

# Appendix Q

## Biodiversity Development Assessment Report



**Port Botany Quayline Equalisation Project**

# Biodiversity Development Assessment Report

Prepared for AECOM

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- Matthew Hyde
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*Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.*

*We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.*

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## Executive Summary

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### The proposed works

Port Botany Operations Pty Ltd, as Trustee for Port Botany Unit Trust (NSW Ports), is seeking approval to undertake works to provide equitable operational quayline length between the three container stevedore companies operating at Port Botany (the Project). The Project involves two principal components:

- Construction of an extended quayline (BD12) on the southern side of Brotherson Dock, including dredging of the Brotherson Dock channel and berths to provide material for reclamation of land. This would provide:
  - Extension of the southern side of the Brotherson Dock quayline by around 314 metres to provide a combined quayline length on the southern side of Brotherson Dock of around 1,250 metres to accommodate up to three longer container vessels, commensurate with the quayline length available to stevedore operators in other parts of the port
  - An additional 5.3 hectares of wharf area (wharf hardstand)
- Consequential changes to the bulk liquids berths at the port, including demolition of the existing Bulk Liquids Berth 1 (BLB1), construction and operation of a new Bulk Liquids Berth (BLB3) in a more southerly location, and associated changes to pipework and bulk liquids handling infrastructure within the port. The types and volumes of bulk liquids would remain unchanged.

A request for a BDAR waiver was previously submitted for the Project but was rejected by the Conservation Programs, Heritage and Regulation (CPHR) division of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) on the grounds that it could not be concluded that the proposed development is not likely to have any significant impact on biodiversity values. Following rejection of the BDAR waiver request, this Biodiversity Development Assessment Report (BDAR) has been prepared in accordance with the NSW Biodiversity Assessment Method (BAM) and the *Biodiversity Conservation Act 2016* (BC Act) by Accredited Assessors Mitchell Palmer (BAAS17051) and Jake Schwebel (BAAS25013) of Biosis.

### The Project Area

The subject land for the BDAR (Figure 1-3) is defined as the Project Area covered by the EIS (AECOM 2025a), with an additional 20 metre buffer to allow comprehensive collection of ecological data beyond the immediate Project Area footprint. The development footprint comprises the area of direct impact associated with the Project and is located entirely within the heavily industrialised Port Botany precinct, bordered by the Hutchison Port and Patrick container terminals to the north and the Bulk Liquids Berth to the south. The subject land is situated within a highly modified industrial and marine environment with limited direct connectivity to terrestrial habitats. Faunal connectivity associated with the subject land relates the movement of shorebirds through or surrounding the Project Area. While the subject land itself does not provide suitable foraging or roosting habitat due to extensive port infrastructure and lack of native vegetation, shorebirds are expected to move regularly between key habitats such as the Towra Point Wetland on the southern side of Botany Bay and the Penrhyn Estuary located to the north of the subject land.

Field investigation, undertaken in accordance with the BAM, determined that vegetation within the subject land is limited to scattered exotic species, opportunistic weeds, and managed lawns adjacent to infrastructure. No native Plant Community Types (PCTs) occur within the subject land.



A nest supporting an Eastern Osprey *Pandion cristatus* (Vulnerable, BC Act) was identified approximately 400 metres north of the subject land. The nest is situated atop a man-made light structure, consistent with the species' known nesting preferences. Furthermore, areas of mapped important habitat for shorebirds, specifically the Bar-tailed Godwit *Limosa lapponica* (Vulnerable, EPBC Act and Endangered, BC Act) and Eastern Curlew *Numenius madagascariensis* (Critically Endangered, *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act] and BC Act), are present within the marine and intertidal areas of the subject land. However, these mapped 'important' areas occur entirely as open water zones. Dredging of Brotherson Dock and construction of associated infrastructure occurs within these marine areas and does not affect terrestrial vegetation or terrestrial habitat used by threatened species.

