Stantec

304501478

Middle Head Amenities Building Biodiversity Assessment Report

Mosman Municipal Council

3 May 2024

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0	29 April 2024	Draft for internal review	Jackson McCutchen	Dane Fogliada
1	30 April 2024	Draft for client review	Dane Fogliada	Kevin Roberts
2	03 May 2024	Updates following client review	Dane Fogliada	Kevin Roberts

Executive Summary

Stantec Australia Pty Ltd (Stantec) has been engaged by Mosman Municipal Council to develop a desktop Biodiversity Assessment Report (BAR) support of a Development Application (DA) for the redevelopment of Middle Head Oval Amenities Building. This BAR focuses on determining whether there are potential impacts from the Project on biodiversity and if so, whether appropriate mitigation is required.

The BAR used a desktop review of relevant information to support the identification of key ecological values within the Study Area.

For a devolpment under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), there are three triggers that may require the proponent to enter into the Biodiversity Offset Scheme (BOS) through a Biodiversity Development Assessment Report (BDAR) or prepare a Species Impact Statement (SIS):

- Clearing of native vegetation on land mapped on the Biodiversity Values (BV) map.
- Clearing thresholds are exceeded for the subject land.
- There is likely to be a significant impact on any threatened species, population and/or community.

The Project does not impact any mapped BV or native vegetation to which the clearing thresholds would apply, nor is it likely to significantly impact any threatened species, population or community. Therefore, entry into the BOS and the requirements of a BDAR are not required for this Project.
.
The Study Area contains no native vegetation and very limited potential fauna habitat restricted to existing buildings and a small, planted garden bed with maintained turf.

A likelihood of occurrence assessment was conducted and found species that had at least a moderate likelihood of occurring within the Study Area and could potentially use the available habitat within the Study Area. Further detailed assessment indicated that it was unlikely that the Project would pose a significant risk to local populations of these species.

Whilst potential habitat occurs for threatened species, further detailed assessment indicated that it was unlikely that the Project would pose a significant risk to local populations of these species due to the nature and extent of the proposed works and the availability of high-quality habitat adjacent to the Study Area. No Commonwealth MNES is likely to be directly impacted by the Project.

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1 Introduction

Mosman Municipal Council (the Client) are proposing the redevelopment of Middle Head Oval Amenities Building. The Client has engaged Stantec Australia Pty Ltd (Stantec) to undertake desktop biodiversity investigations for the proposed development (the Project). A desktop-based Biodiversity Assessment Report (BAR) is required to help inform the Statement of Environmental Effects (SEE) in support of a Development Application (DA) for the proposed works.

1.1 Project Particulars

The Project involves the redevelopment of Middle Head Oval Amenities Building to provide Mosman an exemplary sports and community facility at the entry point of Middle Head precinct. The proposed works are illustrated in **Plate 1** and details include:

- Demolition of existing amenities building and associated structures.
- Construction of new amenities including changerooms and a kiosk.
- Construction and landscaping of a new community space including a barbeque area.
- Planting of vegetation in accordance with the approved landscape design package.

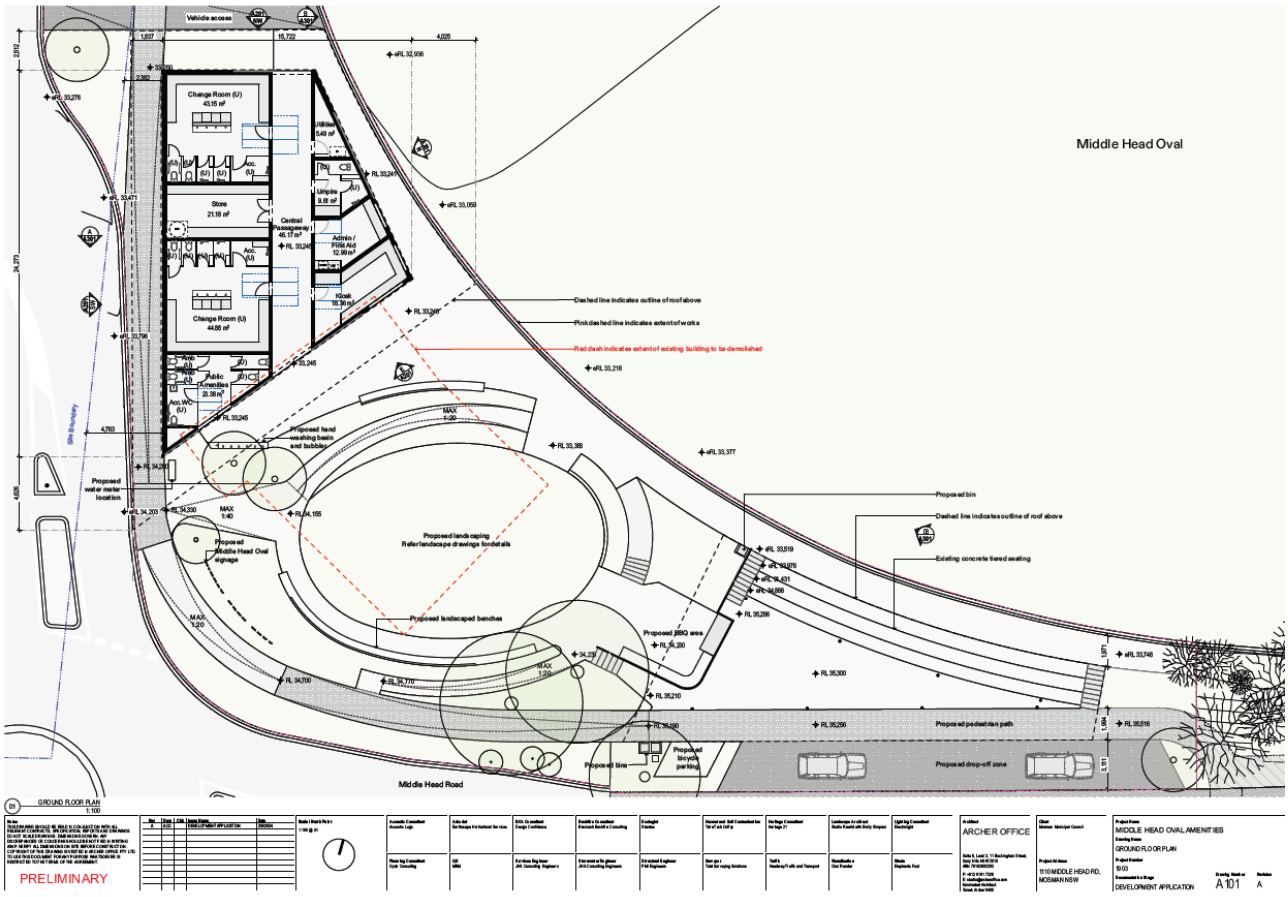


Plate 1: Layout of Proposed Works

1.2 Study Area

The Study Area has been illustrated in **Figure 1** and other site-specific particulars are detailed in **Table 1**.

Table 1 Study Area Particulars.

Attribute	Study Area Particular
Locality	Mosman, NSW
LGA	Mosman Municipal Council
Study Area	0.15 ha
Topography	The Study Area is approximately 35 m above sea level (ASL).
Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and subregion	IBRA region: Sydney Basin IBRA subregion: Pittwater
NSW landscape regions (Mitchell landscapes)	Belrose Coastal Slopes SB Pittwater
Watercourses and Waterbodies	There are no mapped watercourses within the Study Area. Sydney Harbour is less the 200 m from the Study Area.
Geology	The Study Area occurs on Triassic sedimentary rocks; Quartz-lithic to quartz-rich sandstone with conglomerate, mudstone and siltstone.
Conservation Reserves	Sydney Harbour National Park is less than 200 m from the Study Area
Ecological Connectivity features	The Study Area contains maintained grass and buildings, there is little to no connectivity features present.
Areas of Outstanding Biodiversity Value (AOBVs)	There are four declared areas of outstanding biodiversity value (AOBV) in NSW: • Gould's Petrel; • Little Penguin population in Sydney's North Harbour; • Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and • Wollemi Pine. The Little Penguin population in Sydney's North Harbour; is the closest AOBV to the Study Area, approximately 2.5km away.
Local Land Services (LLS) Region	Greater Sydney

1.3 Scope of Works

The BAR addresses the following legislative planning requirements relevant to terrestrial and aquatic biodiversity:

- Determine presence and assess proposal impacts to threatened species, populations or threatened ecological communities (TECs) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), *Fisheries Management Act 1994* (FM Act) and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) of the Study Area.
- Biosecurity obligations under the NSW *Biosecurity Act 2015* (Bio Act) for Priority Weeds for the Greater Sydney LLS region.
- Determine whether the Project would have a significant impact on any identified listed entity.

1.4 Legislative Context

1.4.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires approval of the Commonwealth Minister for Environment (formerly the Minister of Sustainability, Environment, Water, Population and Communities) for actions that may have a significant impact on Matters of National Environmental Significance (MNES). The EPBC Act is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) and lists threatened species, ecological communities and other MNES. Any proposed action that is expected to have an impact on MNES must be referred to the Minister for assessment under the EPBC Act or assessed under the accredited process between the Commonwealth and the State of NSW.

An assessment of MNES and their applicability to the Study Area is provided in **Section 3.1.2** as per the Protected Matters Search Tool (PMST) (see **Appendix B**).

1.4.2 Sydney Harbour Federation Trust Act 2001

Section 71 of the *Sydney Harbour Federation Trust Act 2001* covers 'excluded State Law' this states that certain state laws do not apply to the Trust or to the property (including Trust Land) covering, but not exclusive of, matters of town planning, powers and functions of local Councils, standards applicable to the design, or manner of construction, of a building, structure or facility and the protection of the environment or of the natural and cultural heritage.

Although for completeness and if there is a lack of Commonwealth guidance, NSW laws or standards in these matters have been assessed and reviewed as required.

1.4.3 NSW Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016* (BC Act) establishes mechanisms for:

- The management and protection of listed threatened species of native flora and fauna (excluding fish and marine vegetation) and threatened ecological communities (TECs).
- The listing of threatened species, TECs and key threatening processes.
- The development and implementation of recovery and threat abatement plans.
- The declaration of areas of outstanding biodiversity value (AOBV).
- The consideration and assessment of threatened species impacts in development assessment process.
- Biodiversity Offsets Scheme, including the Biodiversity Values Map and method to identify serious and irreversible impacts (SAII).

The BC Act establishes a regulatory framework for assessing and offsetting biodiversity impacts on proposed developments. Under Part 7.3 of the BC Act a five-part test is required to determine whether there would be

a significant impact on any threatened species or TEC listed under the BC Act known or considered likely to occur on a site as a result of a proposed action.

For a Part 4 development (under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), there are three triggers that may require the proponent to enter into the Biodiversity Offset Scheme (BOS) through a Biodiversity Development Assessment Report (BDAR) or prepare a Species Impact Statement (SIS):

- Clearing of native vegetation on land mapped on the Biodiversity Values (BV) map.
- Clearing thresholds are exceeded for the subject land.
- There is likely to be a significant impact on any threatened species, population and/or community.

There is no mapped BV land within the Study Area and clearing thresholds would not be exceeded as no native vegetation communities are anticipated to be directly impacted by the Project. Tests of Significance were undertaken for two species with potential to occur within the Study Area. It was determined that the Project would be unlikely to have a significant impact on listed threatened entities. Therefore, this entry pathway has not been triggered.

As such entry into the BOS and the preparation of a BDAR or SIS have not been recommended as being required for the Project.

1.4.4 Fisheries Management Act

The *Fisheries Management Act 1994* (FM Act) contains provisions for the conservation of fish stocks, key fish habitat, biodiversity, threatened species, populations and ecological communities. The FM Act regulates the conservation of fish, marine vegetation and some aquatic macroinvertebrates and the development and sharing of the fishery resources of NSW for present and future generations. The FM Act lists threatened species, populations and ecological communities under Schedules 4, 4A and 5. Schedule 6 lists key threatening processes for species, populations and ecological communities in NSW waters.

Part 7A of the FM Act lists threatened species, populations and ecological communities and key threatening processes (KTPs) for species, populations and ecological communities in NSW waters. Section 220ZZ of the FM Act outlines significant impact considerations to threatened species, populations and ecological communities listed under the FM Act. Under the FM Act, a '7-part test' is carried out to assess the likelihood of significant impacts upon threatened species, populations or ecological communities listed under the FM Act. The document Threatened Species Assessment Guidelines: The Assessment of Significance (NSW DPI, 2008) outlines a set of guidelines to help proponents of a development or activity with interpreting and applying the factors of assessment in the 7-part test. Significant impacts trigger the need for a SIS for Part 5 projects.

