater Spotted Gum Forest Recovery Plan;
- Development shall result in no significant onsite loss of canopy cover or a net loss in native canopy trees;
- Development shall retain and enhance habitat and wildlife corridors for locally native species, threatened species and endangered populations;
- Caretakers of domestic animals shall prevent them from entering wildlife habitat;
- Fencing shall allow the safe passage of native wildlife;
- Development shall ensure that at least 80% of any new planting incorporates native vegetation (as per species found on the site or listed in Pittwater Spotted Gum Endangered Ecological Community); and
- Development shall ensure any landscaping works are outside areas of existing Pittwater Spotted Gum Endangered Ecological Community and do not include Environmental Weeds.

In order for the proposed development to satisfy the controls of this clause it should:

- Replace any canopy trees being removed with species representative of Pittwater Spotted Gum Forest, at a ratio of 1:1. These trees must be located within the Subject Property;
- Manage environmental and priority weeds in the remaining Pittwater Spotted Gum Forest on site; and
- At least 80% of all landscaping must be native species listed in the Pittwater Spotted Gum Forest Ecological Community.

This Flora and Fauna Assessment covers all issues relating to the assessment of potential impacts to the Pittwater Spotted Gum Forest Endangered Ecological Community. A Vegetation Management Plan (VMP) has been prepared (Narla 2024) to appropriately manage the vegetation within the Subject Property into the future.

# 2. Methodology

## 2.1 Desktop Assessment and Literature Review

A thorough literature review of local information relevant to the Northern Beaches Council area was undertaken. Searches using NSW Wildlife Atlas (BioNet; NDCCEEW 2022b) and the Commonwealth Protected Matters Search Tool (DCEEW 2024) were conducted to identify all current threatened flora and fauna, as well as migratory fauna records within a 10km x 10km cell search area centred on the Subject Property. These data were used to assist in establishing the presence or likelihood of any ecological values as occurring on or adjacent the Subject Property, 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 Property and assist in determining whether any threatened flora or ecological communities may occur there (Chapman et al. 2009).

## 2.2 Ecological Site Assessment

### 2.2.1 General Survey

A site assessment was undertaken by Narla Ecologist, Rebecca Sutton, on Tuesday the 30th of March 2023, a secondary survey was conducted by Narla Ecologist, Paul Mulligan, on Friday the 14th of June 2024. During the site assessment, the following activities were undertaken:

- Identifying and recording the vegetation communities present within the Subject Property, with focus on identifying any threatened ecological communities (TEC);
- Recording a detailed list of flora species encountered within the Subject Property, with a focus on 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 Property;
- Targeted surveys for threatened flora;
- Identifying and recording the locations of notable fauna habitat such as important nesting, roosting, or foraging microhabitats;
- Assessing the connectivity and quality of the vegetation within the Subject Property and surrounding area; and
- Targeting the habitat of any threatened and regionally significant fauna including:
    - Tree hollows (habitat for threatened large forest owls, parrots, and arboreal mammals);
    - Caves and crevices (habitat for threatened reptiles, small mammals, and microbats);
    - Termite mounds (habitat for threatened reptiles);
    - Soaks (habitat for threatened frogs);
    - 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 nectarivorous birds and mammals);
    - 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.

### 2.2.2 Weather Conditions

Weather conditions recorded at the nearest weather station (Terrey Hills AWS 066059) prior to and during the site assessment are provided in **Table 3** (BOM 2023, 2024). The data revealed moderate temperatures and amounts of rainfall prior to the site assessment. Such conditions would have been conducive to the emergence and flowering of threatened species that could potentially occur within the Subject Site.

**Table 3. Weather conditions recorded at Terrey Hills AWS (station 066059) preceding and during the site assessment (site assessment date in bold)**

| Survey date | Day | Minimum Temp. (°C) | Maximum Temp. (°C) | Rainfall (mm) |
|---|---|---|---|---|
| 24/03/2023 | Fr | 16.3 | 23.9 | 2.0 |
| 25/03/2023 | Sa | 17.8 | 23.6 | 1.8 |
| 26/03/2023 | Su | 16.8 | 24.0 | 5.4 |
| 27/03/2023 | Mo | 18.0 | 23.6 | 5.6 |
| 28/03/2023 | Tu | 18.3 | 24.2 | 0.4 |
| 29/03/2023 | We | 18.4 | 25.9 | 8.0 |
| **30/03/2023** | **Th** | **13.6** | **23.6** | **0.2** |
| 8/06/2024 | Sa | 10.8 | 19.5 | 1.8 |
| 9/06/2024 | Su | 9.3 | 18.2 | 0.0 |
| 10/06/2024 | Mo | 7.2 | 16.8 | 0.0 |
| 11/06/2024 | Tu | 7.2 | 16.3 | 0.0 |
| 12/06/2024 | We | 10.0 | 17.8 | 0.0 |
| 13/06/2024 | Th | 7.9 | 14.2 | 0.0 |
| **14/06/2024** | **Fri** | **9.1** | **13.0** | **0.0** |

### 2.2.3 Mapping and Analysis of Vegetation Communities

Narla examined local satellite imagery, geological mapping, soil landscape mapping, and topographic mapping, in addition to existing vegetation mapping (The Native Vegetation of the Sydney Metropolitan Area [OEH 2016b]) in order to stratify the Subject Property and guide the site assessment survey efforts. The following documents were also consulted during the site assessment to assist with the identification of vegetation communities present within the Subject Property:

- Chapman G.A., Murphy C.L., Tille P.J., Atkinson G. and Morse R.J. (2009) Soil Landscapes of the Sydney 1:100,000 Sheet map, Ed. 4, Department of Environment, Climate Change and Water, Sydney;
- Department of Planning and Environment (NDCCEEW) (2024d) eSPADE v2.1 https://www.environment.nsw.gov.au/eSpade2Webapp#;
- Office of Environment and Heritage (OEH) (2016a) The Native Vegetation of the Sydney Metropolitan Area. Version 3.1; and
- Office of Environment and Heritage (OEH) (2016b) The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Version 3.0.
- DPE (2022) NSW State Vegetation Type Map.
- Narla (2023) Flora and Fauna Assessment - 60 Hudson Parade, Clareville
- Narla (2024) Vegetation Management Plan – 60 Hudson Parade, Clareville

### 2.2.4 Impact Assessment

An Assessment of Significance (5-part Test) was carried out for the BC Act listed Endangered Ecological Community, Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion. A Test of Significance (5-part Test) was undertaken in accordance with the BC Act to assess potential impacts from the proposed development on the BC Act listed threatened ecological community (**Appendix D**).

An assessment of likely occurrence was carried out for locally occurring threatened species (Table 6 and Table 8) and threatened migratory species. It was then determined that a further impact assessment (5-Part Test) was not required for any locally occurring threatened species.

# 3. Native Vegetation

## 3.1 Vegetation Community

### 3.1.1 Historically Mapped Vegetation Communities

Historically mapped was conducted using Native Vegetation of the Sydney Metropolitan Area (OEH 2016b) over the more recent State Vegetation Mapping (DPE 2022) as it was deemed more accurate in this circumstance.

Native Vegetation of the Sydney Metropolitan Area (OEH 2016b) identified two (2) vegetation community within proximity to the Subject Property (**Figure 4**):

- Pittwater Spotted Gum (S_WSF11); and
- Seagrass Meadows (S_SW03).

### 3.1.2 Field-validated Vegetation Communities

The field survey conducted by Narla Ecologists identified the vegetation within the Subject Property as best conforming to two (2) vegetation communities:

- Pittwater Spotted Gum Forest (S_WSF11); and
- Urban Exotic/Native Garden.

The vegetation within these communities is detailed within **Table 4** and **Table 5**. Vegetation mapping of the Subject Property is presented in **Figure 5.**

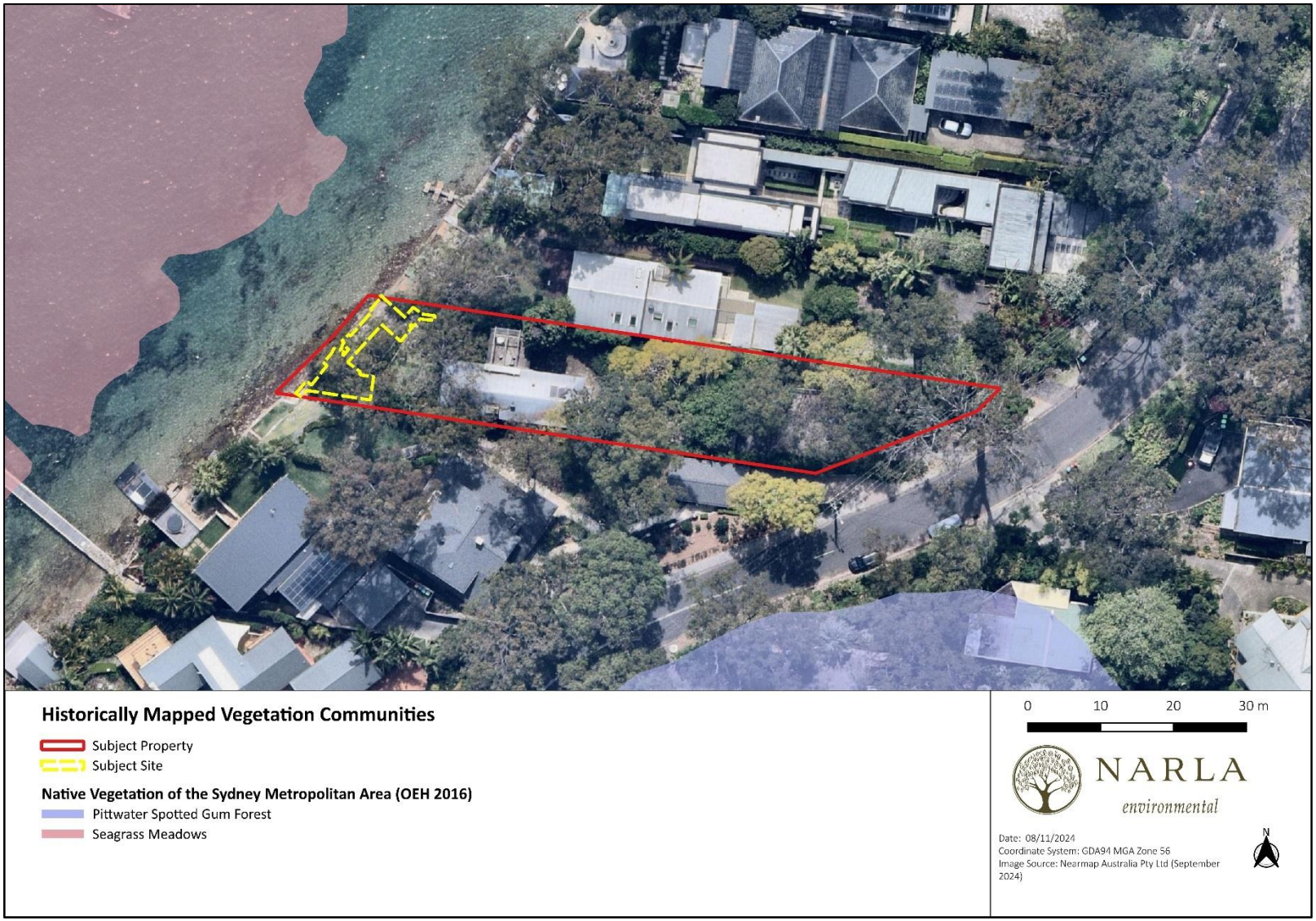


Figure 4. Historically mapped vegetation communities within the Subject Property (OEH 2016b).


Figure 5. Narla field-validated vegetation communities within the Subject Property.