### Avoidance and minimisation of impacts

The Project has been designed to avoid and minimise biodiversity impacts in accordance with the BAM through careful site selection, design refinement, and construction planning. Works are confined to a highly disturbed footprint within Port Botany, dominated by exotic and urban vegetation with very low ecological value. The development footprint avoids adjacent areas of higher biodiversity value, including the Penrhyn Estuary and mapped important shorebird habitat. A portion of the subject land (construction compound WSCC02) was also removed from the Project to further avoid potential indirect disturbance impacts on Penrhyn Estuary and the channel between the estuary and Foreshore Beach. Additionally, the removal of the compound minimises the potential for indirect disturbance to the Eastern Osprey currently nesting at this location.

Design measures can further minimise impacts by limiting ground disturbance, avoiding remnant vegetation, reusing existing infrastructure, and implementing controls to manage runoff, noise, and light spill. Mitigation and management measures would be put in place to adequately address impacts associated with the Project, including direct, indirect, and prescribed impacts.

### Direct, indirect and prescribed impacts

Direct impacts from the Project are limited to the removal of approximately 4.35 hectares of urban native/exotic vegetation within the subject land. This is regrowth vegetation that has colonised the dock after it was constructed around 10 years ago. The vegetation is highly disturbed, dominated by exotic species and urban plantings, and provides limited habitat value for threatened flora or fauna species. The project construction would only use a small portion of this area, however the project area has been assessed conservatively as the entire area.

Indirect and prescribed impacts, including potential noise, vibration, dust, light spill, and inadvertent disturbance to adjacent vegetation, were also considered. The subject land is separated from sensitive habitats such as Penrhyn Estuary and the Eastern Osprey by substantial distances and existing infrastructure, which provide buffers against indirect impacts.. Noise modelling indicates predicted peak levels at these habitats would be comparable to or below existing port operational noise, rendering noise generated from the project indistinguishable from the existing background levels. Other potential impacts, including dust and light spill, are expected to be negligible with standard construction mitigation measures in place.

### Residual biodiversity impacts and offsets

The subject land contains no native vegetation or remnant PCTs. Vegetation is highly modified, consisting of regrowth from exotic species or urban planting with negligible biodiversity value. Therefore, no ecosystem credit offsets are required under the BAM. Following avoidance and minimisation efforts, the only residual terrestrial impact is the removal of highly modified urban/exotic vegetation that has grown on the dock since

it was built in the early 2000's. These impacts do not meet the threshold for ecosystem credit requirements as:

- No native PCTs will be impacted.
- No threatened species habitat will be impacted.
- All potential indirect impacts are negligible and controlled through standard construction practices.

Accordingly, no biodiversity offsets are required. The combination of Project design, avoidance measures, and the highly modified nature of the subject land ensures that impacts to biodiversity values are negligible.

## Certification and declarations

---

I certify that this report has been prepared based on the requirements of, and information provided under the Biodiversity Assessment Method (DPIE 2020) and s6.15 of the *Biodiversity Conservation Act 2016*.

In preparing this assessment I have acted in accordance with the Accredited BAM Assessor Code of Conduct.

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

**Signature:**



**Date:**

15/09/2025

**BAM Assessor Accreditation  
Number:**

BAAS17051

**Signature:**



**Date:**

15/09/2025

**BAM Assessor Accreditation  
Number:**

BAAS25013

## Stage 1 – Biodiversity assessment

---

# 1 Introduction

---

## 1.1 Project context and overview

NSW Ports is seeking approval to undertake works to provide equitable operational quayline length between the three container stevedore companies operating at Port Botany (the Project). The Project would involve two principal components (Figure 1-1):

- Construction of an extended quayline (BD12) on the southern side of Brotherson Dock, including dredging of the Brotherson Dock channel and berths to provide material for reclamation of land. This would provide:
  - Extension of the southern side of the Brotherson Dock quayline by around 314 metres to provide a combined quayline length on the southern side of Brotherson Dock of around 1,250 metres to accommodate up to three longer container vessels, commensurate with the quayline length available to stevedore operators in other parts of the port.
  - An additional 5.3 hectares of wharf area (wharf hardstand).
- Consequential changes to the bulk liquids berths at the port, including demolition of the existing Bulk Liquids Berth 1 (BLB1), construction and operation of a new Bulk Liquids Berth (BLB3) in a more southerly location, and associated changes to pipework and bulk liquids handling infrastructure within the port. The types and volumes of bulk liquids would remain unchanged.