There are no mapped waterways within the Study Area and it is unlikely that impacts to the aquatic environment would occur as a result of the Project. Therefore, it is unlikely provisions under the FM Act would be triggered as part of the Project.

1.4.5 NSW Biosecurity Act 2015

The NSW *Biosecurity Act 2015* came into effect on 1 July 2017, effectively replacing the *Noxious Weeds Act 1993*, and 13 other Acts, with a single Act. . Under the Biosecurity Act, all landowners have a responsibility to control noxious weeds on their property known as a General Biosecurity Duty.

The General Biosecurity Duty states "Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised." The general biosecurity duty applies to all weeds listed in Schedule 3 of the Biosecurity Act.

1.4.6 State Environment Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity SEPP 2021) includes provisions for Koala habitat protection that aims to:

- Help reverse the decline of koala populations by ensuring koala habitat is properly considered during the development assessment process
- Provide a process for councils to strategically manage koala habitat through the development of koala plans of management.

The Biodiversity SEPP 2021 does not apply to Mosman Municipal Council, and therefore the Study Area. Therefore, consideration of potential Koala habitat has not been investigated as part of this assessment.

1.4.7 State Environment Planning Policy (Resilience and Hazards) 2021

The Study Area is located in the coastal use area under the Resilience and Hazards SEPP. Development in this zone must meet the following criteria.

- The development is not considered likely to cause an adverse impact on:
    - 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.
- The development will avoid, minimise or mitigate impacts to the above factors,
- The development has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.

The Project would seek to revitalise the existing amenities building and provide an improvement of amenity to the community and the coastal landscape. It is considered unlikely that the Project would have an adverse impact on the entities listed above, given its continued use as a sports and recreational field.

1.4.8 Mosman Council Local Environmental Plan 2012

Mosman Local Environmental Plan (LEP) 2012 has identified land zones and objectives within the Local Government Area (LGA). The Project is situated on land that has been zoned SP2 – Infrastructure. The objectives of this zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

The Project involves the redevelopment of infrastructure related to the adjacent sports field. The proposed works will be an update to existing facilities.

Study Area

Middle Head Amenities Building Mosman, NSW

Legend

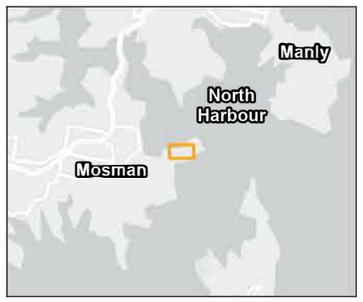
- Study Area
- National Park
- Road

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery (Metromap, 2023)
2. National Park, Road(NSW SS, 2023)

0 20 40 60 80 Metres

Scale at A3: 1:1,500



Client: Mosman Municipal Council
Project Code: 304501478-GS001
Drawn By: JM, Checked By: SM
Figure: 1 | Rev: 1
Date: 2024-04-30

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2 Methodology

2.1 Desktop Review

A desktop review was undertaken to identify records of threatened flora, fauna and ecological communities, migratory species and Key Threatening Processes (KTP) within 5 km of the Study Area (i.e. the locality). This included searches of online databases and a review of available spatial data and literature of relevance, including:

- Existing vegetation mapping as available in NSW BioNet Vegetation Information System.
- Local threatened species records within the NSW BioNet Atlas.
- Relevant Threatened Ecological Community description and assessment guidelines (DEC 2004; DPIE 2020).
- Freshwater threatened species distribution mapping (DPI, 2018).
- Predicted Matters of National Environmental Significance (MNES), including threatened species and ecological communities as per the Commonwealth's Protected Matters Search Tool (PMST).
- The Atlas of Living Australia database, to identify known records of threatened, least concern and pest species recorded within the vicinity of the Study Area.

2.2 Limitations

The methodology presented here provides a limitation on describing the biodiversity values of the Study Area. The biodiversity values of the Study Area discussed in this assessment are derived from databases, existing mapping and other online resources and is dependent on the accuracy of information from these sources. No site inspection to verify the accuracy of this information has been undertaken as part of this assessment.

This BAR was developed based on available data and the environmental condition of the Study Area at the time of the development of this report. Environmental conditions, including the presence of threatened species, can vary with time. To address this limitation, the assessment has aimed to identify the presence and suitability of the habitat for threatened species.

3 Results

3.1 Desktop Searches and Literature Review

3.1.1 BioNet Atlas Search

The results from the BioNet Atlas database searches indicated that 75 threatened species have been recorded within 5 km of the Study Area, including 1 amphibian, 28 bird, 18 mammal, 25 flora, three reptile species. There are several species that have been mapped in proximity to the Study Area including:

- Eastern Cave Bat (*Vespadelus troughtoni*) – listed as vulnerable under the BC Act.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – listed as vulnerable under the BC Act and EPBC Act.
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) – listed as vulnerable under the BC Act.
- Powerful Owl (*Ninox strenua*) – listed as vulnerable under the BC Act.
- White-bellied Sea Eagle (*Haliaeetus leucogaster*) – listed as vulnerable under the BC Act.
- Magenta Lilly Pilly (*Syzigium paniculatum*) – listed as endangered under the BC Act and vulnerable under the EPBC Act.
- Nielsen Park She-oak (*Allocasuarina portuensis*) – listed as endangered under the BC Act and EPBC Act.
- Sunshine Wattle (*Acacia terminalis*) – listed as endangered under the BC Act and EPBC

Locations in proximity to the Study Area are illustrated in
Figure 2. It should be noted that one record of the Sunshine Wattle is depicted within Middle Head Oval, however item descriptions have this location on 1801 Fort Track. BioNet record locations are rounded and can display some inaccuracies.

3.1.2 Protected Matters Search Tool

The results of Commonwealth EPBC Protected Matters Search Tool (PMST) indicated that a total of four MNES are predicted to occur within the Study Area as listed in **Table 2**.

See **Appendix B** for the full PMST report.

Table 2 PMST's predicted Matters of National Environmental Significance

MNES	PMST predicted	Applicability to Study Area
World Heritage Places	One- the Sydney Opera House	NA
National Heritage Places	Four National Heritage places occur in the 5 km buffer: • Governors' Domain and Civic Precinct • North Head – Sydney • Sydney Harbour Bridge • Sydney Opera House	NA
Wetlands of International Importance	None	NA
Great Barrier Reef Marine Park	None	NA
Commonwealth Marine Area	None	NA
Threatened Ecological Communities (TECs)	Eight TECs are predicted to occur within the 5 km locality: • Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South	Further assessment is presented in **Section 3.2**

<table>
<tr><th>MNES</th><th>PMST predicted</th><th>Applicability to Study Area</th></tr>
<tr><td></td><td>East Queensland ecological community– listed as endangered under the EPBC Act.
• Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland– listed as endangered under the EPBC Act.
• Coastal Upland Swamps in the Sydney Basin Bioregion– listed as endangered under the EPBC Act.
• Eastern Suburbs Banksia Scrub of the Sydney Region– listed as critically endangered under the EPBC Act.
• Littoral Rainforest and Coastal Vine Thickets of Eastern Australia– listed as critically endangered under the EPBC Act
• Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion– listed as endangered under the EPBC Act.
• River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria– listed as critically endangered under the EPBC Act
• Western Sydney Dry Rainforest and Moist Woodland on Shale– listed as critically endangered under the EPBC Act</td><td></td></tr>
<tr><td>Threatened Species</td><td>A total of 110 threatened species were predicted to occur within the 5 km locality as per table below, (4 conservation dependent fish/shark species are not included in the table).
<table>
<tr><th rowspan="2">Group</th><th colspan="3">Number of species predicted</th></tr>
<tr><th>Vulnerable</th><th>Endangered</th><th>Critically Endangered</th></tr>
<tr><td>Birds</td><td>32</td><td>15</td><td>4</td></tr>
<tr><td>Fish</td><td>2</td><td>2</td><td>-</td></tr>
<tr><td>Frogs</td><td>3</td><td>-</td><td>-</td></tr>
<tr><td>Mammals</td><td>4</td><td>7</td><td>-</td></tr>
<tr><td>Other</td><td>-</td><td>1</td><td>-</td></tr>
<tr><td>Plants</td><td>15</td><td>8</td><td>3</td></tr>
<tr><td>Reptiles</td><td>3</td><td>3</td><td>-</td></tr>
<tr><td>Shark</td><td>2</td><td>-</td><td>1</td></tr>
<tr><td>Snail</td><td>-</td><td>1</td><td>-</td></tr>
</table></td><td>Further assessment of threatened species was undertaken as shown in Section 3.2</td></tr>
<tr><td>Migratory Species</td><td>A total of 71 listed migratory species were predicted to occur within the 5 km locality.</td><td>Further assessment of threatened species was undertaken as shown in Section 3.2</td></tr>
</table>

3.1.3 Local Vegetation Mapping

The State Vegetation Type Mapping (SVTM) (DPE, 2022) indicated that there are four native Plant Community Types (PCTs) expected to occur in the locality of the Study Area. However, no PCTs were predicted to occur within the Study Area. The vegetation types are defined in **Table 3** and illustrated in Figure 2**.**

Table 3 PCTs as per State Vegetation Type Map (SVTM) (2024)

PCT ID	PCT Name	Associated TEC
3039	Sydney Coastal Lilly Pilly-Palm Gallery Rainforest	• Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion- listed as critically endangered under the BC Act • Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions- listed as endangered under the BC Act • Littoral Rainforest and Coastal Vine Thickets of Eastern Australia- listed as critically endangered under the EPBC Act
3176	Sydney Enriched Sandstone Moist Forest	• Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion- listed as critically endangered under the BC Act
3594	Sydney Coastal Sandstone Foreshores Forest	NA
3812	Sydney Coastal Sandstone Headland Heath	NA
0	Non-native	NA

Aerial imagery shows a small garden bed adjacent to the Middle Head Road roundabout. This is the only vegetation within the Study Area other than maintained turf.

Plate 2: Small garden bed adjacent to Middle Head Road roundabout

3.1.4 Biodiversity Values Map

There is no mapped biodiversity values within the Study Area. The closest mapped biodiversity values land is approximately 130 m south of the Study Area and is illustrated in
Figure 2. These values are attributed to the potential presence of Littoral Rainforest and threatened species or communities with potential for serious and irreversible impacts. It is not expected that the proposed works would have any direct impacts on these mapped biodiversity value areas and indirect impacts can be managed by implemented mitigation measures detailed in **Section 5.**

Biodiversity Values

Middle Head Amenities
Building Mosman, NSW

Client: Mosman Municipal Council
Project Code: 304501478-GS001
Drawn By: JM, Checked By: SM
Figure: 2 | Rev: 1
Date: 2024-04-30

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Legend

- Study Area
- Road
- Biodiversity Values

Plant Community Type

- Sydney Coastal Lilly Pilly-Palm Gallery Rainforest
- Sydney Coastal Sandstone Foreshores Forest
- Sydney Coastal Sandstone Headland Heath
- Sydney Enriched Sandstone Moist Forest

Bionet Records

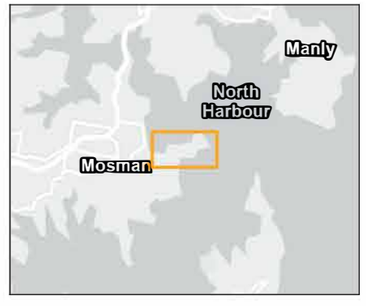
- Eastern Cave Bat
- Grey-headed Flying-fox
- Large Bent-winged Bat
- Powerful Owl
- White-bellied Sea-Eagle
- Magenta Lilly Pilly
- Nielsen Park She-oak
- Sunshine wattle

Notes:
1. Map displayed in GDA2020 MGA Zone 56

References:
1. Aerial Imagery (Metromap, 2023)
2. Plant Community Type- SVTM (DCCEEW, 2023)
3. Biodiversity Values (DCCEEW, 2018)
4. Road (NSW SS, 2023)
5. Bionet records (DCCEEW, 2024)

0 50 100 150 200 Metres

Scale at A3: 1:4,000



3.2 Likelihood of Occurrence

3.2.1 Threatened species, populations and ecological communities

Threatened biodiversity (e.g. TECs, threatened species and their habitats) listed under the BC Act and with known records within 5 km of the Study Area were determined using the BioNet Atlas (**Appendix A).**

An assessment of likelihood of occurrence was undertaken for threatened biodiversity identified with potential to occur within 5 km of the Study Area (**Appendix C).** Aquatic species and communities were excluded due to the lack of aquatic habit in the Study Area. Generally, threatened biodiversity identified in the assessment as having moderate and or higher ranking are subject to further analysis of significance.