Table 4. Description of Pittwater Spotted Gum Forest identified within the Subject Property

| Pittwater Spotted Gum Forest | |
|---|---|
|  | |
| **Extent within Subject Property (approximate)** | 0.01ha |
| **Description of the Vegetation within the Subject Site** | |
| The vegetation within the Subject Site was comprised of *Corymbia maculata* amongst a sparse mid-storey of predominately landscaped and planted species, including native species *Callistemon salignus.* The groundlayer was dominated by exotic species such as *Gazania linearis* and *Bouteloua dactyloides*. Native groundlayer groundcover species included *Commelina cyanea*, *Dichondra repens* and *Geranium homeanum*. | |
| **Description (OEH 2016b)** | |
| Stands of Spotted Gum (*Corymbia maculata*) mark this distinctive forest on the foreshores and escarpments of the Pittwater peninsula. These trees form a tall open forest that may also include Grey Ironbark (*Eucalyptus paniculata*) and Broad-leaved White Mahogany (*Eucalyptus umbra*). At the lower heights of the eucalypt stratum it is common to find an open cover of Forest Oak (*Allocasuarina torulosa*). The midstorey usually comprises a mixed layer of mesic and dry shrub species and occasional palms. Shrub species include Blueberry Ash (*Elaeocarpus reticulatus*), Scentless Rosewood (*Synoum glandulosum subsp. glandulosum*), Narrow-leaved Geebung (*Persoonia linearis*) and Mountain Holly (*Podolobium ilicifolium*). Like many spotted gum forests along coastal New South Wales, Burrawang (*Macrozamia communis*) can assume a prominent component of the ground layer above a scatter of grasses, ferns and small vines. At times the ground layer appears very grassy, with an abundance of Blady Grass (*Imperata cylindrica var. major*) notable where there is a history of frequent fire. | |

| Pittwater Spotted Gum Forest | |
|---|---|
| Pittwater Spotted Gum Forest has recently been subject to review by Bell and Stables (2012). These authors concluded that this forest has a close association with Narrabeen sediments exposed on rises, escarpments and footslopes throughout northern Pittwater LGA and Wagstaff peninsula in the Gosford LGA. The forest spans a number of aspects and topographic positions but is rarely found above 100 metres above sea level. It receives between 1150 and 1300 millimetres of mean annual rainfall. It is estimated that 75 per cent of its pre-European distribution has been cleared in the Pittwater and Gosford urban areas (Bell and Stables 2012) with some remaining stands impacted by the encroachment of urban weeds. | |
| **Justification of Vegetation Assignment** | The determination of this community was based on landscape attributes, including soil landscapes and elevation, and the presence of a number of characteristic species as listed in The Native Vegetation of the Sydney Metropolitan Area (OEH 2016b). |
| **BC Act 2016 Status** | This community is associated with the BC Act listed Endangered Ecological Community (EEC), Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion. |
| **EPBC Act 1999 Status** | Not Listed. |
| **References** | Department of Planning and Environment (NDCCEEW) (2024c) BioNet Vegetation Classification. https://www.environment.nsw.gov.au/research/Visclassification.htm<br><br>Office of Environment and Heritage (OEH) (2016b) The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Version 3.0 |

Table 5. Description of Urban Exotic/Native Vegetation identified within the Subject Property

| Urban Exotic/Native Vegetation | |
|---|---|
|  | |
| **Extent within Subject Property (approximate)** | 0.01ha |
| **Description of the Vegetation within the Subject Property** | |
| The vegetation within this zone consisted of planted urban vegetation, exotic weeds and common native species. The planted exotic species included *Dracaena* sp., *Gazania linearis*, *Hibiscus rosa-sinensis* and *Strelitzia reginae.* | |
| **Justification of Vegetation Assignment** | The vegetation within this area consisted of common urban exotic and native species. As the vegetation in this area did not conform to the characteristic of any remnant vegetation found in the locality and has been extensively modified, it has been classified as urban exotic/native vegetation. |
| **BC Act 2016 Status** | Not Listed. |
| **EPBC Act 1999 Status** | Not Listed. |

# 4. Threatened Entities

## 4.1 Threatened Ecological Communities (TECs)

### 4.1.1 BC Act listing: Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC

The vegetation mapped as Pittwater Spotted Gum Forest within the Subject Property contained characteristic species of the Endangered Ecological Community (ECC) Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion, as indicated by the Final Determination (NSW Scientific Committee 2013). Characteristic tree species of this EEC are *Corymbia maculata* and *Eucalyptus paniculata*, associated trees include *Angophora costata, Corymbia gummifera, Eucalyptus umbra, Eucalyptus punctata, Syncarpia glomulifera*, *Eucalyptus botryoides* and *Angophora floribunda.* Of which *Corymbia maculata* and *Eucalyptus paniculata* are present withing the Subject Property.

This vegetation community occurs on shale-derived soils with high rainfall on lower hillslopes on the Narrabeen group - Newport Formation, on the Barrenjoey Peninsula and western Pittwater foreshores. The structure of the community was originally open-forest but may now exist as woodland or as remnant trees (NSW Scientific Committee 2013). The Subject Property is mapped as being on the Watagan (Chapman et al. 2009) landscape which is consistent with the soil landscapes associated with this EEC.

A Biodiversity Conservation Act 2016 Test of Significance (5-part Test) has been prepared to assess the impacts of the proposed development on Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion is presented in Appendix D.

This threatened Ecological Community is not listed under the EPBC Act 1999.

## 4.2 Threatened Flora

Desktop analysis revealed a range of threatened flora as occurring or having the potential to occur on or within a 10km x 10km cell centred on the Subject Property. Thorough targeted surveys were undertaken throughout the Subject Property for potentially occurring threatened flora. No threatened flora species were identified at the time of the site assessment. A comprehensive list of flora species identified during the site assessment is presented in Appendix B.

The following locally occurring species were assessed for their potential to occur within the Subject Property (Table 6). It was deemed unlikely that the proposed development will have a significant impact on these species. Therefore, no further assessment of impacts pursuant the BC Act (e.g. Biodiversity Development Assessment Report [BDAR]) and/or EPBC Act Referral to Commonwealth should be required.

Table 6. Assessment of likely occurrence of threatened flora species within the Subject Property. Vulnerable = V, Endangered = E, Endangered Population = EP, Critically Endangered = CE.

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Acacia bynoeana* (Bynoe's Wattle) | E | V | Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple. | Absent. Potential habitat is present within the Subject Site however the site assessment conducted in March 2023 and June 2024 was within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Acacia terminalis subsp.* Eastern Sydney (Sunshine wattle) | E | E | Very limited distribution, mainly in near-coastal areas from the northern shores of Sydney Harbour south to Botany Bay. Coastal scrub and dry sclerophyll woodland on sandy soils. Habitat is generally sparse and scattered. Most sites are highly modified or disturbed due to surrounding urban development. | Absent. Potential habitat is present within the Subject Site. Site assessment was conducted in March 2023 and June 2024, which was during the approved survey period for this species (May-Jul; NDCCEEW 2024b), and no individuals were identified. | No |
| *Asterolasia elegans* | E | E | Occurs on Hawkesbury sandstone. Found in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest. The canopy at known sites includes Turpentine (*Syncarpia glomulifera* subsp. *glomulifera*), Smooth-barked Apple (*Angophora costata*), Sydney Peppermint (*Eucalyptus piperita*), Forest Oak (*Allocasuarina torulosa*) and Christmas Bush (*Ceratopetalum gummiferum*). | Low. Appropriate habitat and canopy species are not present within the Subject Site, making its presence unlikely. | No |
| *Astrotricha crassifolia* (Thick-leaf Star-hair) | V | V | Occurs in dry sclerophyll woodland on sandstone. Resprouts from root suckers or basal stem buds after fire. | Low. While appropriate habitat may be present within the Subject Site, no fire regimes are present to facilitate regrowth and the heavily landscaped nature of the site. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Boronia umbellata* (Orara Boronia) | V | V | Only one collection of this species is known from the Pittwater region, with the remainder distributed within the Coffs Harbour district. This Boronia grows as an understorey shrub in and around gullies in wet open forest. | Absent. Potential habitat is present within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and did not detect this species. | No |
| *Caladenia tessellata* (Thick-lipped Spider-orchid) | E | V | Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple. | Low. No potential habitat is present within the Subject Site, as the site does not occur on a sandy soil landscape furthermore, this species is unlikely to occur due to the heavily landscaped nature of the site. | No |
| *Callistemon linearifolius* (Netted Bottle Brush) | V | - | Three of the remaining populations are reserved in Ku-ring-gai Chase National Park, Lion Island Nature Reserve and Spectacle Island Nature Reserve. Grows in dry sclerophyll forest on the coast and adjacent ranges. | Low. Whilst appropriate habitat may be present within the Subject Site, only one (1) *Callistemon* species was identified during the site assessment which was confirmed to be the highly cultivated *Callistemon salignus*. | No |
| *Chamaesyce psammogeton* (Sand Spurge) | E | - | Grows on fore-dunes, pebbly strandlines and exposed headlands, often with Spinifex (*Spinifex sericeus*) and Prickly Couch (*Zoysia macrantha*). | Very low. No such habitat occurs within the Subject Site. Additionally, this species is unlikely to occur due to the landscaped nature of the site. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Cryptostylis hunteriana* (Leafless Tongue-orchid) | V | V | Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by *Eucalyptus sclerophylla*, *E. sieberi*, *Corymbia gummifera* and *Allocasuarina littoralis*; appears to prefer open areas in the understorey of this community. | Very low. No potential habitat is present within the Subject Site as associated species are not present. Additionally, this species is unlikely to occur due to the landscaped nature of the site. | No |
| *Darwinia biflora* | V | V | Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Associated overstorey species include *Eucalyptus haemastoma*, *Corymbia gummifera* and/or *E. squamosa*. The vegetation structure is usually woodland, open forest or scrub-heath. | Absent. No potential habitat is present within the Subject Site as it does not occur on a weathered shale-capped ridge. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Eucalyptus camfieldii* (Camfield's Stringybark) | V | V | Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. Associated species frequently include stunted species of *E. oblonga* Narrow-leaved Stringybark, *E. capitellata* Brown Stringybark and *E. haemastoma* Scribbly Gum. | Absent. No appropriate habitat is present within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Genoplesium baueri* (Yellow Gnat-orchid) | - | E | The species usually grows in heathland to shrubby woodland on sands or sandy loams (Riley and Banks, 2002) or open forest, shrubby forest and heathy forest on well-drained sandy and gravelly soils (Jones, 2006). | Absent. Potential open forest habitat is present within the Subject Property. The site assessment in March 2023 was conducted within the approved survey period for this species (Feb - March) (NDCCEEW 2024b), and did not detect this species. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Grevillea caleyi* (Caley's Grevillea) | CE | CE | This species is restricted to an 8km square area around Terrey Hills. All sites occur on the ridgetop between elevations of 170 to 240m above sea level, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *E. gummifera*. Commonly found in the endangered Duffys Forest ecological community. | Absent. No such habitat occurs within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Grevillea shiressii* | V | V | Known from two populations near Gosford, on tributaries of the lower Hawkesbury River north of Sydney. Grows along creek banks in wet sclerophyll forest with a moist understorey in alluvial sandy or loamy soils. | Low. Potential habitat is present within the Subject Site but not within the limited distribution of the species. The location of the Subject Site bordering Clareville Beach and the landscaped nature of the vegetation in the Subject Property makes it unlikely that this species would occur. | No |
| *Haloragodendron lucasii* (Hal) | E | E | Associated with dry sclerophyll forest. Reported to grow in moist sandy loam soils in sheltered aspects, and on gentle slopes below cliff-lines near creeks in low open woodland. Associated with high soil moisture and relatively high soil-phosphorus levels. | Absent. Potential open forest habitat is present within the Subject Property. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Kunzea rupestris* | V | V | Grows in shallow depressions on large flat sandstone rock outcrops. Characteristically found in short to tall shrubland or heathland. | Absent. No such habitat occurs within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Lasiopetalum joyceae* | V | V | Has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. Grows in heath on sandstone. | Very low. Appropriate soil type is not present and located in the Hornsby plateau formation. The landscaped nature of the vegetation in the Subject Property makes it unlikely that this species would occur. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Melaleuca biconvexa* (Biconvex Paperbark) | V | V | Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. | Absent. No such habitat occurs within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Melaleuca deanei* (Deane's Paperbark) | V | V | Deane's Paperbark occurs in two distinct areas, in the Ku-ring-gai/ Berowra and Holsworthy/ Wedderburn areas respectively. The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. | Absent. No potential habitat is present within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Microtis angusii* (Angus's Onion Orchid) | E | E | All currently known records of the species are located within Northern Beaches LGA in disturbed areas, with most individuals recorded in road verges. Occurs on soils that have been modified but were originally those of the restricted ridgetop lateritic soils in the Duffys Forest - Terrey Hills - Ingleside and Belrose areas. These soils support a specific and distinct vegetation type, the Duffys Forest Vegetation Community ranges from open forest to low open forest and rarely woodland. | Very low. The Subject Property does not occur on the restricted ridgetop lateritic soils required by this species or contain the vegetation type Duffys Forest. | No |
| *Persicaria elatior* (Knotweed) | V | V | This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. | Absent. No appropriate habitat is not present, nevertheless, a targeted survey effort was conducted in March 2023; which was within the approved survey period for this species (Dec - May) (NDCCEEW 2024b), and did not detect this species. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Persoonia hirsuta* (Hairy Geebung) | E | E | The Hairy Geebung is found in clayey and sandy soils in dry sclerophyll open forest, woodland and heath, primarily on the Mittagong Formation and on the upper Hawkesbury Sandstone. It is usually present as isolated individuals or very small populations. | Absent. Although potential habitat may exist within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Pimelea curviflora var. curviflora* | V | V | Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. | Absent. Although appropriate soils may exist within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (Oct-March) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Prostanthera densa* (Villous Mintbush) | V | V | This species generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea. | Absent. Although appropriate habitat may exist within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Prostanthera junonis* (Somersby Mintbush) | E | E | The species is restricted to the Somersby Plateau. It occurs on both the Somersby and Sydney Town soil landscapes on gently undulating country over weathered Hawkesbury sandstone within open forest/low woodland/open scrub. It occurs in both disturbed and undisturbed sites. | Very low. Appropriate soil type is not present within the Subject Site and given the landscaped nature of the vegetation in the Subject Property and the limited distribution of this species makes it unlikely that this species would be present within the Subject Property. | No |
| *Rhizanthella slateri* (Eastern Underground Orchid) | V | E | Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. | Very Low. Potential habitat may be present within the Subject Site; however, the landscaped nature of the vegetation within the Subject Property makes it unlikely that this species would be present within the Subject Property. | No |