The extended quayline and associated wharf area would be constructed and made available for further development in future by a stevedore. The planning application associated with this BDAR does not seek approval for the operation of infrastructure for the purposes of container operations.

A more detailed description of construction and operation of the Project are provided in Chapter 3 (Project description) of the Environmental impact Statement (EIS) (AECOM 2025a).

A request for a BDAR waiver was previously submitted for the Project but was rejected by the CPHR division of the NSW DCCEE on the grounds that it could not be concluded that the proposed development is not likely to have any significant impact on biodiversity values. Following rejection of the BDAR waiver request, this BDAR has been prepared in accordance with the NSW BAM and the NSW BC Act. This BDAR has been prepared and overseen by Accredited Assessors Mitchell Palmer (BAAS17051) and Jake Schwebel (BAAS25013) of Biosis, to accompany the EIS and describes the outcome of the SSI development assessment case (00059755).

As the removal of native vegetation is less than 1 hectare, the small area assessment module (SAAM), has been applied to this assessment in line with Appendix C of the BAM (DPIE 2020).





## 1.2 The Project

Construction and operation of the Project is summarised in the following sections and described in detail in Chapter 3 of the EIS (AECOM 2025a). Additional information relevant to the assessment in this report is provided in Section 1.3.

### 1.2.1 Construction of the Project

A high level summary of the key construction activities for the Project is provided in Table 1. An indicative construction program for each construction phase is shown in Table 2.

**Table 1 Key construction activities**

| Construction phase                                                 | Key construction activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enabling works and establishment of construction compounds</b>  | Site establishment and enabling works would be required to establish four landside construction compounds (LSCCs) and one waterside construction compound (WSCC). Temporary environmental and safety controls, such as erosion and sediment controls would be implemented.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Construction of the new BLB3</b>                                | Construction of BLB3 would involve: <ul style="list-style-type: none"> <li>• Construction of a suspended deck structure, requiring approximately 119 piles</li> <li>• Installation of BLB3 infrastructure and mooring dolphins, new pipeline rack and exchange facility, and electrical services</li> <li>• Construction of a new operations/ control facility and new emergency egress at the existing BLB2.</li> </ul>                                                                                                                                                                                                                                                                |
| <b>Decommissioning and removal of BLB1 and tugboat jetty</b>       | Decommissioning and demolition activities would involve: <ul style="list-style-type: none"> <li>• Demolition and removal of the tugboat jetty south of BLB3</li> <li>• Cessation of operations associated with BLB1, and flushing and pigging (pipe clearing) of pipelines associated with BLB1</li> <li>• Demolition and removal of BLB1 infrastructure and associated pipelines.</li> </ul>                                                                                                                                                                                                                                                                                           |
| <b>Construction of the extended quayline (BD12) and wharf area</b> | Construction of the extended quayline (BD12) on the southern side of Brotherson Dock would involve two main activities: <ul style="list-style-type: none"> <li>• Construction of a bund wall, dredging and reclamation works: <ul style="list-style-type: none"> <li>○ Construction of a bund wall including a core, geofabric textile layer, and outer rock armour layer</li> <li>○ Progressive dredging of Brotherson Dock, filling behind the bund wall</li> <li>○ Compaction of dredged materials within the reclamation area.</li> </ul> </li> <li>• Piling and wharf deck construction, requiring approximately 380 piles with anticipated lengths of up to 70 metres.</li> </ul> |
| <b>Site demobilisation</b>                                         | Construction sites and compounds would be removed. Disturbance areas would be reinstated to pre-construction conditions. Disturbance areas used for construction would be reinstated to conditions comparable to those existing prior to the commencement of construction.                                                                                                                                                                                                                                                                                                                                                                                                              |