Two threatened species has been identified as having moderate, high or known likelihood of occurrence. Any threatened species likely to be impacted by the proposed development must be subject to an analysis of significance (i.e. Test of Significance (BC Act) and/or Assessment of Significance (EPBC Act)) which would determine if the proposal would result in significant impacts on a threatened species.

The following entities were considered to have at least a moderate likelihood of occurrence within the Study Area and listed as threatened under the BC Act:

- White-bellied Sea-Eagle (*Haliaeetus leucogaster*)- listed as vulnerable under the BC Act.
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)- listed as vulnerable under the BC Act.

A Test of Significance has been conducted for this species at **Appendix D.**

3.2.2 Matters of National Significance

As detailed in **Section 3.1.2**, the PMST indicated that four out of the eight MNES listed under the EPBC Act are known or predicted to occur within a 5 km locality surrounding the Study Area (**Appendix B**). The four MNES includes various national heritage places, threatened ecological communities (TECs), threatened species and migratory species. This information along with local knowledge and information from relevant sources was used to assess the likelihood of occurrence on MNES (**Appendix C**).

The result of the assessment is provided in the following subsections.

3.2.2.1 National Heritage places

The PMST identified that the Sydney Opera House occurred in the 5 km buffer. Due to the scope of the works and distance from the Sydney Opera House, it is unlikely that the Project will result in any impacts.

3.2.2.2 Listed threatened ecological communities

The PMST identified eight TEC which may occur in the 5 km buffer, seven of which were terrestrial communities. However, there was no native vegetation within the Study Area, which consists of buildings and maintained grass. As a result, the likelihood of occurrence assessment (**Appendix C)** found that it was unlikely that any of these TEC occur in the Study Area and no further assessment was required.

3.2.2.3 Listed threatened species

PMST report indicated that 110 threatened species are known or predicted to occur within the 5 km locality from the Study Area.

A likelihood of occurrence assessment was undertaken on threatened species listed under the EPBC Act (**Appendix C**), excluding aquatic species due to lack of suitable habitat in the Study Area. All EPBC Act listed entities were considered to be unlikely to occur within the Study Area.

3.2.2.4 Listed migratory species

The PMST report indicated that 71 migratory species are known or predicted to occur within the 5 km locality from the Study Area. The predicted migratory species included 24 marine bird, 18 other marine species, seven terrestrial birds and 22 wetland birds.

The Study Area offers limited refuge for migrating birds and suitable habitat is limited. No migratory species identified in the PMST report were regarded as having a moderate or higher likelihood of occurrence within the Study Area.

3.3 Fauna Habitat

3.3.1 Fauna habitat

The availability of suitable fauna habitat within the Study Area is limited. Available habitat has been summarised in **Table 4.**

Table 4 Fauna Habitat Values.

Habitat Value	Description
Foraging habitat	The Study Area contains limited foraging resources. The only vegetation within the Study Area is a small garden bed and maintained turf.
Connectivity	The Study Area does not contain any mapped features that would facilitate connectivity for fauna species. There is a lack of mapped biodiversity value and is regularly used as a sports and recreational field.
Burrows, hollows, nests and other fauna habitat	The Study Area is an active sport and recreational field and would be considered unlikely to support burrows. Aerial imagery and site photographs does not show any large trees that may contain hollows within the Study Area.
Leaf litter	Middle Head Oval is regularly slashed/maintained and would be unlikely that significant amounts of leaf litter occur within the Study Area.
Logs	Middle Head Oval is actively used by the community and as a result would be unlikely to support log habitat.
Human-made fauna habitat	The existing amenities building may support bird and/or microbats through exposed crevices and dilapidation.
Aquatic Habitat	There is no mapped aquatic habitat within the Study Area

3.3.2 Potential Bat Habitat

Microchipteran bats (microbats) are known to use human-made structures to roost in in the absence of alternate suitable habitat. There are records of seven threatened bat species in the 5 km locality of the Study Area. The Project is seeking to demolish the existing structures at Middle Head Oval and replace them upgraded facilities. Mitigation measures outlined in **Section 5** will reduce the likelihood of direct impacts on bats potentially using the existing structures during demolition.

Plate 3: Existing building with potential bat habitat

4 Impact Assessment

Impacts to biodiversity values in the Study Area identified in this report are assessed based on the following Project features/activities:

- Clearing of vegetation within the Study Area.
- Excavation activities associated with the works within the Study Area.
- Demolition of existing amenities building.
- Potential impacts to native fauna species as a result of the Project.

Section 4 outlines the potential direct and indirect impacts to biodiversity values as a result of the Project.

4.1 Direct and Indirect Impacts

4.1.1 Vegetation Clearing

No mapped native vegetation or PCTs will be cleared as a result of the Project. There is the potential that the small garden bed with planted species would be removed as part of the Project.

Potential indirect impacts on native vegetation within the Study Area, or nearby areas, include:

- Sediment migration from areas of unconsolidated, exposed soil during works into areas of native vegetation.
- Introduction of new weed species and pathogens and sediment into areas due to runoff from unconsolidated, exposed soil during works.
- Increased noise pollution on native vegetation within or adjacent to the Study Area, reducing fauna utility of this habitat.

Management measures to minimise or mitigate potential impacts to native vegetation are provided in **Section 0**

4.1.2 Threatened species, ecological communities and their habitats

The Study Area contains no mapped Threatened Ecological Communities (TECs). All threatened entities that were found to have at least a moderate likelihood of occurring within the Study Area have been subject to tests of significance under the BC Act and/or EPBC Act at **Appendix D**. It was found that it is unlikely that the Project would pose a significant impact on any listed entity.

As summarised in **Table 4**, fauna habitat is limited throughout the Study Area. Impacts on other listed habitat features within the Study Area, including the demolition of buildings would be minimised through the implementation of the mitigation measures recommended in **Section 5.**

Potential indirect impacts on threatened species that could occur include:

- Increased noise pollution on native vegetation within or adjacent to the Study Area, reducing fauna utility of this habitat.
- Increased dust generation during works, reducing fauna utility of areas of nearby retained habitat.
- Increased human traffic in the area, reducing fauna utility of areas of nearby retained habitat.

Assuming that the proposed management measures given in **Section 5** to minimise or mitigate potential impacts to native species, it is considered unlikely that any threatened species listed under the BC Act, FM Act and/or EPBC Act would be significantly impacted by the Project.

4.2 Key Threatening Processes

Table 5 below details the KTPs which could arise from development in the Study Area, as well as an assessment of whether the Project would substantially exacerbate these KTPs.

Table 5 Key Threatening Processes Assessment.

BC Act	FM Act	EPBC Act	Extent of KTP exacerbation
Anthropogenic Climate Change	Human-caused Climate Change	Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases	The Project will contribute to greenhouse gas emissions through construction activities and ongoing vehicle traffic. Emissions due to construction will be temporary and ongoing vehicle traffic is unlikely to exacerbate this KTP.
Infection of native plants by *Phytophthora cinnamomi*	-	Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*)	There is a low risk that this pathogen could be introduced in footwear, plant and equipment. The Project is not considered to exacerbate this KTP provided appropriate mitigation measures are enacted.
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	-	-	There is a low risk that this pathogen could be introduced in footwear, plant and equipment. The Project is not considered to exacerbate this KTP provided appropriate mitigation measures are enacted.
Invasion and establishment of exotic vines and scramblers	-	-	There is a low risk that this pathogen could be introduced in footwear, plant and equipment. The Project is not considered to exacerbate this KTP provided appropriate mitigation measures are enacted.
Invasion of native plant communities by exotic perennial grasses	-	-	Exotic perennial grass species may be introduced as seed in footwear, plant and equipment. The Project is not considered likely to substantially exacerbate this KTP in the locality provided appropriate mitigation measures are enacted.
Invasion, establishment and spread of Lantana (*Lantana camara* L. sens. Lat)	-	-	This species may be introduced as seed in footwear, plant and equipment. The Project is not considered likely to exacerbate this KTP provided appropriate mitigation measures are enacted.

5 Recommendations

When assessing the mitigation of the biodiversity impacts of a Project there are three key levels of mitigation. These three approaches are listed in a descending order of best biodiversity outcomes:

- Avoid: modify the Project so no significant impact on resident biodiversity values would occur. This is typically impractical but can help guide mitigation measures.
- Minimise: modify the Project to reduce the significant impacts on biodiversity values to the maximum extent possible. This is typically achieved through measures such as modification of proposed development footprint to avoid removing vegetation etc.
- Mitigate: include measures for the proposed development to manage potential impacts to biodiversity values present within the Study Area and the locality.

This section makes recommendations to reduce and mitigate the potential impacts on flora and fauna values detailed in **Section 4** above.

5.1 Mitigating Impacts within the Study Area

Appropriate mitigation measures are recommended for addressing potential direct and indirect impacts on biodiversity within the Study Area. As detailed in **Section 4** impacts may arise without adequate safeguards as a result of the Project. Appropriate mitigation for safeguarding against these potential impacts are described below in **Table 6.**

Table 6 Appropriate mitigation measures for the Project

Impact	Action	Outcome	Timing	Responsibility
Sediment migration from areas of unconsolidated, exposed soil during works into waterbodies/drainage	Erosion and sediment control measures within 20m of waterbodies (including sediment fencing) should be implemented, monitored and maintained, if applicable.	Prevention of migration of unconsolidated soil into areas of retained native vegetation and impacting downstream environments	Prior to any soil disturbance works Maintained and repaired as required. Retained until soil is stabilised by another mechanism (laying of turf, sowing of grass etc.)	Contractor(s) responsible for works
Removal of native vegetation	Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing. No other native remnant vegetation will be removed as a result of the Project. No stockpiling or storage within dripline of any mature trees.	Prevention of unnecessary clearing of native vegetation	Prior to any soil disturbance works and during works	Contractor(s) responsible for works
Introduction of new weed species and pathogens and sediment into areas due to runoff from unconsolidated, exposed soil during works	All machinery should be cleaned of foreign soil and vegetative matter before entering the Study Area. It is noted that under the NSW *Biosecurity Act 2015*, all landowners have the obligation to manage weeds as per the General Biosecurity Duty which states "All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable".	Mitigation of the risk of introduction of new pests and diseases into areas of native vegetation	Prior to any soil disturbance works and during works	Contractor(s) responsible for works
Increased noise pollution on nearby areas of native vegetation, reducing fauna utility of this habitat	Restricting works to daylight hours Minimising the use of loud machinery whenever possible	Minimal disturbance to sensitive fauna using habitat within the Study Area and adjacent lands	During all works	Contractor(s) responsible for works
Increased dust generation during works, reducing fauna utility of areas of nearby habitat	Dust minimisation through water suppression, avoiding works on high wind days and limiting dust generating activities to the extent possible (minimising daily vehicle movements within the Study Area)	Minimal disturbance to sensitive fauna using habitat within the Study Area and adjacent lands	During all works	Contractor(s) responsible for works

Impact	Action	Outcome	Timing	Responsibility
Direct impact on fauna utilising human-made structures for roosting.	A Pre-clearance survey would be conducted of the existing buildings to determine the presence of any native birds/microbats. This would be completed by a suitably qualified ecologist/wildlife handler trained in handling bats. A suitably qualified ecologist is to be present during demolition on site to search for, and if present, remove fauna in the structures to be demolished.	Avoid direct mortality to fauna utilising human-made structures.	During demolition of structures.	Ecologist/ Contractor(s) responsible for works

6 Conclusion

The Project is unlikely to directly impact on any mapped native Plant Community Types (PCTs) within proximity to the Study Area and vegetation clearing would be restricted to a small, planted garden bed and maintained turf areas. This habitat is unlikely to support any listed threatened species and/or ecological communities.