| Species | BC Act | EPBC Act | Habitat Requirements (NDCCEEW 2024b) | Likelihood of occurrence within the Subject Property | Further Impact Assessment Required? |
|---|---|---|---|---|---|
| *Rhodamnia rubescens* (Scrub Turpentine) | CE | CE | Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. | Absent. No appropriate habitat was present within the Subject Site. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Rhodomyrtus psidioides* (Native Guava) | CE | CE | Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. | Absent. No appropriate habitat is not present. The site assessment in March 2023 and June 2024 was conducted within the approved survey period for this species (All Year) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Syzygium paniculatum* (Magenta Lilly Pilly) | E | V | On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities. | Absent. No appropriate habitat is not present as the Subject Site does not occur in a remnant littoral rainforest. The site assessment in June 2024 was conducted within the approved survey period for this species (Apr – Jun) (NDCCEEW 2024b), and no individuals were identified. | No |
| *Tetratheca glandulosa* | v | - | Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Vegetation structure varies from heaths and scrub to woodlands/open woodlands, and open forest. | Low. Appropriate soil type is not present within the Subject Site and given the landscaped nature of the vegetation in the Subject Property makes it unlikely that this species would be present within the Subject Property. | No |
| *Thesium australe* (Austral Toadflax) | V | V | Occurs in grassland. Is a root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass. | Very Low. No Grasslands or Kangaroo Grass (T*hemeda triandra*) were identified within the Subject Site, during survey making it unlikely this species would be present within the Subject Site. | No |

## 4.2 Fauna Habitat

Details of the fauna habitat recorded within the Subject Property are included in **Table 7**. Desktop analysis revealed that a number of threatened fauna species have the potential to utilise such habitat within the Subject Property during part of their lifecycles **Table 8**.

**Table 7. Fauna habitat values identified within and surrounding the Subject Property.**

| Habitat component | Site values |
|---|---|
| Coarse woody debris | Absent. |
| Rock outcrops and bush rock | Absent. |
| Caves, crevices and overhangs | Absent. |
| Culverts, bridges, mine shafts, or abandoned structures | Absent. |
| Nectar/lerp-bearing Trees | Nectar-bearing trees were recorded within the Subject Property including *Corymbia maculata* and *Eucalyptus umbra.* These trees may provide intermittent nectar sources for nomadic nectivores such as the Grey-headed Flying-fox. |
| Nectar-bearing shrubs | *Callistemon salignus* and *Eucalyptus umbra* were present within the Subject Property. |
| Koala Feed Trees | Present. |
| Large stick nests | Absent. |
| Sap and gum sources | A suite of sap/ gum sources were present within the Subject Property including *Eucalyptus umbra* and *Corymbia maculata.* |
| She-oak fruit (Glossy Black Cockatoo feed) | *Allocasuarina torulosa* was identified within the Subject Property |
| Seed-bearing trees and shrubs | Seed-bearing trees including *Hakea gibbosa* and *Banksia integrifolia* may provide foraging habitat for various bird species. |
| Soft-fruit-bearing trees | *Glochidion ferdinandi* was identified within the Subject Property and may provide foraging habitat for fructivores such as the Grey-headed Flying-fox. |
| Dense shrubbery and leaf litter | Present. |
| Tree hollows | One (1) hollow-bearing *Corymbia maculata* was present within the Subject Site, this tree is proposed to be retained (**Figure 6**). An additional hollow-bearing tree was located just outside of the Subject Property. |
| Decorticating bark | Absent. |
| Wetlands, soaks, and streams | Absent. |
| Open water bodies | The Subject Property borders Pittwater Harbour and, as such, may provide intermittent foraging/sheltering habitat for shore bird species. |
| Estuarine, beach, mudflats, and rocky foreshores | The Subject Property contains a small sandy beach extending to Pittwater Harbour. |
| Nests and Possums Dreys | Absent. |

## 4.3 Threatened Fauna

No threatened fauna species were observed during the site assessment in March, 2023 and June 2024 within or surrounding the Subject Property. It was deemed unlikely that the proposed works will have a significant impact such that a local viable population or occurrence of any of the threatened species will be placed at risk of extinction. Therefore, no BDAR or EPBC Act Referral to the Commonwealth should be required for the proposed development.

All native fauna species encountered were listed as 'protected' under the BC Act. The list of fauna recorded during the site visit was produced opportunistically (Appendix C).

### 4.3.1 Migratory Fauna Species

Desktop analysis revealed the following EPBC Act listed migratory terrestrial fauna species were considered to have the potential to utilise habitat within the Subject Property (e.g. foraging or passage) during part of their lifecycles:

- *Actitis hypoleucos* (Common Sandpiper);
- *Anous stolidus* (Common Noddy);
- *Apus pacificus* (Fork-tailed Swift);
- *Ardenna carneipes* (Flesh-footed Shearwater);
- *Ardenna grisea* (Sooty Shearwater);
- *Calidris acuminata* (Sharp-tailed Sandpiper);
- *Calidris canutus* (Red Knot, Knot);
- *Calidris ferruginea* (Curlew Sandpiper);
- *Calidris melanotos* (Pectoral Sandpiper);
- *Calonectris leucomelas* (Streaked Shearwater);
- *Charadrius leschenaultia* (Greater Sand Plover);
- *Cuculus optatus* (Oriental Cuckoo, Horsfield's Cuckoo);
- *Diomedea antipodensis* (Antipodean Albatross);
- *Diomedea epomophora* (Southern Royal Albatross);
- *Diomedea exulans* (Wandering Albatross);
- *Diomedea sanfordi* (Northern Royal Albatross);
- *Fregata ariel* (Lesser Frigatebird, Least Frigatebird);
- *Fregata minor* (Great Frigatebird, Greater Frigatebird);
- *Gallinago hardwickii* (Latham's Snipe, Japanese Snipe);
- *Hirundapus caudacutus* (White-throated Needletail);
- *Limosa lapponica* (Bar-tailed Godwit);
- *Macronectes giganteus* (Southern Giant-Petrel);
- *Macronectes halli* (Northern Giant Petrel);
- *Motacilla flava* (Yellow Wagtail);
- *Numenius madagascariensis* (Eastern Curlew);
- *Phaethon lepturus* (White-tailed Tropicbird);
- *Sternula albifrons* (Little Tern);
- *Thalassarche bulleri* (Pacific Albatross);
- *Thalassarche carteri* (Indian Yellow-nosed Albatross);
- *Thalassarche cauta* (Shy Albatross);
- *Thalassarche eremita* (Chatham Albatross);
- *Thalassarche impavida* (Campbell Albatross);
- *Thalassarche melanophris* (Black-browed Albatross);
- *Thalassarche salvini* (Salvin's Albatross);
- *Thalassarche steadi* (White-capped Albatross); and
- *Tringa nebularia* (Common Greenshank).

It was deemed that the proposed works were unlikely to result in a significant impact on these species. Therefore, no EPBC Act Referral to the Commonwealth should be required.

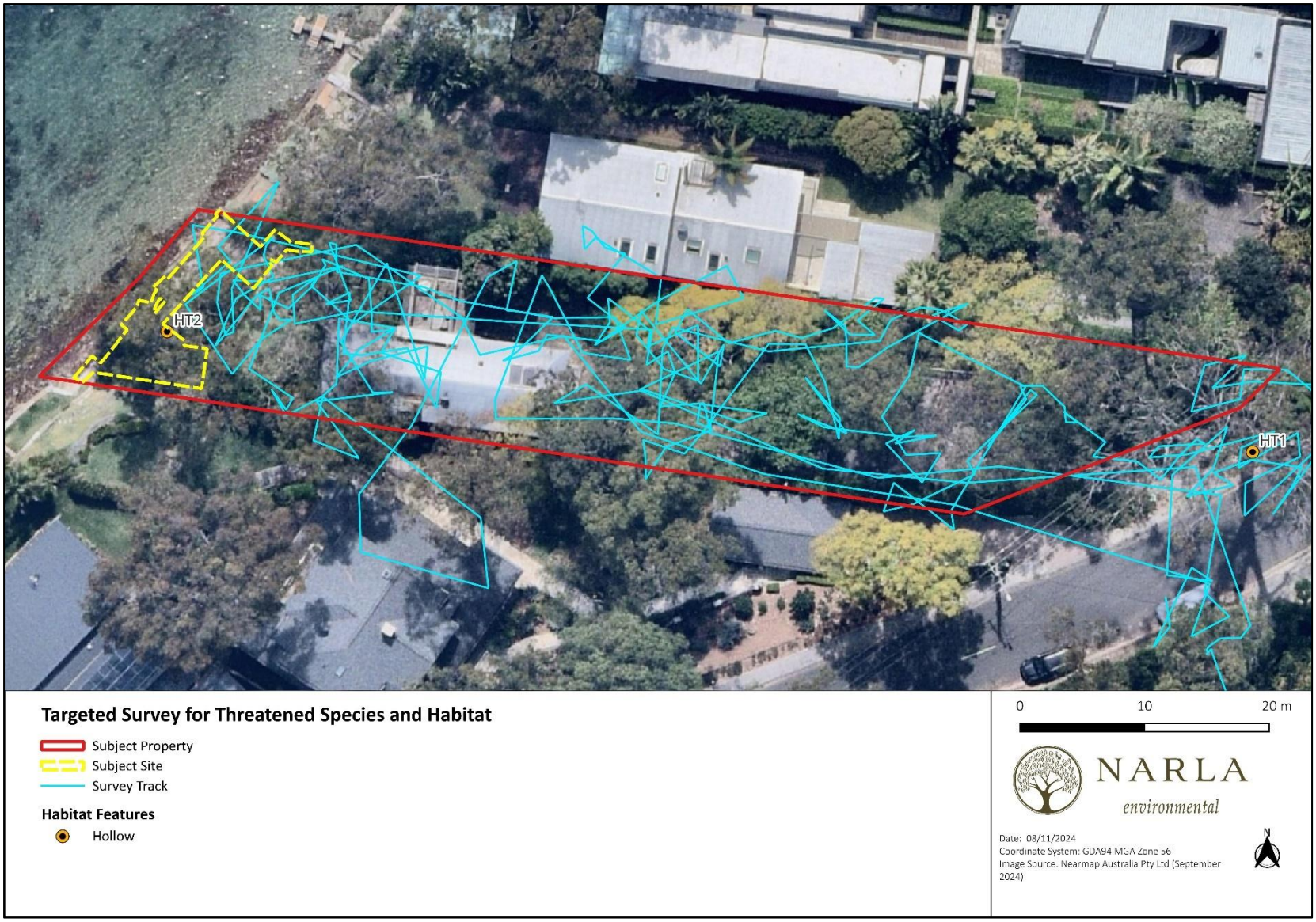


Figure 6. Targeted survey for threatened species and habitat within the Subject Property.