**Figure 1-2 Indicative construction compound locations**

**Table 2 Indicative construction phases and timing**

| Construction phases                                            | Indicative timing |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
|----------------------------------------------------------------|-------------------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
|                                                                | 2027              |    |    |    | 2028 |    |    |    | 2029 |    |    |    | 2030 |    |    |    | 2031 |    |    |    | 2032 |    |    |    |
|                                                                | Q1                | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 |
| Enabling works                                                 |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Establishment of construction compounds and laydown area works |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Construction of the new BLB3                                   |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Decommissioning and removal of BLB1 and tugboat jetty          |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Construction of bund wall, dredging and reclamation            |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Piling and wharf deck construction                             |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |
| Site demobilisation                                            |                   |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |

## 1.2.2 Operation of the Project

The key operational components of the Project are shown in Figure 1-2 and summarised in Table 3. The extended Brotherson Dock and BLB3 would operate 24 hours a day 7 days a week, consistent with existing operations at Port Botany managed by the stevedores.

**Table 3 Project operation**

| Construction phase                                                       | Key construction activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Extended quayline (BD12) and wharf area</b>                           | <p>The extended quayline would allow for the southern side of Brotherson Dock to accommodate longer ships, consistent with the longer quayline available to other stevedores operating within the port.</p> <p>The key operational components would include:</p> <ul style="list-style-type: none"> <li>• An extended BD12 wharf area within the reclaimed area along and behind the extended quayline</li> <li>• A hardstand area around 5.3 hectares in area, composed of the reclaimed area (4 hectares) and suspended deck (1.3 hectares)</li> <li>• Forty-eight fenders along the BD12 quayline to absorb the impact of ships and provide secure points for vessels to tie up their mooring lines</li> <li>• Supporting services, including drainage and security.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>BLB3 to replace BLB1 including associated pipeline infrastructure</b> | <p>The new BLB3 would operate similarly to the current BLBs, but would be located further south. BLB3 would be connected to the existing pipeline network or directly into the existing bulk liquids and gas tenancies that use this berth.</p> <p>The key operational components of the BLB3 would include:</p> <ul style="list-style-type: none"> <li>• A central working platform, including (but not limited to) three marine loading arms to transfer bulk liquids from ships to shore facilities, and provision for up to five additional arms</li> <li>• Access bridges connecting shore to the central working platform to the vessels, providing vehicle and pedestrian access, as well as a pipeline corridor</li> <li>• Additional emergency egress from BLB2 to shore</li> <li>• Pipeline infrastructure including:             <ul style="list-style-type: none"> <li>– Extension of the existing bulk liquids pipeline corridor along Fishburn Road from the BLB3 pipe manifold to existing Vopak and Elgas bulk liquids storage locations</li> <li>– An additional pipeline along Fishburn Road to the existing BLB2 exchange facility, replacing the existing BLB1 bitumen pipelines</li> <li>– An additional bulk liquids exchange facility located on Fishburn Road</li> </ul> </li> <li>• Utilities including power, lighting, security, water, sewer, communications.</li> </ul> |

## 1.3 Purpose of this report

This BDAR is one of a number of technical documents that forms part of the EIS (AECOM 2025a). The purpose of this report is to assess the risks associated with terrestrial biodiversity, in response to the Secretary Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure (DPHI). These require the proponent to apply the NSW BAM (DPIE 2020) to the Project, and assess the potential impacts on biodiversity. Specifically, the BDAR will:

- Address the BAM (DPIE 2020) and the Biodiversity Offset Scheme (BOS).
- Identify how the proponent has avoided and minimised impacts to biodiversity.