Existing structures within the Study Area are required to be demolished as a result of the Project. These structures represent potential habitat for select bird and microbat species. It has been recommended that a pre-clearance survey be implemented prior to demolition to ensure no fauna species are roosting inside this structure.

A likelihood of occurrence assessment was completed for species that have been determined to have the potential to occur within 5 km of the Study Area through desktop database searches and indicative records. Two species have been determined to have at least a moderate likelihood of occurrence within the Study Area:

- White-bellied Sea-Eagle (*Haliaeetus leucogaster*)- listed as vulnerable under the BC Act.
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)- listed as vulnerable under the BC Act.

Whilst potential habitat occurs for threatened species, further detailed assessment through assessments of significance indicated that it was unlikely that the Project would pose a significant risk to local populations of these species due to the nature and extent of the proposed works and the availability of high-quality habitat nearby to the Study Area. No Commonwealth MNES is likely to be directly impacted by the Project.

The Project is likely to have little to no impact on terrestrial habitats, provided appropriate mitigation measures are implemented, the Project would be unlikely to remove, modify, fragment or isolate any habitat important to the long-term survival of any listed threatened species, population or ecological community.

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Appendix A
Bionet Atlas Search Results

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Family	Scientific Name	Common Name	BC Act	EPBC Act	Records
Amphibia					
Myobatrachidae	*Pseudophryne australis*	Red-crowned Toadlet	V	-	117
Aves					
Anseranatidae	*Anseranas semipalmata*	Magpie Goose	V	-	1
Meliphagidae	*Anthochaera phrygia*	Regent Honeyeater	E	CE	2
Procellariidae	*Ardenna carneipes*	Flesh-footed Shearwater	V	J,K	1
Ardeidae	*Botaurus poiciloptilus*	Australasian Bittern	E	E	1
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew	E	-	1
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella	V	-	1
Diomedeidae	*Diomedea exulans*	Wandering Albatross	E	V	2
Burhinidae	*Esacus magnirostris*	Beach Stone-curlew	E	-	1
Spheniscidae	*Eudyptula minor*	Little Penguin in the Manly Point Area	EP	-	79
Psittacidae	*Glossopsitta pusilla*	Little Lorikeet	V	-	4
Haematopodidae	*Haematopus fuliginosus*	Sooty Oystercatcher	V	-	5
Haematopodidae	*Haematopus longirostris*	Pied Oystercatcher	E	-	1
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V	-	24
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	V	-	1
Apodidae	*Hirundapus caudacutus*	White-throated Needletail	V	V,C,J,K	6
Ardeidae	*Ixobrychus flavicollis*	Black Bittern	V	-	1
Psittacidae	*Lathamus discolor*	Swift Parrot	E	CE	7
Procellariidae	*Macronectes giganteus*	Southern Giant Petrel	E	E	1
Strigidae	*Ninox connivens*	Barking Owl	V	-	3
Strigidae	*Ninox strenua*	Powerful Owl	V	-	270
Laridae	*Onychoprion fuscata*	Sooty Tern	V	-	4
Accipitridae	*Pandion cristatus*	Eastern Osprey	V	-	6
Procellariidae	*Pterodroma leucoptera leucoptera*	Gould's Petrel	V	E	2
Columbidae	*Ptilinopus superbus*	Superb Fruit-Dove	V	-	5
Estrildidae	*Stagonopleura guttata*	Diamond Firetail	V	V	1
Diomedeidae	*Thalassarche chrysostoma*	Grey-headed Albatross	-	E	1
Diomedeidae	*Thalassarche melanophris*	Black-browed Albatross	V	V	1
Tytonidae	*Tyto tenebricosa*	Sooty Owl	V	-	1
Flora					
Fabaceae (Mimosoideae)	*Acacia bynoeana*	Bynoe's Wattle	E	V	10

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records
Fabaceae (Mimosoideae)	*Acacia terminalis subsp. Eastern Sydney*	Sunshine wattle	E	E	420
Casuarinaceae	*Allocasuarina portuensis*	Nielsen Park She-oak	E	E	136
Euphorbiaceae	*Amperea xiphoclada var. pedicellata*	-	X	X	1
Rutaceae	*Asterolasia buxifolia*	-	E	CE	1
Orchidaceae	*Caladenia tessellata*	Thick Lip Spider Orchid	E	V	1
Myrtaceae	*Callistemon linearifolius*	Netted Bottle Brush	V	-	6
Euphorbiaceae	*Chamaesyce psammogeton*	Sand Spurge	E	-	2
Ericaceae	*Epacris purpurascens var. purpurascens*	-	V	-	2
Myrtaceae	*Eucalyptus camfieldii*	Camfield's Stringybark	V	V	10
Myrtaceae	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	2
Grammitidaceae	*Grammitis stenophylla*	Narrow-leaf Finger Fern	E	-	1
Proteaceae	*Grevillea caleyi*	Caley's Grevillea	E	CE	6
Hygrophoraceae	*Hygrocybe reesiae*	-	V	-	1
Proteaceae	*Macadamia integrifolia*	Macadamia Nut	-	V	3
Myrtaceae	*Melaleuca biconvexa*	Biconvex Paperbark	V	V	1
Myrtaceae	*Melaleuca deanei*	Deane's Paperbark	V	V	1
Proteaceae	*Persoonia hirsuta*	Hairy Geebung	E	E	3
Thymelaeaceae	*Pimelea curviflora var. curviflora*	-	V	V	5
Orchidaceae	*Prasophyllum fuscum*	Slaty Leek Orchid	E	V	1
Lamiaceae	*Prostanthera marifolia*	Seaforth Mintbush	E	CE	4
Myrtaceae	*Syzygium paniculatum*	Magenta Lilly Pilly	E	V	72
Elaeocarpaceae	*Tetratheca glandulosa*	-	V	-	8
Elaeocarpaceae	*Tetratheca juncea*	Black-eyed Susan	V	V	2
Myrtaceae	*Triplarina imbricata*	Creek Triplarina	E	E	1
Mammalia					
Potoroidae	*Aepyprymnus rufescens*	Rufous Bettong	V	-	1
Otariidae	*Arctocephalus forsteri*	New Zealand Fur-seal	V	-	12
Otariidae	*Arctocephalus pusillus doriferus*	Australian Fur-seal	V	-	17
Balaenopteridae	*Balaenoptera musculus*	Blue Whale	E	E	1
Burramyidae	*Cercartetus nanus*	Eastern Pygmy-possum	V	-	16
Vespertilionidae	*Chalinolobus dwyeri*	Large-eared Pied Bat	V	E	11
Dasyuridae	*Dasyurus maculatus*	Spotted-tailed Quoll	V	E	3

Family	Scientific Name	Common Name	BC Act	EPBC Act	Records
Balaenidae	*Eubalaena australis*	Southern Right Whale	E	E	7
Vespertilionidae	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V	-	1
Miniopteridae	*Miniopterus australis*	Little Bent-winged Bat	V	-	11
Miniopteridae	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V	-	94
Vespertilionidae	*Myotis macropus*	Southern Myotis	V	-	46
Peramelidae	*Perameles nasuta*	Long-nosed Bandicoot, North Head	EP	-	301
Petauridae	*Petaurus norfolcensis*	Squirrel Glider	V	-	1
Phascolarctidae	*Phascolarctos cinereus*	Koala	E	E	4
Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	404
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V	-	1
Vespertilionidae	*Vespadelus troughtoni*	Eastern Cave Bat	V	-	1
Reptillia					
Cheloniidae	*Caretta caretta*	Loggerhead Turtle	E	E	3
Cheloniidae	*Chelonia mydas*	Green Turtle	V	V	7
Cheloniidae	*Eretmochelys imbricata*	Hawksbill Turtle	-	V	3

V- Vulnerable, E- Endangered, CE-Critically Endangered, X- Extinct, EP- Endangered Population

C- China-Australia Migratory Bird Agreement, J- Japan-Australia Migratory Bird Agreement, K- Republic of Korea-Australia Migratory Bird Agreement

BC Act- NSW Biodiversity Conservation Act (2016), EPBC Act- Commonwealth Environment Protection and Biodiversity Conservation Act (1999)

Appendix B
PMST Search Results

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 23-Apr-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	4
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	110
Listed Migratory Species:	71

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	85
Commonwealth Heritage Places:	39
Listed Marine Species:	96
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	5
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	34
Key Ecological Features (Marine):	None
Biologically Important Areas:	3
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties			[Resource Information]
Name	State	Legal Status	Buffer Status
Sydney Opera House	NSW	Declared property	In buffer area only

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
Governors' Domain and Civic Precinct	NSW	Listed place	In buffer area only
North Head - Sydney	NSW	Listed place	In buffer area only
Sydney Harbour Bridge	NSW	Listed place	In buffer area only
Sydney Opera House	NSW	Listed place	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community likely to occur within area	In feature area
Eastern Suburbs Banksia Scrub of the Sydney Region	Critically Endangered	Community likely to occur within area	In feature area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In buffer area only
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In buffer area only
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris tenuirostris			
Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Callocephalon fimbriatum			
Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat likely to occur within area	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
OTHER			
Dendronephthya australis			
Cauliflower Soft Coral [90325]	Endangered	Species or species habitat known to occur within area	In buffer area only
PLANT			
Acacia bynoeana			
Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Acacia terminalis subsp. Eastern Sydney (G.P.Phillips 126) listed as Acacia terminalis subsp. terminalis MS			
Sunshine Wattle (Sydney region) [91564]	Endangered	Species or species habitat known to occur within area	In feature area
Allocasuarina portuensis			
Nielsen Park She-oak [21937]	Endangered	Species or species habitat known to occur within area	In buffer area only
Asterolasia elegans			
[56780]	Endangered	Species or species habitat may occur within area	In feature area
Caladenia tessellata			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Darwinia biflora			
[14619]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus camfieldii			
Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri			
Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat known to occur within area	In feature area
Haloragodendron lucasii			
Hal [6480]	Endangered	Species or species habitat may occur within area	In feature area
Lasiopetalum joyceae			
[20311]	Vulnerable	Species or species habitat may occur within area	In feature area
Leptospermum deanei			
Deane's Tea-tree [21777]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Leucopogon exolasius Woronora Beard-heath [14251]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat known to occur within area	In feature area
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat known to occur within area	In feature area
Prostanthera densa Villous Mintbush [12233]	Vulnerable	Species or species habitat may occur within area	In feature area
Prostanthera junonis Somersby Mintbush [64960]	Endangered	Species or species habitat known to occur within area	In buffer area only
Prostanthera marifolia Seaforth Mintbush [7555]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhodomyrtus psidioides](#) Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Syzygium paniculatum](#) Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Hoplocephalus bungaroides](#) Broad-headed Snake [1182]	Endangered	Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
[Carcharias taurus (east coast population)](#) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In feature area
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
SNAIL			
Meridolum maryae			
Maroubra Woodland Snail, Maroubra Land Snail [89884]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas			
Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area	In feature area
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In buffer area only
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
[Calidris tenuirostris](#) Great Knot [862]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Charadrius bicinctus](#) Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [14280]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13215]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13153]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [13195]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [13214]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [13152]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14281]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14279]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13216]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [13194]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13187]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [13213]	NSW	In buffer area only
Defence		
Defence - DEGAUSSING RANGE [10039]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10021]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - FLEET BASE WHARVES [10024]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10022]	NSW	In buffer area only
Defence - FLEET BASE WHARVES [10023]	NSW	In buffer area only
Defence - GARDEN ISLAND [10014]	NSW	In buffer area only
Defence - HMAS KUTTABUL (AC 30/5 Lot4 DP218946) [11074]	NSW	In buffer area only
Defence - HMAS PENGUIN [11071]	NSW	In feature area
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10041]	NSW	In buffer area only
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10040]	NSW	In buffer area only
Defence - HMAS PLATYPUS - SPDU FOR DISPOSAL [10042]	NSW	In buffer area only
Defence - HMAS WATSON [10029]	NSW	In buffer area only
Defence - JENNER BUILDING [10034]	NSW	In buffer area only
Defence - KISMET/HMAS KUTTABUL-POTTS PT [11173]	NSW	In buffer area only
Defence - MARITIME COMD CTRE-POTTS POINT ; BOMERAH/TARANA [10032]	NSW	In buffer area only
Defence - MARITIME COMD CTRE-POTTS POINT ; BOMERAH/TARANA [10033]	NSW	In buffer area only
Defence - MARITIME HEADQUARTERS [11178]	NSW	In buffer area only
Defence - NFI CHOWDER BAY (fuel depot) [10043]	NSW	In buffer area only
Defence - TRAINING SHIP CONDAMINE [11073]	NSW	In buffer area only
Defence - TRAINING SHIP CONDAMINE [11072]	NSW	In buffer area only
Defence - TRESCO [10044]	NSW	In buffer area only
Defence - VAUCLUSE TRAINING DEPOT [11137]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11175]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11177]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11174]	NSW	In buffer area only
Defence - WOOLLOOMOOLOO CARPARK [11176]	NSW	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [13167]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [13186]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15608]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13168]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13189]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13177]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13171]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13170]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13172]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13178]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13135]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13180]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13181]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13182]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13183]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13185]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13184]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13166]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15718]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13188]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13175]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16062]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13169]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13176]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13174]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13212]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13179]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13190]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [13191]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [13196]	NSW	In buffer area only
Treasury - Reserve Bank of Australia		
Commonwealth Land - Reserve Bank of Australia [13149]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13148]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13151]	NSW	In buffer area only
Commonwealth Land - Reserve Bank of Australia [13150]	NSW	In buffer area only
Unknown		
Commonwealth Land - [13143]	NSW	In buffer area only
Commonwealth Land - [13142]	NSW	In buffer area only
Commonwealth Land - [13165]	NSW	In buffer area only
Commonwealth Land - [13145]	NSW	In buffer area only
Commonwealth Land - [13146]	NSW	In buffer area only
Commonwealth Land - [13147]	NSW	In buffer area only
Commonwealth Land - [15410]	NSW	In buffer area only
Commonwealth Land - [13217]	NSW	In buffer area only
Commonwealth Land - [13173]	NSW	In buffer area only
Commonwealth Land - [13144]	NSW	In buffer area only
Commonwealth Land - [13139]	NSW	In buffer area only
Commonwealth Land - [13218]	NSW	In buffer area only
Commonwealth Land - [13219]	NSW	In buffer area only