Table 8. List of potential threatened fauna that may occupy the Subject Property at some stage of their lifecycles. Vulnerable = V, Endangered = E, Endangered Population = EP, Critically Endangered = CE.

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Anthochaera phrygia* (Regent Honeyeater) | CE | CE | Low | The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She oak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Potential foraging habitat does occur within the Subject Site. | There are three (3) known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions which do not occur within the Subject Site. The Subject Property does not occur within the important areas map for this species. | Minimal impact to suboptimal foraging habitat given the mobility of this species. No anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Artamus cyanopterus* (Dusky Wood swallow) | V | - | Low | Often inhabit dry, open eucalypt forests and woodlands 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. Potential foraging habitat was present within the Subject Site. | Nest sites vary greatly, but generally occur in shrubs or low trees, living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. No nests were identified within the Subject Site during the time of the Site Assessment in March 2023 and June 2024. | Minimal impact to potential foraging habitat given the mobility of this species. Nectar producing trees will persist within the Subject Property and adjoining properties. No impacts to breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Botaurus poiciloptilus* (Australasian Bittern) | E | E | Moderate | Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. No appropriate foraging habitat is present within of the Subject Site. | Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch. No appropriate breeding habitat is present within the Subject Site. | Negligible impact to foraging habitat or breeding habitat is expected as potential habitat is outside of the Subject Site. Site assessment in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Burhinus grallarius* (Bush Stone-curlew) | E | - | Low | Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Potential sub-optimal foraging habitat was present within the Subject Site given the lack of fallen timber and highly disturbed nature of the site. | Nests on the ground in a scrape of small bare patch. The Subject Site provides suboptimal breeding habitat for this species, as it is located in a highly disturbed landscape. | Minimal impact to suboptimal breeding and foraging habitat given the disturbed nature of the site. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Calidris ferruginea* (Curlew Sandpiper) | E | CE | Low | It generally occupies littoral and estuarine habitats, and is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed, feeding on worms, molluscs, crustaceans, insects and some seeds. Coastal habitat in the form of a sandy beach is present within the Subject Site. | The Curlew Sandpiper breeds in Siberia and migrates to Australia. | Negligible. No anticipated loss of foraging or breeding habitat however the proposed works will be occurring within close proximity to habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | **Yes, whilst unlikely the proposed activity would significantly impact this species a BC and EPBC Assessment of Significant Impact was prepared as a precaution due to the proximity of the proposed works to sandy beaches (Appendix E, Appendix F and Appendix G).** |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Callocephalon fimbriatum* (Gang-gang Cockatoo) | V | - | Low | The species feeds on the seeds of native flora including eucalyptus and acacia seed. The species favours box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. Potential feed trees occur within the Subject Site. | This species favours Eucalypt tree species with hollows that are 10 cm in diameter or larger and at least 9m above the ground in eucalypts. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to potential foraging habitat given the mobility of this species. A suite of eucalypts will remain within the Subject Property and adjoining areas. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Calyptorhynchus lathami* (Glossy Black-Cockatoo) | V | - | Low | This species feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species). Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of she-oak occur. No feed trees were within the Subject Site but occur within the broader Subject Property. | Dependent on large hollow-bearing eucalypts for nest sites. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to potential foraging habitat given the mobility of this species. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Cercartetus nanus* (Eastern Pygmy-possum) | V | - | Low | This species is 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, as well as insects. Suboptimal foraging habitat present within the Subject Site given the level of disturbance. | Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, although hollows are preferred. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat. A suite of eucalypts will remain within the Subject Property and adjoining areas. No anticipated net loss of breeding habitat. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Chalinolobus dwyeri* (Large-eared Pied Bat) | V | V | Low | This species forages for small, flying insects in well-timbered areas. The open native vegetation within the Subject Site is unlikely to provide suitable foraging habitat for this species. | 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*). No such habitat was identified within the Subject Site. | Minimal impact to suboptimal foraging habitat given the mobility of this species. Potential foraging habitat will remain within the Subject Property and adjoining areas. No anticipated net loss of breeding habitat. | No |
| *Climacteris picumnus victoriae* (Brown Treecreeper) | V | - | Low | Found in eucalypt woodlands and dry open forest mainly dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging. Potential habitat is found within the Subject Site. | This species uses hollows in standing dead or live trees and tree stumps. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | No impact to foraging or breeding habitat is anticipated as no trees are proposed to be removed. Site assessment in March 2023 and June 2024 did not detect this species. | No |
| *Dasyornis brachypterus* (Eastern Bristlebird) | E | E | Very low | This species requires dense, low vegetation including heath and open woodland with a heathy understorey. Potential foraging habitat is present within the Subject Site. | Nests are elliptical domes constructed on or near the ground amongst dense vegetation. No dense vegetation was present within the Subject Site. | Minimal impact to suboptimal foraging habitat given the mobility of this species. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Dasyurus maculatus* (Spotted-tailed Quoll) | V | E | Very low | Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl. Potential prey items may exist within the Subject Site. | This species uses hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Negligible, no anticipated net loss of foraging or breeding habitat. | No |
| *Erythrotriorchis radiatus* (Red Goshawk) | CE | V | Low | Inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus Forest of coastal rivers. Potential prey items may occur within the Subject Site. | Build stick nests in a tall tree (>20 m tall) within 1 km of a watercourse or wetland. No nests were identified within the Subject Site during the site survey. | Negligible. No anticipated impact to foraging habitat given the mobility of the species and the relatively small Subject Site. No impact to breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Esacus magnirostris* (Beach Stone-curlew) | CE | - | Very low | This species forages in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Although the Subject Property borders on Pittwater Harbour, the proposed development does not encroach on the intertidal zone of the beach. Foraging habitat in the form of sandy beach occurs within the Subject Site. | This species breeds above the littoral zone; at the backs of beaches; or on sandbanks and islands. Breeding occurs amongst low vegetation of grass, scattered shrubs or low trees. Breeding may also occur amongst open mangroves. Such habitat does occur within the Subject Site. | Minimal foraging or breeding habitat was present within the Subject Property. No anticipated loss of foraging or breeding habitat however the proposed works will be occurring within close proximity to habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | **Yes, whilst unlikely the proposed activity would significantly impact this species an BC Assessment of Significant Impact was prepared as a precaution due to the proximity of the proposed works to sandy beaches (Appendix E).** |
| *Falco hypoleucos* (Grey Falcon) | V | V | Low | Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Potential prey items may occur within the Subject Site. | Utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse. No nests were identified within the Subject Site during the site survey. | Negligible. No anticipated impact to foraging habitat given the mobility of the species. No impact to breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Falsistrellus tasmaniensis* (Eastern False Pipistrelle) | V | - | Low | Prefers moist habitats, with trees taller than 20 m. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Such habitat is not present within the Subject Site. | Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Negligible. Minimal impact to foraging habitat given the mobility of the species and no impact breeding habitat. | No |
| *Glossopsitta pusilla* (Little Lorikeet) | V | - | Low | This species forages primarily in the canopy of open Eucalyptus Forest and woodland, yet also finds food in *Angophora*, *Melaleuca,* and other tree species. Mostly feeds on nectar and pollen of flowers in the open canopy of woodland trees. *Eucalyptus* species exist within the Subject Site. | Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3cm) and usually high above the ground (2–15m). One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to potential foraging habitat given the mobility of this species. A suite of eucalypts will remain within the Subject Property and adjoining areas. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Grantiella picta* (Painted Honeyeater) | V | V | Low | A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema. No mistletoes are present within the Subject Site at the time of the site assessment. | Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark, or mistletoe branches. No nests were identified within the Subject Site during the site survey. | No anticipated loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Haematopus fuliginosus* (Sooty Oystercatcher) | V | - | Low | This species forages on exposed rock or coral at low tide for foods such as limpets and mussels. Although the Subject Property borders on Pittwater Harbour, the proposed development does not encroach on the exposed rock below the cliff face. Tidal sandy beach and exposed rock foraging habitat exists within the Subject Site. | Breeds almost exclusively on offshore islands, and occasionally on isolated promontories. It is unlikely for breeding habitat to occur within the Subject Site, given the small size and non-sheltered shore. | Minimal anticipated net loss of foraging or breeding habitat. No anticipated loss of foraging or breeding habitat however the proposed works will be occurring within close proximity to habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | **Yes, whilst unlikely the proposed activity would significantly impact this species an BC Assessment of Significant Impact was prepared as a precaution due to the proximity of the proposed works to sandy beaches (Appendix E).** |
| *Haliaeetus leucogaster* (White-bellied Sea-Eagle) | V | - | Low | Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries, and mangroves. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Potential prey items may occur within the Subject Site. | Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nests are large structures built from sticks and lined with leaves or grass. No nests were identified during the site assessment. | Minimal impact to potential foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Heleioporus australiacus* (Giant Burrowing Frog) | V | V | Low | This species is found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. It mainly eats invertebrates including ants, beetles, cockroaches, spiders, centipedes and scorpions. The Subject Site provides suboptimal foraging habitat for this species, as it is located in a disturbed landscape reducing potential prey items. | Not present, the species breeds in soaks and second order streams. No such habitat was present within the Subject Site. | Minimal impact to suboptimal foraging habitat given the level of disturbance within the Subject Property. No anticipated net loss of breeding habitat. | No |
| *Hieraaetus morphnoides* (Little Eagle) | V | - | Low | This species occupies open eucalypt forest, woodland or open woodland. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion. Potential prey items may occur within the Subject Site. | Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. No nests were identified during the site assessment. | Minimal impact to suboptimal foraging habitat given the mobility of this species. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Hirundapus caudacutus* (White-throated Needletail) | - | V | Low | This species is mostly aerial, from heights of less than 1m to greater than 1000m above the ground. Feeds on a wide variety of insects. Prey items may occur within the Subject Site. | This species does not breed in Australia. | Minimal impact to potential foraging habitat given the mobility of this species. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Hoplocephalus bungaroides* (Broad-headed Snake) | E | V | Low | Moves from the sandstone rocks to shelters in crevieces or hollows in large trees within 500m of escarpments in summer. Feeds mostly on geckos and small skinks; will also eat frogs and small mammals occasionally. Caves and cliff crevices are not present within the Subject Site. | Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Caves and cliff crevices not are present within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Isoodon obesulus obesulus* (Southern Brown Bandicoot) | E | E | Very low | Typically found in heath or open forest with a heathy understorey on sandy or friable soils. Potential sub-optimal foraging habitat occurs within the Subject Site in the form of sandy soils. | Nests may be located under Grass trees *Xanthorrhoea* spp., blackberry bushes, and other shrubs, or in rabbit burrows. Such habitat does not occur within the Subject Site. | Minimal anticipated loss of foraging given the sub-optimal habitat. No net loss of breeding habitat. | No |
| *Ixobrychus flavicollis* (Black Bittern) | V | - | Very low | 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. Feeds on frogs, reptiles, fish and invertebrates, including snails, dragonflies, shrimps. and crayfish, with most feeding done at dusk and at night. No such habitat was identified within the Subject Site. | Nests, built in spring, are located on a branch overhanging water and consist of a bed of sticks and reeds on a base of larger sticks. No nests were identified within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Lathamus discolor* (Swift Parrot) | E | CE | Low | On the mainland, this species occurs in areas where eucalypts are flowering profusely or where there are abundant lerp infestations (from sap-sucking bugs). Favoured feed trees include winter flowering species such as *Eucalyptus robusta, Corymbia maculata, C. gummifera, E. tereticornis, E. sideroxylon, E. pilularis,* and *E. albens.* Potential feed trees were present within the Subject Site. | This species breeds in Tasmania. The Subject Site does not occur within the important areas map for this species. | Minimal impact to potential foraging habitat given the mobility of this species. *Corymbia maculata* will be retained within the Subject Property and adjoining areas. No anticipated net loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Litoria aurea* (Green and Golden Bell Frog) | E | V | Very low | Species forages on insects and inhabits marshes, dams and stream sides, particularly those containing bullrushes (Typha spp.) or spikerushes (Eleocharis spp.) No such habitat was identified within the Subject Site. | The species breeds within aquatic habitats. No such habitat was identified within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. | No |
| *Lophoictinia isura* (Square-tailed Kite) | V | - | Low | Found in a variety of timbered habitats including dry woodlands and open forests. The species is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy. Prey species may occur within the Subject Site. | Nest sites generally located along or near watercourses, in a fork or on large horizontal limbs. Although tall trees were present within the Subject Property, it provides suboptimal breeding habitat for this species, as it is located in a highly disturbed landscape. No stick nests were present within the Subject Site. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