- Identify any potential impacts that could be characterised as serious and irreversible.
- Describe the offset obligations required to compensate for any unavoidable biodiversity impacts resulting from the Project.
- Consider and assess the Project in accordance with other relevant legislation such as the Commonwealth EPBC Act the NSW BC Act.

## 1.4 Legislative requirements

The Project has been assessed against relevant biodiversity legislation and government policy, including:

- *Environment Protection and Biodiversity Conservation Act 1999.*
- *Environmental Planning and Assessment Act 1979.*
- *Biodiversity Conservation Act 2016.*
- *Fisheries Management Act 1994.*
- *Biosecurity Act 2015.*
- Relevant State Environmental Planning Policies (SEPPs):
  - *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP).
  - *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity and Conservation SEPP).
- *Randwick Development Control Plan 2016* (Randwick DCP).
- *Randwick Local Environmental Plan 2012* (Randwick LEP).
- *Bayside Local Environmental Plan 2021* (Bayside LEP).
- *Bayside Development Control Plan 2022* (Bayside DCP).

A key objective of this BDAR is to address the requirements of the BAM, as identified in the SEARs, issued by the relevant regulatory authorities. The SEARs for the Project are summarised below in Table 4.

**Table 4 Summary of SEARs**

| Biodiversity requirements                                                                                                                                                                                                                                                     | Relevant section                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SEARS</b>                                                                                                                                                                                                                                                                  |                                                                                                                                                     |
| <i>Provide a Biodiversity Development Assessment Report (BDAR) that assess biodiversity impacts in accordance with s7.9 of the BC Act and the Biodiversity Assessment Method 2020 (BAM), unless a BDAR Waiver has been granted.</i>                                           | This BDAR (entire document).                                                                                                                        |
| <i>The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM</i>                                                                                          | Section 5 (Avoid and minimise impacts)<br>Section 6 (Impacts that are unable to be avoided)                                                         |
| <i>Provide a threatened aquatic species assessment (under Parts 7 and 7A of Fisheries Management Act 1994 (FM Act)) to address whether there are likely to be any significant impact on threatened species, populations or ecological communities listed under the FM Act</i> | Section 11.4 ( <i>Fisheries Management Act 1994</i> )<br>Also refer to the Marine Ecology Report (Stantec 2025a) for assessment of aquatic species. |
| <i>Identify whether the Project, or any component of the Project, would be classified as a Key Threatening Process (KTP) in accordance with</i>                                                                                                                               | Section 11.3 ( <i>Biodiversity Conservation Act 2016</i> )<br>Appendix 5 (EPBC Act Significant Impact Criteria assessments)                         |

| Biodiversity requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Relevant section                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>the listings in the Biodiversity Conservation Act 2016 (BC Act), FM Act and EPBC Act</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Also refer to the Marine Ecology Report (Stantec 2025a) for assessment of aquatic species.                                                                                                                                                                                                               |
| <i>Identify any risks associated with translocation of aquatic species and marine pests as a result of carrying out the Project (including importing marine pest species to the site)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer to the Marine Ecology Report (Stantec 2025a) for assessment of aquatic and marine species.                                                                                                                                                                                                         |
| <i>Assess the impacts of the Project on protected and sensitive lands, including, but not limited to the following:</i><br><i>(a) land defined as a “coastal environment area” under the State Environmental Planning Policy (Resilience and Hazards) 2021</i><br><i>(b) waterfront land as defined in the Water Management Act 2000</i><br><i>(c) protected areas (including land and water) managed by NSW DCCEW and / or</i><br><i>DPIRD Fisheries under the NPW Act and the Marine Estate Management Act 2014</i><br><i>(d) Key Fish Habitat as mapped and defined in accordance with the FM Act</i><br><i>(e) land or waters identified as Critical Habitat under the FM Act or EPBC Act or areas of outstanding biodiversity value under the BC Act</i><br><i>(f) biodiversity stewardship sites, private conservation lands and other lands identified as offsets safe public access to coastal areas, beaches, headlands and foreshores, or any sensitive lands.</i> | Section 11.2.1 ( <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> )<br>Section 11.4 ( <i>Fisheries Management Act 1994</i> )<br>Section 11.5 ( <i>Water Management Act 2000</i> ).<br>Also refer to the Marine Ecology Report (Stantec 2025a) for assessment of aquatic species. |

## 1.5 The Subject Land, Project Area and Assessment Area

The terms subject land, project area and assessment area are used throughout this BDAR and are defined below and shown on Figure 1-3.