Commonwealth Heritage Places			[Resource Information]
Name	State	Status	Buffer Status
Historic			
Admiralty House and Lodge	NSW	Listed place	In buffer area only
Admiralty House Garden and Fortifications	NSW	Listed place	In buffer area only
Army Cottage with return verandah	NSW	Listed place	In buffer area only
Barracks Group HMAS Watson	NSW	Listed place	In buffer area only
Batteries A83 and C9A	NSW	Listed place	In buffer area only

Name	State	Status	Buffer Status
Battery B42	NSW	Listed place	In buffer area only
Battery for Five Guns	NSW	Listed place	In buffer area only
Buildings 31 and 32	NSW	Listed place	In buffer area only
Chain and Anchor Store (former)	NSW	Listed place	In buffer area only
Chowder Bay Barracks Group	NSW	Listed place	In buffer area only
Cliff House	NSW	Listed place	In buffer area only
Commonwealth Avenue Defence Housing	NSW	Listed place	In buffer area only
Cottage at Macquarie Lighthouse	NSW	Listed place	In buffer area only
Customs Marine Centre	NSW	Listed place	In buffer area only
Defence site - Georges Heights and Middle Head	NSW	Listed place	In feature area
Factory	NSW	Listed place	In buffer area only
Garden Island Precinct	NSW	Listed place	In buffer area only
Gazebo	NSW	Listed place	In buffer area only
Golf Clubhouse (former)	NSW	Listed place	In feature area
Headquarters 8th Brigade Precinct	NSW	Listed place	In buffer area only
Headquarters Training Command Precinct	NSW	Listed place	In buffer area only
HMAS Penguin	NSW	Listed place	In feature area
Kirribilli House	NSW	Listed place	In buffer area only
Kirribilli House Garden & Grounds	NSW	Listed place	In buffer area only
Macquarie Lighthouse	NSW	Listed place	In buffer area only
Macquarie Lighthouse Group	NSW	Listed place	In buffer area only
Macquarie Lighthouse Surrounding Wall	NSW	Listed place	In buffer area only
Marine Biological Station (former)	NSW	Listed place	In buffer area only
Military Road Framework - Defence Land	NSW	Listed place	In feature area
Naval Store	NSW	Listed place	In buffer area only
Navy Refuelling Depot and Caretakers House	NSW	Listed place	In buffer area only

Name	State	Status	Buffer Status
North Head Artillery Barracks	NSW	Listed place	In buffer area only
Office Building	NSW	Listed place	In buffer area only
Officers Mess, HQ Training Command	NSW	Listed place	In buffer area only
Residences Group	NSW	Listed place	In buffer area only
Rigging Shed and Chapel	NSW	Listed place	In buffer area only
Shark Point Battery	NSW	Listed place	In buffer area only
Ten Terminal Regiment Headquarters and AusAid Training Centre	NSW	Listed place	In feature area
Thirty Terminal Squadron Precinct	NSW	Listed place	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area	In feature area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche bulleri platei as Thalassarche sp. nov.			
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa brevipes as Heteroscelus brevipes			
Grey-tailed Tattler [851]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa stagnatilis](#) Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Fish			
[Acentronura tentaculata](#) Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
[Festucalex cinctus](#) Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
[Filicampus tigris](#) Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
[Hippichthys penicillus](#) Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
[Hippocampus abdominalis](#) Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
[Hippocampus whitei](#) White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat known to occur within area	In feature area
[Histiogamphelus briggsii](#) Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
[Lissocampus runa](#) Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Hydrophis platura as Pelamis platurus](#) Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Cabbage Tree Bay	Aquatic Reserve	NSW	In buffer area only
Garigal	National Park	NSW	In buffer area only
North Head	Private Nature Reserve	NSW	In buffer area only
North Sydney Harbour	Aquatic Reserve	NSW	In buffer area only
Sydney Harbour	National Park	NSW	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Circular Quay Renewal	2023/09727		Assessment	In buffer area only
Greenway Wall - Macquarie Lightstation Conservation	2023/09650		Completed	In buffer area only
Controlled action				
Australian Institute of Police Management Facilities Upgrade	2006/2746	Controlled Action	Post-Approval	In buffer area only
Development of a Residential Care Facility, Middle Head, NSW	2014/7194	Controlled Action	Post-Approval	In feature area
Garden Island Hammerhead Crane Proposed Removal, NSW	2012/6430	Controlled Action	Post-Approval	In buffer area only
Sydney Opera House Building Renewal Program, NSW	2016/7825	Controlled Action	Post-Approval	In buffer area only
Sydney Opera House Building Renewal Program - Concert Hall and associated works	2017/7955	Controlled Action	Post-Approval	In buffer area only
Upgrade of Floodlighting for Night Sports Training	2009/4798	Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Admiralty House, Kirribilli, foreshore works, NSW	2014/7357	Not Controlled Action	Completed	In buffer area only
Conservation and Adaptive Use of Quarantine Station	2002/556	Not Controlled Action	Completed	In buffer area only
Demolition and Removal of Two Naval Cottages	2008/4373	Not Controlled Action	Completed	In buffer area only
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In buffer area only
Fitout works, 4th Floor, Sydney Customs House, 31 Alfred Street	2004/1449	Not Controlled Action	Completed	In buffer area only
Fuel Reduction Proposal Redfield Road, East Killara	2003/1238	Not Controlled Action	Completed	In buffer area only
Garden Island ADI Warehouse	2000/69	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In buffer area only
Noxious weed removal and controlled burn	2003/1272	Not Controlled Action	Completed	In buffer area only
Rabbit Control Anzac Rifle Range	2005/1940	Not Controlled Action	Completed	In buffer area only
Rehabilitation works of the Coogee Sewer Diversion Submain - Maxwell Avenue, Mar	2004/1683	Not Controlled Action	Completed	In feature area
Remediation of contaminated soil around the Macquarie Lighthouse	2004/1836	Not Controlled Action	Completed	In buffer area only
Sale of New South Head Road, Edgecliff	2001/302	Not Controlled Action	Completed	In buffer area only
sewage treatmemt plant process and reliability renewals project	2005/2186	Not Controlled Action	Completed	In feature area
Subdivision and sale of Commonwealth land in Pymble to Ku-ring-gai City Council	2004/1368	Not Controlled Action	Completed	In buffer area only
Subdivision of Precincts 3 and 12, St Patricks Estate	2004/1925	Not Controlled Action	Completed	In feature area
Torpedo Factory Renewal Project	2020/8847	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Undertake a controlled burn of the Eastern Suburbs Banksia Scrub at Byrne Cresce	2004/1728	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Construction works on SE corner of the grounds of Admiralty House	2012/6278	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Walking Track connecting Middle Head Rd & Balmoral Park	2002/572	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Alterations and Additions	2006/3081	Referral Decision	Completed	In buffer area only
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In feature area
Demolition and Removal of Five Naval Cottages	2008/4322	Referral Decision	Completed	In buffer area only
Demolition of Naval Cottages & Revegetation as Part of SHFT's Headland Park	2005/2128	Referral Decision	Completed	In buffer area only
Renovation and Landscape Rehabilitation of the Championship Course at Royal Sydney Golf Club	2022/9167	Referral Decision	Referral Publication	In buffer area only

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Foraging	Known to occur	In buffer area only

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status

SubRegion	BioRegion	Website	Buffer Status
Sydney	Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix C
Likelihood of Occurrence

We design with community in mind

Threatened species, populations and ecological communities, and migratory species (listed under the BC Act and / or EPBC Act) that are known, or have potential, to occur within a 5km radius of the Study Area have been considered in this section. The likelihood of occurrence within the Study Area of each species or TEC was assessed using the criteria described in **Table 7** and the findings presented in **Table 8.** This assessment was undertaken based on previous records, the results of the field survey and known species habitat requirements.

Table 7 Likelihood of occurrence criteria

Likelihood Rating	Criteria
Known	The species was recorded within the Study Area during the field surveys.
High	It is likely that a species would inhabit or utilise habitat within the Study Area. Criteria for this category may include: Species recently and/or regularly recorded in contiguous or nearby habitat. High quality habitat or resources present within the Study Area. Species is known or likely to maintain a resident population surrounding the Study Area. Species is known or likely to visit during migration or in response to seasonal availability of resources present on site.
Moderate	Potential habitat for a species occurs within the Study Area. Criteria for this category may include: Species previously recorded in contiguous habitat albeit not recently (>10 years). Habitat present, but poor quality, depauperate or modified types and/or resources. Species has potential to utilise habitat during migration or seasonal availability of resources. Cryptic flora species with potential habitat within the Study Area that have not been targeted by surveys (for example, surveys were not undertaken with the flowering season).
Low	It is unlikely that the species inhabits the area, if it did, it would likely be a transient visitor. Criteria for this category may include: The Study Area does not support the specific habitat types or resources required by the species. The Study Area is beyond the current distribution of the species or is isolated from known populations. Non cryptic flora species not observed during targeted surveys.
None/Absent	The habitat within the Study Area is unsuitable for the species.