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| *Melanodryas cucullata cucullate* (South-eastern Hooded Robin) | V | - | Low | Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey. There is a lack of shrub layer and tall native grasses present within the Subject Site. | The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1 m to 5 m above the ground. The nest is defended by both sexes with displays of injury-feigning, tumbling across the ground. No nests were identified during site assessment in March 2023 and June 2024. | No impact to foraging or breeding habitat is anticipated. Site assessment in March 2023 and June 2024 did not detect this species. | No |
| *Melithreptus gularis gularis* (Black-chinned Honeyeater - eastern subspecies) | V | - | Very low | This species typically occurs in large woodland patches, as birds forage over large home ranges of at least 5 hectares, occupying dry open forests or woodlands. Such habitat does not occur within the Subject Site. | This species typically occurs in large woodland patches, as birds forage over large home ranges of at least 5 hectares, occupying dry open forests or woodlands. Such habitat does not occur within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Meridolum maryae* (Maroubra Woodland Snail) | E | - | Low | The species is found in the leaf litter of coastal vegetation communities, most commonly in heathland on foredunes also from areas of podsolised dunes/sand plains that support taller heath communities including Eastern Suburbs Banksia Scrub. Such habitat does not occur within the Subject Site. | The species is found in the leaf litter of coastal vegetation communities, most commonly in heathland on foredunes also from areas of podsolised dunes/sand plains that support taller heath communities including Eastern Suburbs Banksia Scrub. Such habitat does not occur within the Subject Site. | No anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat) | V | - | Low | Species is insectivorous and occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Potential prey items may exist within the Subject Site. | Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges, and sometimes buildings during the day. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No anticipated net loss of breeding habitat. | No |
| *Miniopterus australis* (Little Bent-winged Bat) | V | - | Low | Found in 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. At night, this species forages for small insects beneath the canopy of densely vegetated habitats. Potential prey items may exist within the Subject Site. | Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day. Only five (5) nursery sites/maternity colonies are known in Australia. They require large colonies roosting together to provide the high temperatures needed to rear their young. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No anticipated net loss of breeding habitat. | No |
| *Miniopterus orianae oceanensis* (Large Bent-winged Bat) | V | - | Low | Hunt in forested areas, catching moths and other flying insects above the tree tops. Potential prey items may exist within the Subject Site. | Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No anticipated net loss of breeding habitat. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
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| *Mixophyes balbus* (Stuttering Frog) | E | V | Low | Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Feed on insects and smaller frogs. No potential foraging habitat is present within the Subject Site. | Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Breed in streams during summer after heavy rain. Such breeding habitat does not occur within the Subject Site. | Minimal anticipated loss of foraging given the sub-optimal habitat. No net loss of breeding habitat. | No |
| *Myotis macropus* (Southern Myotis) | V | - | Low | This species forages over streams and pools catching insects and small fish by raking their feet across the water surface. The Subject Site is adjacent to Pittwater Harbour which may be used as foraging habitat; however, the proposed development does not encroach on this area. | 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. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Negligible, no anticipated impact to foraging or breeding habitat. | No |
| *Neophema chrysostoma* (Blue-winged Parrot) | V | V | Low | Inhabit coastal, sub-coastal and inland areas through semi-arid zones. Can occur in altered environments. Forage in pairs mainly near ground level for seeds from native and introduced grasses, herbs and shrubs. Foraging habitat is not present the Subject Site. | N/A. Breeding occurs in Tasmania, coastal south-eastern Southern Australia and southern Victoria. | No impact to foraging or breeding habitat is anticipated. Site assessment in March 2023 and June 2024 did not detect this species. | No |
| *Neophema pulchella* (Turquoise Parrot) | V | - | Low | Species lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. It forges on seeds or grasses and herbaceous plants. The Subject Site provides suboptimal foraging habitat for this species, as it is located in a disturbed landscape. | Nests in tree hollows, logs or posts. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | A small area of suboptimal foraging habitat will be removed to accommodate the proposed development. No anticipated loss of breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Ninox connivens* (Barking Owl) | V | - | Low | 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. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums, but also can rely on birds, invertebrates, and mammals such as rodents and rabbits. Can catch bats and moths on the wing. The Subject Site provides suboptimal foraging habitat for this species, as it is located in a disturbed landscape. | This species nests in large hollows. One One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |
| *Ninox strenua* (Powerful Owl) | V | - | Low | The species breeds and hunts in open or closed sclerophyll forest or woodlands and hunts small mammals. It roosts by day in dense vegetation comprising species such as *Syncarpia glomulifera*, *Allocasuarina littoralis*, *Acacia melanoxylon*, *Angophora floribunda*, *Exocarpus cupressiformis* and a number of eucalypt species. The Subject Site provides suboptimal foraging habitat for this species, as it is located in a disturbed landscape. | This species favours hollows >20cm in diameter. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Notamacropus parma* (Parma Wallaby) | V | V | Low | Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas. No appropriate foraging habitat is present within the Subject Site. | Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. During the day they shelter in dense cover. Such breeding habitat does not occur within the Subject Site. | Negligible, no anticipated impact to foraging or breeding habitat. Site survey conducted in March 2023 did not detect this species. | No |
| *Numenius madagascariensis* (Eastern Curlew) | - | CE | Very low | This species is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. It forages in or at the edge of shallow water. Although the Subject Site is adjacent to Pittwater Harbour, the proposed development does not encroach on the open water. | This species does not breed in Australia. | Negligible, no anticipated impact to foraging or breeding habitat. Site survey conducted in March 2023 did not detect this species. | No |
| *Pandion cristatus* (Eastern Osprey) | V | - | Low | Favour coastal areas, especially the mouths of large rivers, lagoons, and lakes. Feed on fish over clear, open water. Although the Subject Site is adjacent to Pittwater Harbour, the proposed development does not encroach on the open water. | Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. No nests were identified within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. Site survey conducted in March 2023 did not detect this species. | No |
| *Petauroides volans* (Greater Glider) | - | V | Very low | This species is typically found in taller, montane, moist eucalypt forests within relatively old trees and abundant hollows. Suboptimal potential foraging habitat is present within the Subject Site in the form of eucalypt canopy with minimal hollows. | This species is typically found in taller, montane, moist eucalypt forests within relatively old trees and abundant hollows. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No anticipated loss to breeding habitat. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Petaurus australis australis* (Yellow-bellied Glider) | V | V | Low | Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences include mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. Suboptimal potential foraging habitat due to the sparse eucalypt canopy present within the Subject Site. | Den, often in family groups, in hollows of large trees. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No anticipated loss to breeding habitat. | No |
| *Petaurus norfolcensis* (Squirrel Glider) | V | - | Very low | The species Inhabits Blackbutt-Bloodwood Forest with heath understorey in coastal areas. The species diet consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein. Suboptimal potential foraging habitat is present within the Subject Site with a sparse canopy. | The species requires abundant tree hollows for refuge and nest sites. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No anticipated loss to breeding habitat. | No |
| *Petrogale penicillate* (Brush-tailed Rock-wallaby) | E | V | Low | Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. No appropriate foraging habitat is present within the Subject Site. | Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. No appropriate breeding habitat was identified within the Subject Site. | No impact to foraging or breeding habitat is anticipated. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Petroica boodang* (Scarlet Robin) | V | - | Very low | The species live in dry eucalypt forests and woodlands, habitat usually contains abundant logs and fallen timber. Birds forage from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground. No appropriate foraging habitat exists within the Subject Site. | This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground. No nests were identified within the Subject Site. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Phascolarctos cinereus* – endangered population (Koala in the Pittwater Local Government Area) | EP | - | Very low | This species feeds on the foliage of more than 70 eucalypt species and 30 non-eucalypt species. Although potential feed trees are present within the Subject Property, it provides suboptimal foraging habitat for this species. The highly urbanised and fragmented nature of the Subject Site suggests the potential for Koala presence is extremely low. | No potential breeding habitat exists within the Subject Property. The urbanised and fragmented nature of the Subject Site makes the potential for Koala presence extremely low. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No anticipated loss to breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Potorous tridactylus* (Long-nosed Potoroo) | V | V | Low | Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. No appropriate foraging trees are present within the Subject Site. | Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. The Subject Site provides suboptimal habitat. | Minimal impact to potential suboptimal foraging and breeding habitat. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Pseudomys novaehollandiae* (New Holland Mouse) | - | V | Very low | Species is known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. Such habitat does not occur within the Subject Site. | This species breeds in burrows. No such habitat was identified within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. | No |
| *Pseudophryne australis* (Red-crowned Toadlet) | V | - | Very low | 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. No such habitat was identified within the Subject Site. | Breeding congregations occur in dense vegetation and debris beside ephemeral creeks and gutters. No such habitat was identified within the Subject Site. | Negligible, no anticipated net loss of foraging or breeding habitat. | No |
| *Pteropus poliocephalus* (Grey-headed Flying-fox) | V | V | Moderate | Feed on the nectar and pollen of native trees, in particular *Eucalyptus*, *Melaleuca*, and *Banksia*, and fruits of rainforest trees and vines. Foraging habitat is present within the Subject Site. | 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. No known roosting camps occur within or in close proximity to the Subject Site. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |
| *Ptilinopus regina* (Rose-crowned Fruit-Dove) | V | - | Low | 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. Vegetation within the Subject Site is considered sub optimal for foraging, as it is sparse and highly modified with limited fruit available. | The species nest in rainforests with dense growth vines. The nest is a frail loosely woven cup of twigs and tendrils. No nests were detected within the Subject Site. | Minimal impact to suboptimal foraging habitat given the mobility of the species. No anticipated loss to breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Ptilinopus superbus* (Superb Fruit-dove) | V | - | Low | 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. Potential feed trees occur within the Subject Site. | The nest is a structure of fine interlocked forked twigs, giving a stronger structure than its flimsy appearance would suggest, and is usually 5-30m up in rainforest and rainforest edge tree and shrub species. No such habitat exists within the Subject Site and no nests were identified. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Pycnoptilus floccosus* (Pilotbird) | - | V | Low | Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter. Forage mostly in pairs for insects, and occasionally eat seeds and fruits No suitable habitat was present within the Subject Site. | Build a domed nest on or near the ground. No suitable habitat was present within the Subject Site. | No impact to foraging or breeding habitat is anticipated. Site assessment in March 2023 and June 2024 did not detect this species. | No |
| *Rostratula australis* (Australian Painted Snipe) | E | E | Low | This species prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Forages nocturnally on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter. No appropriate foraging habitat is present within the Subject Site. | Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. Some appropriate nesting habitat is present within the Subject Site. | Due to the mobility of this species minimal impact to foraging or breeding habitat is anticipated. The site assessment in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat) | V | - | Low | This species forages for small, flying insects. The species flies high and fast over the forest canopy, but lower in more open country. Foraging habitat is present within the Subject Site. | Species roosts in trees hollows and dilapidated buildings. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |
| *Scoteanax rueppellii* (Greater Broad-nose bat) | V | - | Low | This species forages in most habitats across its very wide range, with and without trees. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Prey items may occur within the Subject Site. | This species requires tree hollows or buildings for roosting/ breeding. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |
| *Stagonopleura guttata* (Diamond Firetail) | V | - | Low | Found in grassy eucalypt woodlands. Feeds exclusively on the ground, on ripe and partly ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). Potential foraging habitat may occur within the Subject Site. | Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. No nests were identified within the Subject Site at the time of the site assessment. | Some impact to foraging habitat will occur, however no impact to breeding habitat is anticipated as no trees are proposed to be removed. Site assessment in March 2023 and June 2024 did not detect this species. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Sternula nereis nereis* (Australian Fairy Tern) | - | V | Low | Found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline. Diet consists of small baitfish. Coastline habitat was present within the Subject Site. | Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. No nests or suitable vegetation were identified within the Subject Site at the time of the site assessment. | Minimal anticipated net loss of foraging or breeding habitat. No anticipated loss of foraging or breeding habitat however the proposed works will be occurring within close proximity to habitat. This species was not identified during the site assessments in March 2023 and June 2024 did not detect this species. | Yes, whilst unlikely the proposed activity would significantly impact this species an EPBC Assessment of Significant Impact was prepared as a precaution due to the proximity of the proposed works to sandy beaches (Appendix H). |
| *Tyto novaehollandiae* Masked Owl) | V | - | Low | Lives in dry eucalypt forests and woodlands from sea level to 1100m. The species often hunts along the edges of forests, including roadsides. Its diet consists of tree-dwelling and ground mammals, especially rats. Prey items may occur within the Subject Site. | This species nests in large hollows. One (1) medium hollow-bearing tree was present within the Subject Site and will be retained. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |

| Species | BC Act | EPBC Act | Likelihood of Occurrence | Foraging Habitat Present Within the Subject Site | Breeding Habitat Present Within the Subject Site | Anticipated Impact | Further Impact Assessment Required? |
|---|---|---|---|---|---|---|---|
| *Varanus rosenbergi* (Rosenburg's Goanna) | V | - | Low | Species is found in heath, open forest and woodland and associated with termites. The species feeds on carrion, birds, eggs, reptiles and small mammals. Potential prey items may occur within the Subject Site. However, the Subject Site is not conducive to the species habitat requirements; the Subject Property lacks termite mounds, bird nests and sheltering structures. The species is unlikely to occur. | Not present. The species lays up to 14 eggs in a termite mound; the hatchlings dig themselves out of the mounds. No such habitat exists within the Subject Site. | Negligible, no anticipated impact to foraging or breeding habitat. Site survey conducted in March 2023 and June 2024 did not detect this species. | No |
| *Vespadelus troughtoni* (Eastern Cave Bat) | V | - | Very low | Little is understood of its feeding or breeding requirements or behaviour. Species roosts in caves that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Some foraging habitat may occur within the Subject Site. | Not present, the species roosts in caves. No such habitat exists within the Subject Site. | Minimal impact to foraging habitat given the mobility of the species. No loss of breeding habitat is anticipated. | No |

# 5. Impact Summary

## 5.2 Vegetation and Habitat

Approximately 0.02ha of vegetation proposed to be impacted in order to accommodate the proposed development including:

- 0.01ha of native vegetation mapped as Pittwater Spotted Gum (S_WSF11, OEH 2016b); and
- 0.01ha of vegetation mapped as Urban Exotic/ Native is.

This will involve the removal of one (1) local native tree to facilitate the development (Arcadia 2023, Bennett Murada Architects 2024 and Martin Peacock Tree Care 2022). One (1) hollow-bearing tree was identified within the Subject Site and will be retained.

### 5.2.1 Local occurrence of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion

Local occurrence is defined as the ecological community that occurs within the study area (OEH 2018). However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated (OEH 2018).

Vegetation within the Subject Property and immediate surrounds was dominated by canopy species that conform to the BC Act 2016 listed EEC Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion. A combination of ground-truthing, vegetation mapping, soil mapping and aerial imagery was used to conclude that the remnant trees in close proximity to the Subject Property are likely to conform to the Pittwater and Wagstaffe Spotted Gum Forest EEC.

It was concluded that the local occurrence of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion was likely to be greater than 175ha, considering connectivity most likely extended well beyond the local occurrence mapped in Figure 7. Most of the local occurrence was situated amongst a residential setting and most likely highly degraded. The removal of approximately 0.01ha of this EEC within the Subject Property will therefore impact on a maximum of 0.01% of the local occurrence.

A Test of Significance (5-part test) was undertaken in accordance with Section 7.3 of the BC Act to assess potential impacts from the proposed development on Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (Appendix D). It is not expected that the removal of 0.01ha will have an impact on the persistence of Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion EEC within the wider locality.

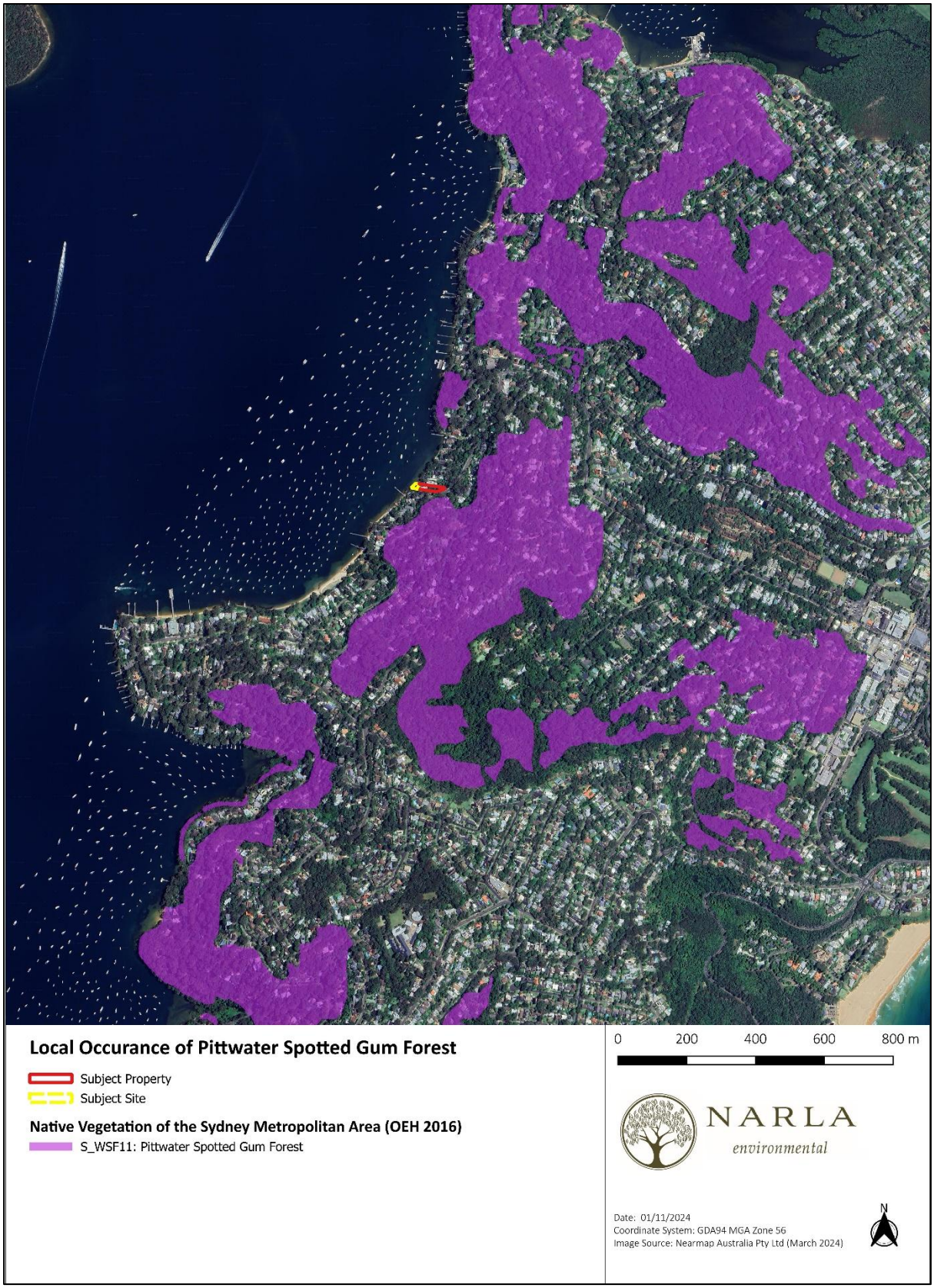


Figure 7. Local occurrence of Pittwater Spotted Gum Forest.

# 6. Recommendations

## 6.2 Impact Mitigation and Minimisation Recommendations

This section of the report details recommended efforts to avoid and minimise impacts on biodiversity values associated with the proposed development. Measures to be implemented before, during, and post construction are detailed in **Table 9.**

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

| Action | Outcome | Timing | Responsibility |
|---|---|---|---|
| **Project Location, Design and Planning** | The design of the proposed development is situated in the location that will predominately utilise the existing hardstand, however it will require the removal of one (1) *Corymbia maculata*. One (1) *Corymbia maculata* is proposed to be planted to compensate the loss of this tree. | Pre-construction phase | Proponent |
| **Assigning a Project Ecologist** | Prior to the construction phase of the development, the proponent may be required to commission the services of a qualified and experienced Ecologist with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management.<br><br>The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act.<br><br>If required by Council, the Ecologist will be commissioned to:<br>▪ Undertake an extensive pre-clearing survey; delineating habitat-bearing trees and shrubs to be retained/removed; and<br>▪ Supervise the clearance of and identified habitat trees and shrubs in order to capture, treat and/or relocate any displaced fauna. | Pre-construction phase | Proponent |
| **Vegetation Management Plan (VMP)** | A Vegetation Management Plan (VMP) has been compiled to support the pervious Development Application to ensure environmentally sensitive management of the EEC, as well as detail ongoing habitat management, weed management and revegetation across the Subject Property (Narla 2024). | Pre-construction phase | Proponent<br>Ecologist |

| Action | Outcome | Timing | Responsibility |
|---|---|---|---|
| **Tree Protections** | Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on construction sites. It is an area isolated from construction disturbance so that the tree remains viable. Ideally, works should be avoided within the TPZ.<br><br>A Minor Encroachment is less than 10% of the TPZ and is outside the structural root zone (SRZ). A Minor Encroachment is considered acceptable by AS-4970 when it is compensated for elsewhere and contiguous within the TPZ.<br><br>A Major Encroachment is greater than 10% of the TPZ or inside the SRZ. Major Encroachments generally require root investigations undertaken by non-destructive methods or the use of tree sensitive construction methods. | Pre-construction phase | Proponent<br><br>Arborist |
| **Erosion and Sedimentation** | Appropriate erosion and sediment control must be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004). | Construction phase | Proponent<br><br>Construction Contractor |
| **Landscaping** | Where possible, landscaping efforts within the Subject Property should incorporate locally indigenous species representative of Pittwater Spotted Gum Forest. | Construction phase | Proponent |
| **Storage and Stockpiling (Soil and Materials)** | Allocate all storage, stockpile, and laydown sites away from any vegetation that is planned to be retained. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values. | Construction phase | Construction Contractors |
| **Removal of Priority Weeds** | Prior to construction all Priority weeds are to be removed from the Subject Site.<br>Three (3) Priority Weed for the South East region was identified within the broader Subject Property:<br>▪ *Anredera cordifolia* (Madeira Vine)<br>▪ *Cestrum parqui* (Green cestrum)<br>▪ *Dolichandra unguis-cati* (Cat's claw creeper) | Pre-construction phase | Proponent |
| **Stormwater** | The proposed development is unlikely to result in significant changes to local storm-water runoff so it is expected there will be no exacerbated impact on native species of flora and fauna. | Post-construction phase | Proponent<br><br>Construction Architect |

# 7. Conclusion

The proposed development at 60 Hudson Parade, Clareville, involves the construction of a boatshed, associated site works and landscaping in the south-western corner of the Subject Property. It is expected that approximately 0.01ha of native Pittwater Spotted Gum vegetation will be impacted as a result of the proposed development. A further 0.01ha of vegetation mapped as Urban Exotic/ Native will be removed. A total of one (1) local native tree and shrubs are proposed for removal to facilitate the development (Arcadia 2023, Bennett Murada Architects 2024 and Martin Peacock Tree Care 2022). One (1) hollow-bearing tree was identified within the Subject Site however will be retained.

In total the proposed development will impact upon approximately 0.01ha of Pittwater Spotted Gum. This comprises 0.01% of the locally occurring BC Act listed EEC, Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion. The condition of the EEC being impacted is low and a number of impact mitigation and minimisation measures, as outlined in this report, are to be implemented to reduce impacts to native vegetation and fauna where possible. A VMP (Narla 2024) has been compiled to support the pervious Development Application to ensure environmentally sensitive management of the EEC, as well as detail ongoing habitat management, weed management and revegetation across the Subject Property.