- The subject land is located within the Randwick and Bayside Local Government Areas (LGAs) and the Greater Sydney Local Land Services (LLS) Region and is zoned as SP1 (Special Activities) and under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*. The subject land is the same as the “Project Area,” as shown on Figure 1-1, with an added 20 metre buffer to allow comprehensive collection of ecological data beyond the immediate footprint.
- The assessment area includes the subject land and the area of land within a 1,500 metre buffer zone surrounding the subject land, as required under the BAM.
- The Project Area comprises the area of direct impact associated with the project (i.e., the development footprint).

## 1.6 Sources of information

Sources of information used in the assessment included relevant databases, spatial data, literature and previous site reports.

In order to provide a context for the assessment area, records of flora and fauna from within 5 kilometres (the locality) were collated from the following databases and datasets were reviewed:

- Australian Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEW) Protected Matters Search Tool (PMST) for matters protected by the EPBC Act.



- NSW BioNet - the database for the Atlas of NSW Wildlife, NSW Department of Climate Change, Energy, the Environment and Water, for species, populations and ecological communities listed under the BC Act.
- NSW BAM Calculator (BAM-C).
- Biodiversity values (BV) map (NSW DCCEEW 2025a).
- Native vegetation regulatory (NVR) map.
- BAM important areas maps (NSW DCCEEW 2024a).
- PlantNET (The Royal Botanic Gardens and Domain Trust).
- BirdLife Australia, the New Atlas of Australian Birds 1998-2015.

Other sources of biodiversity information relevant to the assessment area were sourced from:

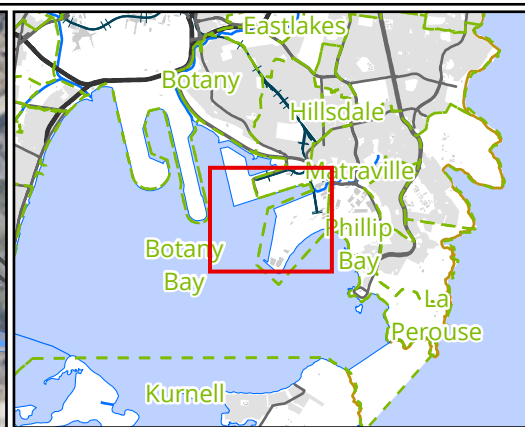
- The NSW PCTs as held within the BioNet Vegetation Classification database (NSW DCCEEW 2024b).
- Relevant vegetation mapping including the NSW State Vegetation Type map (NSW DCCEEW 2024c).

Basemap data was obtained from NSW Land and property information (LPI) 1:25,000 digital topographic databases (DTDB), with cadastral data obtained from LPI digital cadastral database (DCDB).

The following spatial datasets were utilised during the development of this report:

- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.
- Interim Biogeographic Regionalisation of Australia (IBRA) Version 7.
- Directory of Important Wetlands (DoIW).
- NSW Soil and Land Information System (SALIS).
- Mapping has been produced using a Geographic Information System (GIS). The following maps and data have been provided:
  - Digital mapping with aerial photography showing 1:1000 or finer.
  - Site map as described in subsection 3.1.1 of the BAM (DPIE 2020).
  - Location map as described in subsection 3.1.2 of the BAM (DPIE 2020).
  - Landscape map with features including 1,500 metre buffer, as described in section 3.1.3 of the BAM (DPIE 2020).