Table 8 Assessment of likelihood of occurrence of threatened species, populations and communities and migratory species

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Birds						
Anseranas semipalmata	Magpie Goose	V	-	Bionet (1)	The Magpie Goose is seen in floodplains and wet grasslands.	Low. The Study Area lacks suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Anthochaera phrygia	Regent Honeyeater	CE	CE	PMST-L Bionet (2)	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.	Low. The Study Area is outside the important mapped habitat of this species. Therefore, it is unlikely that this species would occur in the Study Area.
Ardenna carneipes	Flesh-footed Shearwater	V	J,K	Bionet (1)	The Flesh-footed Shearwater mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Ardenna grisea	Sooty Shearwater	-	V	PMST-L	The Sooty Shearwater forages in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Arenaria interpres	Ruddy Turnstone	-	V	PMST-K	It strongly prefers rocky shores or beaches where there are large deposits of rotting seaweed.	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Botaurus poiciloptilus	Australasian Bittern	E	E	PMST-K Bionet (1)	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west.	Low. The Study Area lacks suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Burhinus grallarius	Bush Stone-curlew	E	-	Bionet (1)	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	Low. The Study Area lacks suitable woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area
Calidris acuminata	Sharp-tailed Sandpiper	-	V, C,J,K	PMST-K	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris canutus	Red Knot, Knot	-	V	PMST-K	In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris ferruginea	Curlew Sandpiper	E	CE	PMST-L	The Curlew Sandpiper is distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. The Curlew Sandpiper breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period,	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					arriving in Australia between August and November, and departing between March and mid-April.	
Calidris tenuirostris	Great Knot	V	V	PMST-K	In Australasia, the species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	PMST-L	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee.	Low. The Study Area lacks sufficiently large hollow-bearing trees for this species or preferred dense understorey. Therefore, it is unlikely that this species would occur in the Study Area.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	PMST-K	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina.	Low. The Study Area lack suitable foraging habitat. Therefore, it is unlikely that this species may occur in the Study Area.
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	V	V	PMST-L	In the non-breeding grounds in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Charadrius mongolus	Lesser Sand Plover, Mongolian Plover	V	E	PMST-K	In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	PMST-L	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges.	Low. The Study Area lacks the preferred habitat of this species and is closer to the coast then this species is typically found. Therefore, it is possible that this species would occur in the Study Area.
Daphoenositta chrysoptera	Varied Sittella	V	-	BioNet (1)	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades.	Low. The Study Area contains suitable eucalypt woodland. Therefore, it is unlikely that this species would occur in the Study Area.
Dasyornis brachypterus	Eastern Bristlebird	E	E	PMST-M	The distribution of the Eastern Bristlebird has contracted to three disjunct areas of south-eastern Australia. There are three main populations: Northern - southern Queensland/northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. The estimated population size is less than 2000 individuals occupying a total	Low. The Study Area lacks suitable heath habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					area of about 120 sq km. There are now only four populations in the southern	
Diomedea antipodensis	Antipodean Albatross		V	PMST-L	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea antipodensis gibsoni	Gibson's Albatross		V	PMST-L	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea epomophora	Southern Royal Albatross		V	PMST-L	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea exulans	Wandering Albatross	E	V	PMST-L Bionet (2)	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea sanfordi	Northern Royal Albatross		E	PMST-M	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Erythrotriorchis radiatus	Red Goshawk	E	E	PMST-M	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia.	Low. The Study Area lacks suitable wooded areas. Therefore, it is unlikely that this species would occur in the Study Area.
Esacus magnirostris	Beach Stone-curlew	CE	-	Bionet (1)	The Beach Stone-Curlew occurs on open, undisturbed beaches, islands, reefs, and estuarine intertidal sand and mudflats, prefering beaches with estuaries or mangroves nearby.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Eudyptula minor	Little Penguin in the Manly Point Area (being the area on	EP	-	Bionet (79)	Only known breeding population on the mainland in NSW.	Low. This population is found on North Head, across Sydney Harbour from the Study Area. Therefore, it is

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
	and near the shoreline from Cannae Point generally northward to the point near the intersection of Stuart Street and Oyama Cove Avenue, and extending 100 metres offshore from that shoreline)				A range of nest sites are used by the penguins at Manly including under rocks on the foreshore, under seaside houses and structures, such as stairs, in wood piles and under overhanging vegetation including lantana and under coral tree roots.	unlikely that this population would occur in the Study Area.
Falco hypoleucos	Grey Falcon	E	V	PMST-M	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW.	Low. The Study Area is outside the typical range of this species. Therefore, it is unlikely that this species would occur in the Study Area.
Fregetta grallaria grallaria	White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian)		V	PMST-L	Marine and Pelagic.	Low. This species is marine and pelagic. Therefore, it is unlikely that this species would occur in the Study Area.
Gallinago hardwickii	Latham's Snipe	-	V, J,K	PMST-L	In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level	Low. The Study Area lacks wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Glossopsitta pusilla	Little Lorikeet	V	-	Bionet (2)	Little Lorikeets mainly inhabit dry, open sclerophyll forests and woodlands, usually dominated by tall eucalypts, especially box–ironbark species including White Box	Low. The Study Area lacks suitable sclerophyll forest. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					and Yellow Box, where they forage in the canopy of flowering trees.	
Grantiella picta	Painted Honeyeater	V	V	PMST-L	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Haematopus fuliginosus	Sooty Oystercatcher	V	-	Bionet (5)	The Sooty Oystercatcher is strictly coastal, usually within 50 m of the ocean. It prefers rocky shores but will be seen on coral reefs or sandy beaches near mudflats. It breeds on offshore islands and isolated rocky headlands.	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Haematopus longirostris	Pied Oystercatcher	E	-	Bionet (1)	The Australian Pied Oystercatcher inhabits mudflats, sandbanks, sandy ocean beaches, and less often along rocky or shingle coasts.	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	BioNet (24)	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways.	Moderate. The Study Area has records nearby. Therefore, it is possible that this species would occur in the Study Area.
Hieraaetus morphnoides	Little Eagle	V		Bionet (1)	The Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Hirundapus caudacutus	White-throated Needletail		V,C,J,K	BioNet (6) PMST-K	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial,	Low. This species is predominantly aerial. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					it has been stated that conventional habitat descriptions are inapplicable ,but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland	this species would occur in the Study Area.
Ixobrychus flavicollis	Black Bittern	V	-	Bionet (1)	Black Bitterns roost and nest in trees, and are found in tree-lined wetlands and in mangroves.	Low. The Study Area lacks suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Lathamus discolor	Swift Parrot	E	CE	PMST-K Bionet (7)	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and southwest slopes.	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	-	E	PMST-K	Bar-tailed godwits usually forage near the edge of water or in shallow water within tidal estuaries and harbours.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Limosa limosa	Black-tailed Godwit	V	E	PMST-K	In Australia the Black-tailed Godwit has a primarily coastal habitat environment. The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Macronectes giganteus	Southern Giant-Petrel	E	E	PMST-M Bionet (1)	The Southern Giant-Petrel is marine bird that occurs in Antarctic to subtropical waters.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Macronectes halli	Northern Giant Petrel	V	V	PMST-L	The Northern Giant-Petrel is marine and oceanic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	E	PMST-M	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW.	Low. The Study Area lacks a dense understorey. Therefore, it is unlikely that this species would occur in the Study Area.
Neophema chrysostoma	Blue-winged Parrot		V	PMST-L	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones.	Low. This Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Ninox connivens	Barking Owl	V	-	Bionet (3)	Barking Owls are found in open woodlands and the edges of forests,	Low. This Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Ninox strenua	Powerful Owl	V	-	Bionet (270)	The Powerful Owl is found in open forests and woodlands, as well as along sheltered	Low. This Study Area lacks suitable habitat. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					gullies in wet forests with dense understoreys, especially along watercourses. Will sometimes be found in open areas near forests such as farmland, parks and suburban areas, as well as in remnant bushland patches.	this species would occur in the Study Area.
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew		CE	PMST-L	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. The Eastern Curlew breeds in Russia and north-eastern China but its distribution is poorly known. During the non-breeding season a few birds occur in southern Korea and China, but most spend the non-breeding season in north, east and south-east Australia.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Onychoprion fuscata	Sooty Tern	V	-	Bionet (4)	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Pachyptila turtur subantarctica	Fairy Prion (southern)		V	PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Pandion cristatus	Eastern Osprey	V		Bionet (6)	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands.	Low. While this species has been recorded in locality, the Study Area lacks foraging and roosting habitat. Therefore, it is unlikely that this

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						species would occur in the Study Area.
Phoebetria fusca	Sooty Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Pterodroma leucoptera leucoptera	Gould's Petrel, Australian Gould's Petrel	V	E	PMST-M Bionet (2)	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Pterodroma neglecta neglecta	Kermadec Petrel (western)	-	V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Ptilinopus superbus	Superb Fruit-Dove	V	-	Bionet (5)	The Superb Fruit-Dove is found in rainforests, rainforest margins, mangroves, wooded stream-margins, and even isolated figs, lilly pillies and pittosporums.	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pycnoptilus floccosus	Pilotbird	-	V	PMST-M	Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth.	Low. The Study Area lacks suitable dense understorey habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Rostratula australis	Australian Painted Snipe		E	PMST-L	The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more	Low. The Study Area lacks suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					recently, swamps near Balldale and Wanganella..	
Stagonopleura guttata	Diamond Firetail	V	V	PMST-L Bionet (1)	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River.	Low. There is no suitable woodland habitat in the Study Area. Therefore, it is unlikely that this species would occur in the Study Area.
Sternula nereis nereis	Australian Fairy Tern		V	PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche bulleri	Buller's Albatross, Pacific Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche bulleri platei	Northern Buller's Albatross, Pacific Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche carteri	Indian Yellow-nosed Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche cauta	Shy Albatross		E	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Thalassarche chrysostoma	Grey-headed Albatross	-	E	Bionet (1)	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche eremita	Chatham Albatross		E	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche impavida	Campbell Albatross,		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche melanophris	Black-browed Albatross	V	V	PMST-L Bionet (1)	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche salvini	Salvin's Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche steadi	White-capped Albatross		V	PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Tringa nebularia	Common Greenshank		E, C,J,K	PMST-K	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity.	Low. The Study Area lacks suitable coastal or wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Tyto tenebricosa	Sooty Owl	V	-	Bionet (1)	Nocturnal and roost in large tree hollows, caves and in dense foliage during daylight hours. Found in areas with deep gullies in moist forests, where smooth-barked gum	Low. The Study Area lacks suitable hollows or forest habitat. Therefore, it

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					trees, tree ferns and wet forest under-storey are present.	is unlikely that this species would occur in the Study Area.
Frog						
Heleioporus australiacus	Giant Burrowing Frog	V	V	PMST-L	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Across its range, the Giant Burrowing Frog appears to be dependent on areas with native vegetation	Low. The Study Area lacks sufficient areas of native vegetation with dense leaf litter. Therefore, it is unlikely that this species would occur in the Study Area.
Litoria aurea	Green and Golden Bell Frog		V	PMST-L	This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.	Low. The Study Area lacks streams and swamps. Therefore, it is unlikely that this species would occur in the Study Area.
Mixophyes balbus	Stuttering Frog, Southern Barred Frog (in Victoria)	E	V	PMST-L	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor.	Low. The Study Area lacks rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pseudophryne australis	Red-crowned Toadlet	V	-	Bionet (117)	Red-crowned Toadlets usually live in the vicinity of permanently moist soaks or areas of dense ground vegetation or leaf litter along or near head-water stream beds. They prefer the first or second order ephemeral drainage lines commonly called 'feeder creeks' which drain the ridges, benches, cliffs and tallus slopes.	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Snail						
Meridolum maryae	Maroubra Woodland Snail,	E	E	PMST-K	The species is found in the leaf litter of coastal vegetation communities, most	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
	Maroubra Land Snail				commonly in heathland on foredunes also from areas of podsolised dunes/sand plains that support taller heath communities including Eastern Suburbs Banksia Scrub	this species would occur in the Study Area.
Mammal						
Aepyprymnus rufescens	Rufous Bettong	V	-	Bionet (1)	Rufous Bettongs inhabit a variety of forests from tall, moist eucalypt forest to open woodland, with a tussock grass understorey. A dense cover of tall native grasses is the preferred shelter.	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Cercartetus nanus	Eastern Pygmy-possum	V	-	Bionet (16)	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 preferre	Low. The Study Area lacks suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	V	V	PMST-K Bionet (11)	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	Low. The Study Area lacks suitable cliff or cave habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Dasyurus maculatus	Spotted-tailed Quoll	V	E	PMST-K BioNet (3)	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common.	Low. The Study Area lacks suitable habitat and vegetation extent for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Bionet (1)	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern)	E	E	PMST-L	They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils.	Low. The Study Area lacks suitable heath habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Miniopterus australis	Little Bent-winged Bat	V	-	Bionet (11)	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Bionet (94)	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	Moderate. This species has been recorded on Middle Head and may use buildings to roost. Therefore, it is possible that this species would occur in the Study Area.
Myotis macropus	Southern Myotis	V	-	Bionet (46)	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Notamacropus parma	Parma Wallaby	V	V	PMST-M	The species once occurred in north-eastern NSW from the Queensland boarder to the Bega area in the southeast. Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino.	Low. The Study Area lacks suitable dense forest habitat. Therefore, it is unlikely that this species would occur.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Perameles nasuta	Long-nosed Bandicoot, North Head	EP	-	Bionet (301)	Restricted to North Head in the Manly Local Government Area.	Low. This population is found at North Head, across Sydney Harbour Therefore, it is unlikely that this population would occur in the Study Area.
Petaurus norfolcensis	Squirrel Glider	V	-	Bionet (1)	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas.	Low. The Study Area lacks suitable mature eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Petauroides volans	Greater Glider (southern and central)	E	E	PMST-L	Occurs in eastern Australia, in eucalypt forests and woodlands, where it has a broad distribution from around Proserpine in Queensland, south through NSW and the Australian Capital Territory into Victoria.	Low. The Study Area lacks suitable mature eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	V	V	PMST-L	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	Low. The Study Area lacks suitable mature eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Phascolarctos cinereus	Koala	E	E	PMST-K Bionet (4)	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.	Low. The Study Area lacks suitable eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pseudomys novaehollandiae	New Holland Mouse, Pookila		V	PMST-L	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Genetic	Low. The Study Area lacks suitable heathland habitat. Therefore, it is