It is not anticipated that any threatened flora or fauna will be significantly impacted by the proposed development as long as the impact mitigation measures outlined in this report, are to implemented to reduce impacts to native vegetation and fauna where possible.

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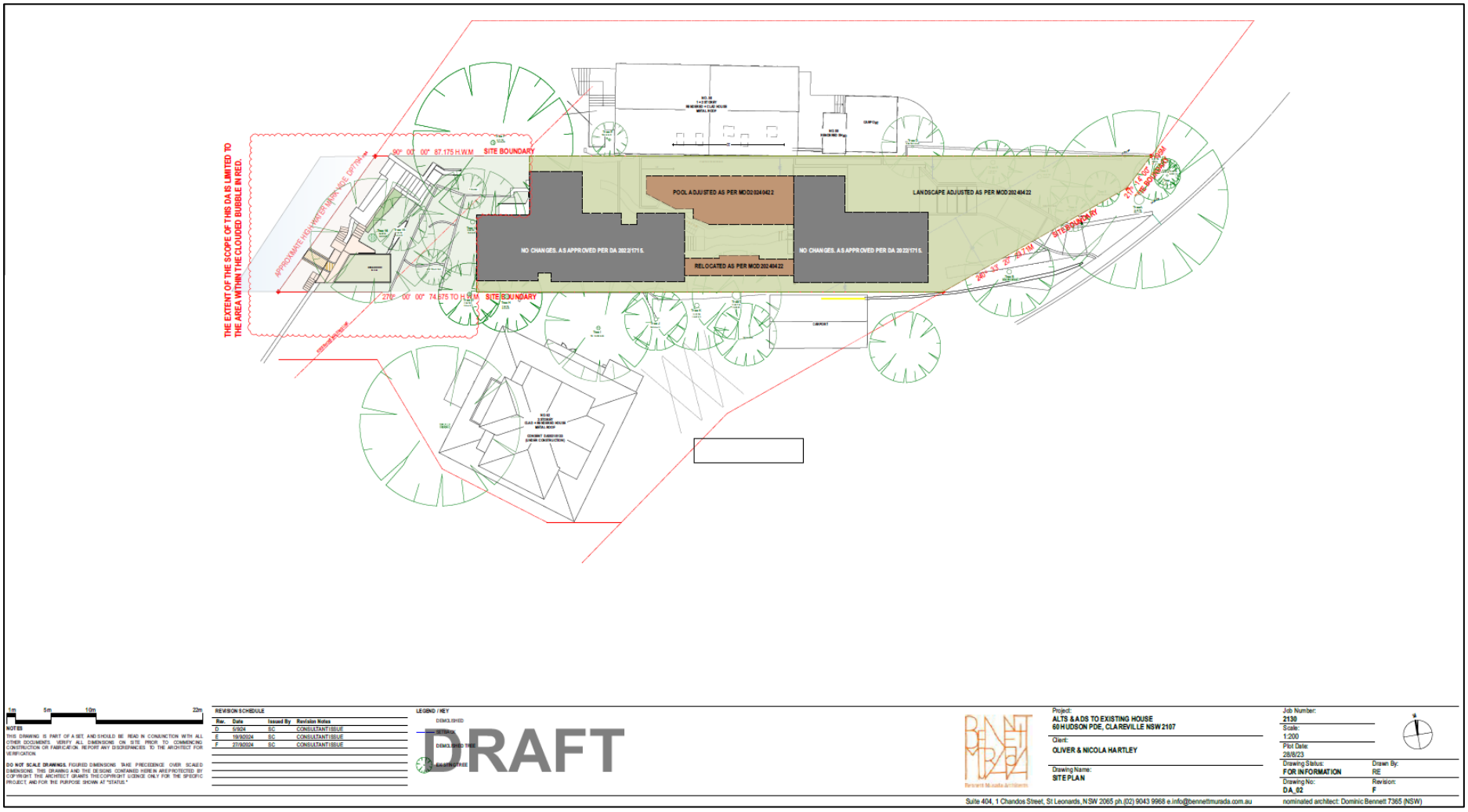
# 9. Appendices

Appendix A. Alts and Adds to 60 Hudson Parade, Clareville (Bennett Murada Architects 2024)
Appendix B. Flora species identified within the Subject Property
Appendix C. Fauna species identified within and surrounding the Subject Property
Appendix D. Biodiversity Conservation Act 2016 Test of Significance (5-part Test)
Appendix E. Biodiversity Conservation Act 2016 – Assessment of Significance (5-part Test) for Shorebird Species.
Appendix F. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Migratory Shorebirds.
Appendix G. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Threatened Shorebirds.
Appendix H. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Vulnerable Species.

Appendix A. Alts and Adds to 60 Hudson Parade, Clareville (Bennett Murada Architects 2024)



Appendix B. Flora species identified within the Subject Property

| Scientific Name | Canopy | Mid-Storey | Groundcover |
|---|---|---|---|
| *Acacia fimbriata* | | x | |
| *Acmena smithii* | | x | |
| *Aechmea fasciata** | | | x |
| *Agapanthus praecox ** | | | x |
| *Allocasuarina torulosa* | x | | |
| *Aloe* sp.* | | | x |
| *Anredera cordifolia*** | | | x |
| *Asparagus aethiopicus*** | | | x |
| *Atractocarpus fitzalanii ** | | x | |
| *Banksia integrifolia* subsp. *integrifolia* | | x | |
| *Bauhinia forficata** | | x | |
| *Beaumontia grandiflora ** | | x | |
| *Bidens pilosa** | | | x |
| *Bouteloua dactyloides** | | | |
| *Brachychiton acerifolius* | x | | |
| *Brugmansia sp.** | | x | |
| *Bryophyllum x houghtonii** | | | x |
| *Callistemon salignus* | | x | |
| *Camellia sasanqua** | | x | |
| *Canna indica** | | | x |
| *Cayratia clematidea* | | | x |
| *Celtis sinensis** | | x | |
| *Cestrum parqui*** | | x | |
| *Chlorophytum comosum** | | | x |
| *Commelina cyanea* | | | x |
| *Conyza bonariensis** | | | x |
| *Coreopsis lanceolata** | | | x |
| *Corymbia citriodora** | | x | |
| *Corymbia maculata* | x | | |
| *Crassula ovata** | | x | |
| *Ctenanthe lubbersiana** | | | x |
| *Cyperus involucratus** | | | x |
| *Cupressus* sp.* | x | | |
| *Dianella caerulea* | | | x |
| *Dichondra repens* | | | x |
| *Digitaria sanguinalis*** | | | x |
| *Dolichandra unguis-cati** | | | x |
| *Dracaena sp.** | | x | |
| *Ehrharta erecta** | | | |
| *Glochidion ferdinandi* | x | | |
| *Epidendrum radicans** | | | x |

| Scientific Name | Canopy | Mid-Storey | Groundcover |
|---|---|---|---|
| *Erigeron karvinskianus** | | | x |
| *Eucalyptus paniculata* | x | | |
| *Gazania linearis** | | | x |
| *Geitonoplesium cymosum* | | | x |
| *Geranium homeanum* | | | x |
| *Ginkgo biloba** | | x | |
| *Gloriosa superba** | | | x |
| *Hakea gibbosa* | | x | |
| *Hedera helix** | | | x |
| *Hibiscus rosa-sinensis** | | x | |
| *Hibiscus syriacus** | | x | |
| *Hypoestes phyllostachya** | | | x |
| *Imperata cylindrica* | | | x |
| *Jacaranda mimosifolia** | x | | |
| *Jasminum officinale** | | | x |
| *Justicia brandegeeana** | | | x |
| *Kalanchoe sp.** | | | x |
| *Kennedia rubicunda* | | | x |
| *Livistona australis* | | | |
| *Lomandra longifolia* | | | x |
| *Macrozamia communis* | | x | |
| *Murraya paniculata* | | x | |
| *Musa sp.** | | x | |
| *Nandina domestica** | | x | |
| *Nerium oleander** | | | |
| *Ochna serrulata** | | x | |
| *Pelargonium sp.** | | | |
| *Pelargonium zonal** | | | x |
| *Pittosporum undulatum* | | x | |
| *Platycerium bifurcatum* | | | |
| *Plectranthus saccatus** | | | x |
| *Plumeria rubra** | | x | |
| *Potentilla indica** | | | x |
| *Pteris tremula* | | | x |
| *Rhaphiolepis indica** | | x | |
| *Rumex sagittatus** | | | x |
| *Senna pendula** | | x | |
| *Solanum nigrum** | | | x |
| *Sonchus oleraceus** | | | x |
| *Strelitzia reginae** | | x | |
| *Tradescantia fluminensis** | | | x |

** Denotes exotic species, ** Denotes priority weed*

Appendix C. Fauna species identified within and surrounding the Subject Property

| Class | Scientific Name | Common Name | Status |
|---|---|---|---|
| Aves | *Cacatua galerita* | Sulphur-crested Cockatoo | Protected |
| | *Dacelo novaeguineae* | Laughing Kookaburra | |
| | *Manorina melanocephala* | Noisy Miner | |
| | *Trichoglossus moluccanus* | Rainbow Lorikeet | |

Appendix D. Biodiversity Conservation Act 2016 Test of Significance (5-part Test)

| Biodiversity Conservation Act 2016 – Test of Significance (5-part Test)<br>for<br>Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (PWSGF) | | |
|---|---|---|
| BC Act Status: Endangered Ecological Community | | |
| (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, | Not applicable. | |
| (b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: | (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or | The proposed development is situated amongst a largely residential setting. It is a highly degraded parcel of land containing an existing dwelling and landscaped vegetation. Few remnant trees characteristic of PWSGF occur. The vegetation within the Subject Property is connected to other larger areas of Pittwater Spotted Gum Forest through remnant canopy trees scattered amongst the residential setting. The proposed development will involve the clearing of 0.01ha of PWSGF. This area accounts for approximately 0.01% of local occurring PWSGF. This is not expected to have a significant impact on the remaining local occurrence, or the ecological community in the wider locality. Revegetation work have been proposed to reduce adverse impacts. |
| | (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 composition of the ecological community within the Subject Property has been largely altered as a result of historical disturbances. As the proposed development will result in the removal of one (1) local native tree (0.01ha) within the Subject Site, amongst an exotic dominated ground-layer, this will not substantially modify the composition of the ecological community within its local occurrence. The majority of the local occurrence of this EEC is highly degraded and situated amongst residential dwellings, and mostly represented in the |

| Biodiversity Conservation Act 2016 – Test of Significance (5-part Test)<br>for<br>Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (PWSGF) | | |
|---|---|---|
| BC Act Status: Endangered Ecological Community | | |
| | | canopy stratum. It is not expected that the removal of vegetation within the Subject Property will therefore alter the remaining local occurrence to such an extent that it will be placed at risk of extinction. |
| (c) in relation to the habitat of a threatened species or ecological community: | (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and | The proposed development will result in the removal of 0.01ha of Pittwater PWSGF. This area accounts only for 0.01% of the locally occurring PWSGF. |
| | (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 area of habitat it not likely to become fragmented or isolated from other areas of habitat as a result of the proposed development. The Subject Property is situated in a fragmented landscape with connectivity only provided by remnant canopy trees. The removal of one (1) local native tree within the Subject Property is not expected to increase fragmentation of habitat, considering the small area of impact. Canopy trees remaining within the Subject Property will still be able to provide connectivity to other areas of PWSGF surrounding the Subject Property. Additional local native trees are recommended for planting to reduce 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 condition of the PWSGF in the Subject Property was highly degraded and situated amongst an urban setting. It is not expected that the removal of vegetation within the Subject Property will impact on the survival of the ecological community in the locality, considering its small area and low quality. The removal of canopy trees in the Subject Property is also not expected to significantly reduce the habitat within the locality. Revegetation plans have been proposed to enhance and contribute to the long-term survival of important PWSGF. Revegetation work |

| Biodiversity Conservation Act 2016 – Test of Significance (5-part Test)<br>for<br>Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion (PWSGF) | | |
|---|---|---|
| BC Act Status: Endangered Ecological Community | | |
| | | have been proposed to prevent extinction. |
| (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 proposed development 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 result in the following Key Threatening Processes (KTPs) listed under Schedule 4 of the BC Act:<br>▪ Clearing of native vegetation.<br>▪ Weed invasion | |
| References<br><br>NSW Scientific Committee (2013) Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion – endangered ecological community listing: https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2013/pittwater-wagstaffe-spotted-gum-forest-nsw-scientific-committee-final-determination.pdf?la=en&hash=95E95CC5FFA86592227BE0A6B42614F597BCE468 | | |

Appendix E. Biodiversity Conservation Act 2016 – Assessment of Significance (5-part Test) for Shorebird Species.