**Legend**

- Subject land
- Project area

**Figure 1-3 Subject land**

0 100 200 300

Metres

Scale: 1:8,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

**biosis**

APEM Group



## 2 Landscape context

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This chapter describes the landscape and site context, specifically, the landscape features present within the subject land and the assessment area, as required by the BAM (DPIE 2020). Figure 1-3 shows the location of the subject land and landscape features within the assessment area.

### 2.1 Subject land description

The subject land is located at Port Botany and occurs within both the Randwick and Bayside LGAs. The subject land lies within a highly industrialised and coastal environment, primarily encompassing marine infrastructure and port operations. The subject land is bordered by significant container handling facilities to the north (Hutchison and Patrick container operations), and the south (DP World container operations) of Brotherson Dock. The subject land also adjoins two Bulk Liquids Berths to the south, which are specialised facilities for the import and export of liquid bulk commodities. This spatial arrangement situates the subject land within a complex, multi-use maritime precinct integral to Sydney's commercial port operations.

Historically, the Port Botany precinct has been extensively developed for maritime and shipping activities since the mid-20th century. The subject land and surrounding land have predominantly supported bulk cargo handling, container storage, and associated industrial uses. This long-term industrialisation has resulted in significant modification of the natural landscape, with large portions of the original coastal and wetland environments replaced by wharves, shipping terminals, roads, storage yards, and port-related facilities. More broadly, Sydney (Kingsford Smith) Airport and multiple flight paths occur over Port Botany. Overall, this area has been extensively modified through land reclamation, shipping and freight operations, and aviation activities, establishing it as one of Australia's busiest transport and industrial hubs. Further information on the historical context of the subject land is provided below in Section 2.1.1.

Within the subject land, no native vegetation remains due to the historic and ongoing industrial land uses. Vegetation present is limited to scattered patches of exotic weeds, regrowth species, and maintained lawns, typically found in marginal areas adjacent to infrastructure or access roads. No freshwater waterways or natural riparian features are present within the subject land. However, the subject land encompasses part of the oceanic and estuary environments, including dock waters and navigation channels that provide access for commercial vessels. These marine waters form a significant element of the landscape and are integral to the operational functions of the port. The built environment dominates the landscape, with large concrete wharves, shipping container yards, cranes, warehouses, and heavy industrial equipment forming the primary physical features. These elements support the active commercial and maritime functions of Port Botany, reflecting the highly modified and engineered nature of the subject land and its immediate surrounds.

Additionally, Penrhyn Estuary is a small tidal estuary located on the northern shoreline of Botany Bay, immediately adjacent to Port Botany. It lies at the eastern end of the port precinct, bounded by the airport runways to the north and container terminals to the west, forming part of the highly modified coastal landscape shaped by port development and land reclamation. Despite its proximity to intensive industrial activity, the estuary has been retained and managed as an important habitat for migratory shorebirds and other estuarine species. The subject land is subject to established airborne noise and vibration from port operations and nearby flight paths, with operational cranes and equipment visible across the site, forming part of the existing environmental context.

The subject land lies within the:

- Sydney Basin Bioregion.
- Sydney Coast-Georges River Basin (Georges River catchment).
- Greater Sydney Local Land Services Management Area.