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					evidence indicates that the New Holland Mouse once formed a single continuous population on mainland Australia and the distribution of recent subfossils further suggest that the species has undergone a large range contraction since European settlement. Total population size of mature individuals is now estimated to be less than 10,000 individuals although, given the number of sites from which the species is known to have disappeared between 1999 and 2009, it is likely that the species' distribution is actually smaller than current estimates.	unlikely that this species would occur in the Study Area.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	PMST-K BioNet (404)	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations.	Low. The Study Area lacks suitable roosting or high quality foraging habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Bionet (1)	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Vespadelus troughtoni	Eastern Cave Bat	V	-	Bionet (1)	A cave-roosting species 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. Occasionally found along cliff-lines in wet eucalypt forest and rainforest.	Low. The Study Area lacks suitable habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.
Flora						

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Acacia bynoeana	Bynoe's Wattle, Tiny Wattle	E	V	PMST-M Bionet (10)	Bynoe's wattle is found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. The species is currently known from about 30 locations, with the size of the populations at most locations being very small (1-5 plants).It has recently been found in the Colymea and Parma Creek areas west of Nowra.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Acacia terminalis subsp. Eastern Sydney	Sunshine Wattle (Sydney region)	E	E	PMST-K Bionet (420)	Coastal scrub and dry sclerophyll woodland on sandy soils .	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Allocasuarina portuensis	Nielsen Park She-oak	E	E	PMST-K Bionet (136)	The original habitat is tall closed woodland. The original habitat occurs above a sandstone shelf approximately 20 m above the harbour. The shallow sandy soils are highly siliceous, coarsely textured and devoid of a soil profile. The plantings have occurred on similar soils.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Amperea xiphoclada var. pedicellata	-	X	X	Bionet (1)	*Amperea xiphoclada var. pedicellata* is known only from the type specimen collected in 1892 from Sydney, NSW. The species has not been observed since and is presumed to be extinct.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Asterolasia buxifolia	-	E	CE	Bionet (1)	Known from a single site associated with granite geology in the riparian zone of the Lett River.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Asterolasia elegans	-	E	E	PMST-M	Found in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Caladenia tessellata	Thick-lipped Spider-orchid, Daddy Long-legs	E	V	PMST-L Bionet (1)	Known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. It was also recorded in the Huskisson area in the 1930s. The species occurs on the coast in Victoria from east of Melbourne to almost the NSW border.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Callistemon linearifolius	Netted Bottle Brush	V	-	Bionet (6)	Grows in dry sclerophyll forest on the coast and adjacent ranges.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Chamaesyce psammogeton	Sand Spurge	E	-	Bionet (2)	Grows on fore-dunes, pebbly strandlines and exposed headlands, often with Spinifex (*Spinifex sericeus*) and Prickly Couch (*Zoysia macrantha)*	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	PMST-L	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Munmorah State Conservation Area, Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park and Ben Boyd National Park.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Darwinia biflora	-	V	V	PMST-M	Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Epacris purpurascens var. purpurascens	-	V	-	Bionet (2)	Found in a range of habitat types, most of which have a strong shale soil influence.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Eucalyptus camfieldii	Camfield's Stringybark	V	V	PMST-K Bionet (10)	Poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	Bionet (2)	Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Genoplesium baueri	Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid	E	E	PMST-K	The species has been recorded from locations between Ulladulla and Port Stephens. About half the records were made before 1960 with most of the older records being from Sydney suburbs including Asquith, Cowan, Gladesville, Longueville and Wahroonga. No collections have been made from those sites in recent years. Currently the species is known from just over 200 plants across 13 sites. The species has been recorded at locations now likely to be within the following conservation reserves: Berowra Valley Regional Park, Royal National Park and Lane Cove National Park. May occur in the	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					Woronora, O'Hares, Metropolitan and Warragamba Catchments.	
Grammitis stenophylla	Narrow-leaf Finger Fern	E	-	Bionet (1)	Moist places, usually near streams, on rocks in rainforest and dry and moist eucalypt forest.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Grevillea caleyi	Caley's Grevillea	E	CE	Bionet (6)	All sites occur on the ridgetop between elevations of 170 to 240m asl, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *E. gummifera*.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Haloragodendron lucasii	Hal	E	E	PMST-M	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.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Hygrocybe reesiae	-	V	-	Bionet (1)	Occurs in gallery warm temperate forests dominated by Lilly Pilly (*Acmena smithii*), Grey Myrtle (*Backhousia myrtifolia*), Cheese Tree (*Glochidion ferdinandi*) and Sweet Pittosporum (*Pittosporum undulatum*). Associated with alluvial sandy soils of the Hawkesbury Soil Landscapes with naturally low fertility and erodible.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Lasiopetalum joyceae	-	V	V	PMST-M	Grows in heath on sandstone.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Leptospermum deanei	Deane's Tea-tree	V	V	PMST-M	Woodland on lower hill slopes or near creeks. Sandy alluvial soil or sand over sandstone.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Leucopogon exolasius	Woronora Beard-heath	V	V	PMST-M	Woronora Beard-heath is found along the upper Georges River area and in Heathcote National Park.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Macadamia integrifolia	Macadamia Nut	-	V	Bionet (3)	The Macadamia Nut grows in remnant rainforest.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Melaleuca biconvexa	Biconvex Paperbark	V	V	PMST-M Bionet (1)	Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Melaleuca deanei	Deane's Melaleuca	V	V	PMST-M Bionet (1)	The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Persicaria elatior	Knotweed, Tall Knotweed	V	V	PMST-M	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Persoonia hirsuta	Hairy Geebung	E	E	PMST-K Bionet (3)	Has a scattered distribution around Sydney. The species is distributed from Singleton in the north, along the east coast to Hilltop in the south west, Dombarton in the south east and the Blue Mountains to the west. Has a large area of occurrence, but occurs in small populations or isolated individuals, increasing the species' fragmentation in the landscape.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Pimelea curviflora var. curviflora	-	V	V	PMST-K Bionet (5)	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Prasophyllum fuscum	Tawny Leek-orchid, Slaty Leek-orchid	CE	V	Bionet (1)	Grows in moist heath, often along seepage lines. The known population grows in moist sandy soil over sandstone amongst sedges and grasses in an area that appears to be regularly slashed by the local council.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Prostanthera densa	Villous Mintbush	V	V	PMST-M	*Prostanthera densa* generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Prostanthera junonis	Somersby Mintbush	E	E	PMST-K	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.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Prostanthera marifolia	Seaforth Mintbush	CE	CE	PMST-K	*Prostanthera marifolia* is currently only known from the northern Sydney suburb of	Low. The Study Area is a developed area with buildings and maintained

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
				Bionet (4)	Seaforth. Occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. Located on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses, a soil type which only occurs on ridge tops and has been extensively urbanised.	grass. Therefore, it is unlikely that this species would occur in the Study Area.
Rhizanthella slateri	Eastern Underground Orchid	V	E	PMST-M	Occurs from south-east Queensland to south-east NSW. In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Rhodamnia rubescens	Scrub Turpentine, Brown Malletwood	CE	CE	PMST-K	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Rhodomyrtus psidioides	Native Guava	CE	CE	PMST-M	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Syzygium paniculatum	Magenta Lilly Pilly	E	V	PMST-K Bionet (72)	The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Tetratheca glandulosa	-	V	-	Bionet (8)		Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Tetratheca juncea	Black-eyed Susan	V	V	Bionet (2)		Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Thesium australe	Austral Toadflax, Toadflax	V	V	PMST-L	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Triplarina imbricata	Creek Triplarina	E	E	Bionet (1)		Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this species would occur in the Study Area.
Reptiles						
Hoplocephalus bungaroides	Broad-headed Snake	E	E	PMST-M	Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in crevieces or hollows in large trees within 500m of escarpments in summer.	Low. The Study area lacks suitable cliff face habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Threatened Ecological Communities						
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community			E	PMST-L	The ecological community occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales. The canopy layer is dominated by Casuarina glauca (swamp oak, swamp she-oak). This often occurs as a relatively uniform upper layer of swamp oak, with height and density dependent on the local environmental conditions.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland			E	PMST-M	The ecological community typically occurs in low-lying coastal alluvial areas with minimal relief. In an intact forest, the canopy can be layered, with a sub-canopy of melaleuca grading into a taller mixed melaleuca and/or eucalypt canopy.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.
Coastal Upland Swamps in the Sydney Basin Bioregion		-	E	PMST - L	Coastal Upland Swamps are characterised by a diverse assemblage of vegetation and are essentially treeless, although trees may be present as scattered individuals or isolated clumps of eucalypts, including mallees.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.
Eastern Suburbs Banksia Scrub of the Sydney Region		-	CE	PMST-L	Locally, it is found predominantly along the coastline in the Sydney region, between the mouth of the Hawkesbury River and Stanwell Park. It is comprised of the plants, animals and other organisms associated with a predominantly sclerophyllous heath or scrub vegetation structure. The range of species present varies, but the shrub layer frequently includes Banksia species such as *Banksia aemula* (Wallum Banksia) and *Banksia serrata* (Old Man Banksia) as well	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					as other characteristic woody species such as *Monotoca elliptica* (Tree Broom-heath), *Acacia suaveolens* (Sweet Wattle), *Allocasuarina distyla* (Scrub Sheoak), *Isopogon anemonifolius* (Broad-leaf Drumsticks), *Kunzea ambigua* (Tick Bush), *Ricinocarpos pinifolius* (Wedding Bush) and *Leptospermum laevigatum* (Coast Tea Tree).	
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia		-	CE	PMST-L	The ecological community represents a complex of rainforest and coastal vine thickets, including some that are deciduous, on the east coast of Australia. Typically, the ecological community occurs within two kilometres of the coast or adjacent to a large salt water body, such as an estuary and, thus, is influenced by the sea.	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria		-	CE	PMST-L	The ecological community occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates, including floodplains, river-banks, riparian zones, lake foreshores, creek lines (including the floors of tributary gullies), floodplain pockets, depressions, alluvial flats, fans, terraces, and localised colluvial fans. The ecological community is typically found below 50 metres above sea-level (m ASL), although it can occur up to 250 m ASL	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.
Western Sydney Dry Rainforest and Moist Woodland on Shale		-	CE	PMST-M	The ecological community varies from a low closed rainforest, typically in lower slopes and gullies, to a more open moist woodland form on upper slopes and disturbed sites. Emergent trees can be up to around 25 m high and a lower tree layer is often present. Dominant species of the canopy and the	Low. The Study Area is a developed area with buildings and maintained grass. Therefore, it is unlikely that this community would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					sub-canopy vary across the latitudinal range of the ecological community, and also according to the available moisture and shelter	
Migratory Species						
Migratory Marine Birds						
Anous stolidus	Common Noddy	-		PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Apus pacificus	Fork-tailed Swift			PMST-L	Pacific (Fork-tailed) Swifts, race "pacificus", are non-breeding migrants to Australia from far-eastern Asia. They can appear anywhere along the tropical North coast, from Exmouth, WA, in the West to Fraser Island, QLD, in the East. To the best of our knowledge, Pacific (Fork-tailed) Swifts never set foot on Australian soil.	Low. This migratory species is not known to land in Australia. Therefore, it is unlikely that this species would occur in the Study Area.
Ardenna carneipes	Flesh-footed Shearwater			PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Ardenna grisea	Sooty Shearwater		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Calonectris leucomelas	Streaked Shearwater			PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea antipodensis	Antipodean Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Diomedea epomophora	Southern Royal Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea exulans	Wandering Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Diomedea sanfordi	Northern Royal Albatross		E	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Fregata ariel	Lesser Frigatebird, Least Frigatebird			PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Fregata minor	Great Frigatebird, Greater Frigatebird			PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel		E	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Macronectes halli	Northern Giant Petrel		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Phaethon lepturus	White-tailed Tropicbird			PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Phoebetria fusca	Sooty Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Sternula albifrons	Little Tern			PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche bulleri	Buller's Albatross, Pacific Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche carteri	Indian Yellow-nosed Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche cauta	Shy Albatross		E	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche eremita	Chatham Albatross		E	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross		V	PMST-M	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche melanophris	Black-browed Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
						this species would occur in the Study Area.
Thalassarche salvini	Salvin's Albatross		V	PMST-L	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Thalassarche steadi	White-capped Albatross		V	PMST-K	Marine and pelagic.	Low. This species is predominately marine. Therefore, it is unlikely that this species would occur in the Study Area.
Migratory Terrestrial Birds						
Cuculus optatus	Oriental Cuckoo	-	C,J,K	PMST-K	Oriental Cuckoos are winter visitors to Australia and unlike all of our other cuckoos, do not breed here. Mainly seen in northern Australia, occasionally they are sighted as far south as Sydney.	Low. The Study Area does not contain large amount of suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Hirundapus causacutus	White-throated Needletail	-	V	PMST-K	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable ,but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland	Low. This species is predominantly aerial. Therefore, it is unlikely that this species would occur in the Study Area.
Monarcha melanopsis	Black-faced Monarch	-	-	PMST-K	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll	Low. The Study Area does not contain suitable dense woodland habitat. Therefore, it is unlikely that