<table>
<tr><td colspan="3">Biodiversity Conservation Act 2016– Assessment of Significance (5-part Test)<br>For<br>Shorebirds:<br>Calidris ferruginea (Curlew Sandpiper)[2]<br>Esacus magnirostris (Beach Stone-curlew)[2]<br>Haematopus fuliginosus (Sooty Oystercatcher)[1]</td></tr>
<tr><td colspan="3">BC Act Status: [1]Vulnerable and [2]Critcally Endangered</td></tr>
<tr><td>(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,</td><td colspan="2">The proposed works are unlikely to adversely impact upon the life cycle of these species as this habitat will not be impacted by the proposed activity. No significant impacts to the life cycle of these species will occur across the Subject Site. All three (3) species breed in Australia, however appropriate breeding habitat is not present within the Subject Property and these species would only utilise the sandy beaches and rock areas within the Subject Site as intermittent foraging habitat. Therefore, the proposed activity will not have an adverse effect such that the viability of a local population is likely to be placed at risk of extinction.</td></tr>
<tr><td rowspan="2">(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:</td><td>(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</td><td>Not applicable – Shorebirds do not constitute an ecological community.</td></tr>
<tr><td>(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,</td><td>Not applicable – Shorebirds do not constitute an ecological community.</td></tr>
<tr><td rowspan="2">(c) in relation to the habitat of a threatened species or ecological community:</td><td>(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and</td><td>The proposed activity is unlikely to impact on beach and rocky habitat, however works will be in close proximity to this area. No Shorebird habitat is expected to be removed or modified.</td></tr>
<tr><td>(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</td><td>The proposed activity is unlikely to impact on beach and rocky habitat, however works will be in close proximity to this area. Whilst there may be a temporary disruption during works, the habitat is expected to exist as it currently does post works. No isolation or fragmentation is expected to occur as a result of the proposed activity. Furthermore, significant habitat of the same quality will continue to occur along the banks of Clareville Beach.</td></tr>
</table>

| Biodiversity Conservation Act 2016– Assessment of Significance (5-part Test)<br>For<br>Shorebirds:<br>*Calidris ferruginea* (Curlew Sandpiper)[2]<br>*Esacus magnirostris* (Beach Stone-curlew)[2]<br>*Haematopus fuliginosus* (Sooty Oystercatcher)[1] | | |
|---|---|---|
| BC Act Status: [1]Vulnerable and [2]Critcally Endangered | | |
| | **(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 proposed activity is unlikely to impact on beach and rocky habitat, however works will be in close proximity to this area. Whilst there may be a temporary disruption during works, the habitat is expected to exist as it currently does post works. The importance of foreshore, rocky and beach habitat is essential foraging and breeding habitat and for the long-term survival of shorebirds. No isolation or fragmentation is expected to occur as a result of the proposed activity. Furthermore, habitat will continue to exist for these species along the banks of Clareville Beach. |
| **(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 proposed activity 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 KTPs relevant to these species within the Subject Site are:<br>▪ Reduced water quality from siltation and pollution.<br>▪ Predation by foxes and feral cats.<br>▪ Use of chemicals near wetlands.<br>▪ Grazing and associated frequent burning of wetlands.<br>▪ Exotic weeds and invasive native plants degrading wetland habitat. | |

References
NSW Government (2018a) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 4: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf

Office of Environment and Heritage (2024) Curlew Sandpiper – Species Profile https://threatenedspecies.bionet.nsw.gov.au/profile?id=20166

Office of Environment and Heritage (2021) Beach Stone-curlew – Species Profile https://threatenedspecies.bionet.nsw.gov.au/profile?id=10280

Office of Environment and Heritage (2023) Sooty Oystercatcher – Species Profile https://threatenedspecies.bionet.nsw.gov.au/profile?id=10385

Appendix F. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Migratory Shorebirds.

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Migratory Shorebirds<br>*Calidris ferruginea* (Curlew Sandpiper) | |
|---|---|
| EPBC Act Status: Migratory | |
| Significant impact criteria<br>An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will: | |
| Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species | The proposed activity is not deemed likely to substantially modify, destroy or isolate an area of important habitat for a migratory species. "Important Habitat" for a migratory species is defined as:<br>▪ Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population and/or;<br>▪ Habitat that is of critical important to the species at particular life-cycle stages, and/or<br>▪ Habitat utilised by a migratory species which is at the limit of the species range, and/or<br>▪ Habitat within an area where the species is declining.<br>The proposed activity will be in close proximity but will not impact on any shorebird habitat that could provide intermittent foraging habitat for these species. |
| Result in an Invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species. | The proposed activity is not likely to result in an increase to pest species such that it would impact on habitat for migratory species. The Subject Site is adjacent to Clareville Beach, and whilst there may be a temporary disruption during works, the habitat will continue to exist as it currently does post work. Furthermore, extensive areas of suitable habitat will remain for these species along Clareville Beach. |
| Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat and therefore is not deemed likely to seriously disrupt the lifecycle of an ecological significant proportion of the population of any of these species. Due to the small nature of the Subject Site, only a few individuals could occupy the area for foraging at one time. Whilst minor disruptions in foraging might result due to the proposed activity, it is not deemed likely to seriously disrupt an ecological significant proportion of the population. Especially when considering the extensive habitat remaining along Clareville Beach. |
| References:<br>DCCEEW (2015) Calidris ferruginea — Curlew Sandpiper - Species Profile and Threats Database http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=856<br><br>DCCEEW (2011) Sternula nereis nereis — Australian Fairy Tern - Species Profile and Threats Database https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82950 | |

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Migratory Shorebirds<br>*Calidris ferruginea* (Curlew Sandpiper) |
|---|
| EPBC Act Status: Migratory |
| Commonwealth of Australia (2013) Matters of National Environmental Significance - Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999 |

Appendix G. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Threatened Shorebirds.

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Threatened Shorebirds<br>*Calidris ferruginea* (Curlew Sandpiper) | |
|---|---|
| EPBC Act Status: Endangered | |
| Significant impact criteria<br>An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will: | |
| Lead to the long-term decrease in the size of a population. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for this species. The habitat within the Subject Site is deemed unlikely to provide intermittent foraging habitat for this species. Therefore, it is deemed unlikely that the proposed works would result in the long-term decrease of the size of a population, especially considering the extensive habitat that will still remain along Pittwater Bay. |
| Reduce the area of occupancy of the species. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for this species. No individuals have previously been recorded within the Subject Site. The proposed works will not result in a reduction in the area of occupancy for this species. |
| Fragment an existing population into two or more population. | The proposed activity will not fragment an existing population. No population has been recorded within the Subject Site, at the time of writing this report. In addition, this species is highly mobile, and there will be no loss of foreshore habitat from within the Subject Site, therefore is not considered likely to significantly affect these species. |
| Adversely affect habitat critical to the survival of the species. | 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:<br>▪ For activities such as foraging, breeding, roosting, or dispersal<br>▪ For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)<br>▪ To maintain genetic diversity and long-term evolutionary development, or<br>▪ For the reintroduction of populations or recovery of the species or ecological community.<br>Whilst the Subject Site might provide intermittent foraging habitat for select individuals of this species, it is not deemed to be habitat critical to the survival for any of these species. |
| Disrupt the breeding cycle of a population. | This species does not breed in Australia. The minor disruption of potential sub-optimal foraging habitat it not deemed likely to result in an impact that would result in the breeding cycle of these species being disrupted. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for these species. The habitat within the Subject Site is deemed unlikely to provide intermittent foraging habitat for select individuals of these species. Therefore, it is deemed unlikely that the proposed works would result in the decline of the species, especially considering the extensive habitat that will still remain along the Parramatta River within the locality. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the | Due to the highly disturbed, urban nature of the Subject Site, invasive flora and fauna are already present. The proposed activity is not deemed likely to increase the presence of invasive species. A CEMP will be created for the activity that will outline weed and rubbish removal from the site which will aid in levels of invasive species not exceeding what is already present. |

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Threatened Shorebirds<br>*Calidris ferruginea* (Curlew Sandpiper) | |
|---|---|
| EPBC Act Status: Endangered | |
| endangered or critically endangered species habitat | |
| Introduce disease that may cause the species to decline. | The proposed activity is deemed unlikely to introduce disease that will cause this species to decline. |
| Interfere with the recovery of the species. | No potential foraging habitat may be removed as a result of the proposed activity; therefore, the proposed activity is not expected to interfere with the recovery of the species, especially considered the extensive habitat that will remain within the locality along Pittwater Bay. |
| References:<br>DCCEEW (2015) Calidris ferruginea — Curlew Sandpiper - Species Profile and Threats Database http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=856<br><br>Commonwealth of Australia (2013) Matters of National Environmental Significance - Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999 | |

Appendix H. Commonwealth Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significant Impact Criteria for Vulnerable Species.

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Vulnerable Species<br>*Sternula nereis nereis* (Australian Fairy Tern) | |
|---|---|
| EPBC Act Status: Vulnerable | |
| Significant impact criteria<br>An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will: | |
| Lead to the long-term decrease in the size of a population. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for this species. The habitat within the Subject Site is deemed unlikely to provide intermittent foraging habitat for this species. Therefore, it is deemed unlikely that the proposed works would result in the long-term decrease of the size of a population, especially considering the extensive habitat that will still remain along Pittwater Bay. |
| Reduce the area of occupancy of the species. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for this species. No individuals have previously been recorded within the Subject Site. The proposed works will not result in a reduction in the area of occupancy for this species. |
| Fragment an existing population into two or more population. | The proposed activity will not fragment an existing population. No population has been recorded within the Subject Site, at the time of writing this report. In addition, this species is highly mobile, and there will be no loss of foreshore habitat from within the Subject Site, therefore is not considered likely to significantly affect these species. |
| Adversely affect habitat critical to the survival of the species. | 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:<br>▪ For activities such as foraging, breeding, roosting, or dispersal<br>▪ For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)<br>▪ To maintain genetic diversity and long-term evolutionary development, or<br>▪ For the reintroduction of populations or recovery of the species or ecological community.<br>Whilst the Subject Site might provide intermittent foraging habitat for select individuals for these species, it is not deemed to be habitat critical to the survival for any of these species. |
| Disrupt the breeding cycle of a population. | This species nests on sheltered sandy beaches, spits and banks. The minor disruption of potential foraging and breeding habitat it not deemed likely to result in an impact that would result in the breeding cycle of these species being disrupted. |
| Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. | The proposed activity will be in close proximity but will not impact on any potential foraging habitat for these species. The habitat within the Subject Site is only deemed likely to provide intermittent foraging habitat for select individuals of these species. Therefore, it is deemed unlikely that the proposed works would result in the decline of the species, especially considering the extensive habitat that will still remain along the Parramatta River within the locality. |
| Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the | Due to the highly disturbed, urban nature of the Subject Site, invasive flora and fauna are already present. The proposed activity is not deemed likely to increase the presence of invasive species. A CEMP will be created for the activity that will outline weed and rubbish removal from the site which will aid in levels of invasive species not exceeding what is already present. |

| Commonwealth Environment Protection and Biodiversity Conservation Act 1999<br>Assessment of Significant Impact Criteria<br>for<br>Vulnerable Species<br>*Sternula nereis nereis* (Australian Fairy Tern) | |
|---|---|
| EPBC Act Status: Vulnerable | |
| endangered or critically endangered species habitat | |
| Introduce disease that may cause the species to decline. | The proposed activity is deemed unlikely to introduce disease that will cause any of these species to decline. |
| Interfere with the recovery of the species. | No potential foraging habitat may be removed as a result of the proposed activity; therefore, the proposed activity is not expected to interfere with the recovery of the species, especially considered the extensive habitat that will remain within the locality along Pittwater Bay. |

References:
DCCEEW (2011) Sternula nereis nereis – Australian Fairy Tern - Species Profile and Threats Database http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=856

Commonwealth of Australia (2013) Matters of National Environmental Significance - Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999

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