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					(broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.	this species would occur in the Study Area.
Motacilla flava	Yellow Wagtail	-	-	PMST-L	Widespread wagtail, favoring wet meadows, marshland, grassy and muddy lakeshores. Occurs in fields and often near livestock during migration.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Myiagra cyanoleuca	Satin Flycatcher	-	-	PMST-K	Widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	Low. The Study Area does not contain suitable dense woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Rhipidura rufifrons	Rufous Fantail	-	-	PMST-K	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (Eucalyptus microcorys), Mountain Grey Gum (E. cypellocarpa), Narrow-leaved Peppermint (E. radiata), Mountain Ash (E. regnans), Alpine Ash (E. delegatensis), Blackbutt (E. pilularis) or Red Mahogany (E. resinifera); usually with a dense shrubby understorey often including ferns.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Symposiachrus trivirgatus as *Monarcha trivirgatus*	Spectacled Monarch	-	-	PMST-M	Spectacled Monarchs occur down most of the east coast of Australia in rain forests and wet gullies, south to about Newcastle in most years but occasionally as far south as Sydney and rarely to the NSW south coast.	Low. The Study Area does not contain suitable dense woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Migratory Wetland Species						
Actitis hypoleucos	Common Sandpiper	-		PMST-K	The Common Sandpiper breeds in Europe and Asia. In Australasia it visits New Guinea and Australia, mainly in the north and west. In Australia, the Common Sandpiper is found in coastal or inland wetlands, both saline or fresh.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris acuminata	Sharp-tailed Sandpiper	-	V	PMST-K	The Sharp-tailed Sandpiper is a summer migrant from Arctic Siberia, being found on wetlands throughout Australia. The Sharp-tailed Sandpiper prefers the grassy edges of shallow inland freshwater wetlands. It is also found around sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris canutus	Red Knot, Knot		V	PMST-K	In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris ferruginea	Curlew Sandpiper	E	V	PMST-K	The Curlew Sandpiper is distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration.	Low. The Study Area lacks suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris melanotos	Pectoral Sandpiper	-	CE	PMST-L	In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. In Australasia, the Pectoral Sandpiper prefers	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	
Calidris ruficollis	Red-necked Stint	-	-	PMST-K	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats,	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Calidris tenuirostris	Great Knot	V	V	PMST-K	In Australasia, the species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Charadrius bicinctus	Double-banded Plover	-	V	PMST-K	The Double-banded Plover is found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	-		PMST-K	In the non-breeding grounds in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Charadrius mongolus	Lesser Sand Plover, Mongolian Plover	-	V	PMST-L	In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops.	
Gallinago hardwickii	Latham's Snipe	-	E	PMST-K	Non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia. They usually inhabit open, freshwater wetlands with low, dense vegetation	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Black-tailLimosa lapponica	Bar-tailed Godwit		V	PMST-L	Bar-tailed godwits usually forage near the edge of water or in shallow water within tidal estuaries and harbours.	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Limosa limosa	Black-tailed Godwit	E	V	PMST-K	In Australia the Black-tailed Godwit has a primarily coastal habitat environment. The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets	Low. The Study Area lacks suitable intertidal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Numenius madagascariensis	Eastern Curlew	-	E	PMST-K	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. The Eastern Curlew breeds in Russia and north-eastern China but its distribution is poorly known. During the non-breeding season a few birds occur in southern Korea and China, but most spend	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
					the non-breeding season in north, east and south-east Australia.	
Numenius phaeopus	Whimbrel		CE	PMST-L	Whimbrels are found mainly on the coast, on tidal and estuarine mudflats, especially near mangroves. They are sometimes found on beaches and rocky shores.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pandion haliaetus	Osprey	-	V	PMST-K	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Philomachus pugnax	Ruff (Reeve)	-	-	PMST-K	In Australia the Ruff is found on generally fresh, brackish of saline wetlands with exposed mudflats at the edges.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pluvialis fulva	Pacific Golden Plover	-	-	PMST-K	The Pacific Golden Plover is found on muddy, rocky and sandy wetlands, shores, paddocks, saltmarsh, coastal golf courses, estuaries and lagoons.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Tringa brevipes	Grey-tailed Tattler	-	-	PMST-K	Grey-tailed Tattlers are usually seen in small flocks on sheltered coasts with reefs and rock platforms or with intertidal mudflats.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Tringa nebularia	Common Greenshank	-		PMST-K	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Name		BC/ FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Tringa stagnatilis	Marsh Sandpiper, Little Greenshank	-	E	PMST-K	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Appendix D
Significant Impact Assessment

We design with community in mind

Where threatened species and vegetation communities are identified as likely to be impacted by a given proposal, an assessment of those impacts is undertaken to identify whether significant impacts are likely to occur. Requirements for assessment of significance involve several steps to identify extent of impacts on population and/or community structure and long-term survival and consist of addressing several questions. Assessments of significance as per applicable legislative instruments in NSW are:

- Threatened Species Test of Significance (also known as five-part test) under the *Biodiversity Conservation Act 2016;* and
- Assessment of Significance (AoS) under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*.

Selection of threatened species and vegetation communities for assessment of significance is based on the Likelihood of Occurrence assessment (**Appendix C**). Where the Likelihood of Occurrence assessment identifies a threatened species or ecological community as having a moderate, high, or known likelihood of occurrence and is likely to be impacted, an assessment of significance is undertaken.

All threatened species and vegetation communities with potential to occur within the 5 km locality surrounding the Study Area were identified during desktop searches (see **Section 3, Appendix A** and **Appendix B**) and a Likelihood of Occurrence assessment was undertaken (**Appendix C**). The following species were identified as having a moderate likelihood of occurrence within the Study Area:

- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) - listed as vulnerable under the BC Act (**Table 9**)
- White-bellied Sea Eagle (*Haliaeetus orianae oceanensis*) - listed as vulnerable under the BC Act (**Table 10**)

Under Part 7.3 of the *NSW Biodiversity Conservation Act 2016* (BC Act) a five-part test is required to determine whether a significant impact on any threatened species or TEC listed under the NSW BC Act known or considered likely to occur on a site or be impacted as a result of a proposed action.
The proposed works are considered to have minimal direct impact on potential habitat for threatened species in the locality.

Table 9 Test of Significance- White-bellied Sea-Eagle (*Haliaeetus leucogaster*)

Species Assessed		
	The following bird species has been assessed as having at least a moderate likelihood of occurrence within the Study Area: • White-bellied Sea-Eagle (*Haliaeetus leucogaster*)- listed as vulnerable under the BC Act.	
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.**	This species is highly mobile and there is higher quality habitat in the locality of the Study Area. Therefore, the proposal is unlikely to result in an adverse effect on the life cycle of this species or place a local population at risk of extinction.
b.	**In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**	
i.	**Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	Not applicable to threatened species.
ii.	**Is likely to substantially and adversely modify the composition of the ecological community such that**	Not applicable to threatened species.

	its local occurrence is likely to 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 works will not remove or modify any potential habitat for this species.
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**	As no habitat will be removed, fragmentation will not be exacerbated.
iii.	**The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.**	No habitat will be directly impacted by the proposed works.
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).**	At the time of writing, four Areas of Outstanding Biodiversity Value (AOBV) have been declared: • Gould's Petrel - critical habitat declaration. • Little penguin population in Sydney's North Harbour - critical habitat declaration. • Mitchell's Rainforest Snail in Stotts Island Nature Reserve - critical habitat declaration. • Wollemi Pine - critical habitat declaration. Of the above listed AOBV, Little penguin population in Sydney's North Harbour - critical habitat declaration is the closest AOBV to the Study Area, approximately 2.5km away. The proposed works would not be expected to have any direct or indirect effect on this or any declared AOBV.
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 project would or may constitute, introduce or exacerbate the following KTPs relevant to this species: • The White-bellied Sea-eagle is sensitive to disturbance when nesting, especially during the early stages of the breeding season, and may desert nests and young if confronted by humans or exposed to human activity. - While the White-bellied Sea Eagle has been detected near to the Study Area, there is no evidence of breeding near the Study Area. Mitigation measures outlined in Section 5, such as limiting noise and dust pollution, should reduce the likelihood of indirect impacts on habitat in the locality of the Study Area.
Conclusion		
	The Study Area does not contain any suitable habitat as it has been heavily modified. The proposed works will not impact any native PCTs. It is considered unlikely that the project would have a significant impact on the local population of this species. Based on this, the proposal is unlikely to significantly impact this species and a species impact statement (SIS) is not required.	

Table 10 Test of Significance- Large Bent-winged Bat (Miniopterus orianae oceanensis)

Species Assessed
The following bat species has been assessed as having at least a moderate likelihood of occurrence within the Study Area: • Large Bent-winged Bat (*Miniopterus orianae oceanensis*) listed as vulnerable under the BC Act.
Five-part Test of Significance

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.**	This species is highly mobile and there is higher quality habitat in the locality of the Study Area. Therefore, the proposal is unlikely to result in an adverse effect on the life cycle of this species or place a local population at risk of extinction. Pre-clearance surveys have been recommended prior to the buildings being demolished.
b.	**In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**	
i.	**Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**	Not applicable to threatened species.
ii.	**Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**	Not applicable to threatened species.
c.	**In relation to the habitat of a threatened species or ecological community:**	
i.	**The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity; and**	The Project involves the demolition of existing buildings that may provide habitat for this species. Pre-clearance surveys have been recommended prior to the buildings being demolished. No native PCTs have been identified for removal as a result of the Project.
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 proposed works would not result in further isolation or fragmentation of habitat.
iii.	**The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.**	The Project involves the demolition of existing buildings that may provide habitat for this species. Pre-clearance surveys have been recommended prior to the buildings being demolished. No native PCTs have been identified for removal as a result of the Project.
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).**	At the time of writing, four Areas of Outstanding Biodiversity Value (AOBV) have been declared: • Gould's Petrel - critical habitat declaration. • Little penguin population in Sydney's North Harbour - critical habitat declaration. • Mitchell's Rainforest Snail in Stotts Island Nature Reserve - critical habitat declaration. • Wollemi Pine - critical habitat declaration. Of the above listed AOBV, Little penguin population in Sydney's North Harbour - critical habitat declaration is the closest AOBV to the Study Area, approximately 2.5km away. The proposed works would not be expected to have any direct or indirect effect on this or any declared AOBV.
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 project would or may constitute, introduce or exacerbate the following KTPs relevant to this threatened species. • Introduction of exotic pathogens, particularly white-nose fungus. – The mitigation measures listed in Section 5 should reduce the likelihood of pathogen introduction.
Conclusion		

	The Study Area does contain buildings which may be used as potential habitat for this species. However, given the proximity of other high-quality habitat and that records on Middle Head are in vegetated areas, it is unlikely that these building are important habitat for the local population. The proposed works will not impact any mapped native PCTs. It is considered unlikely that the project would have a significant impact on the local population of this species. Based on this, the proposal is unlikely to significantly impact this species and a species impact statement (SIS) is not required.

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