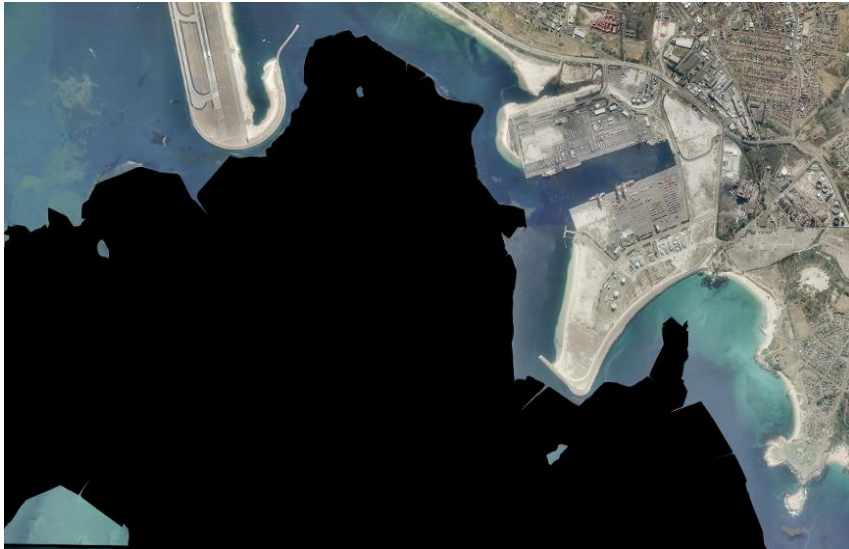
### 2.1.1 Historical context

Review of historical aerial imagery provides critical context for interpreting the biodiversity values of the subject land. Imagery from 1971 indicates that the existing Port Botany shipping yards and associated reclaimed land did not exist at that time, with the location of the subject land comprising open water, intertidal flats, and dredged areas of Botany Bay. The progressive landform and land use changes over time are illustrated in Photo 2-1 to Photo 2-4 below, which have been exported from the NSW *Historical Imagery Viewer* (NSW Spatial Services 2025). Progressive reclamation works and associated port infrastructure development occurred through the late 1970s and early 1980s, resulting in the complete infilling and construction of hardstand surfaces across the current site. These activities removed any pre-existing natural substrates, eliminated native vegetation, and displaced any terrestrial fauna habitat that may have occurred in the broader area prior to reclamation.

Given this disturbance history, any vegetation present on the subject land is the result of recent colonisation by exotic or disturbance-tolerant native species or is the product of intentional landscaping. As such, the subject land does not support remnant native vegetation communities. This historical context is a key consideration when assessing the potential for the subject land to support habitat for threatened species.



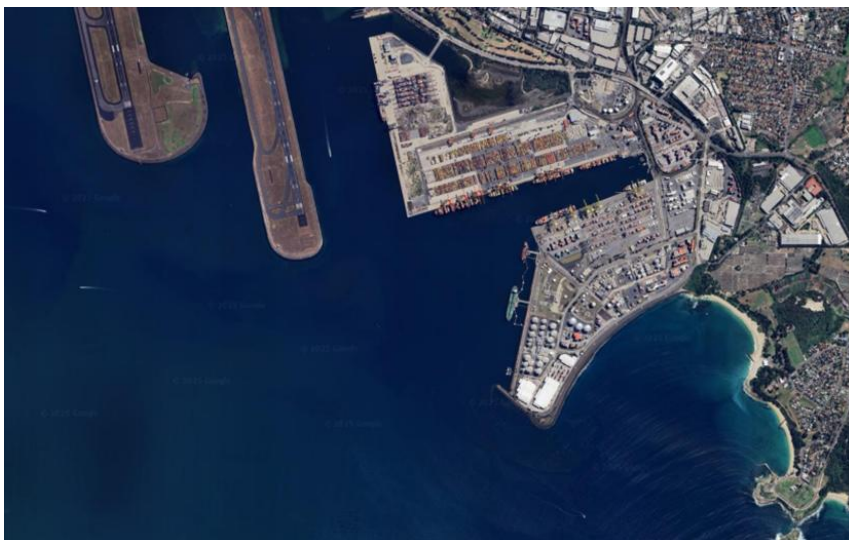
**Photo 2-1 Port Botany in 1971**



**Photo 2-2 Port Botany in 1986**



**Photo 2-3 Port Botany in 2005**



**Photo 2-4 Port Botany in 2025**

### 2.1.2 NSW (Mitchell) Landscape

The subject land occurs within the *Sydney – Newcastle Barriers and Beaches* Mitchell Landscape. This coastal landscape comprises long, curved quartz sand beaches flanked by rocky headlands, with a network of sand dunes and intermittent lagoons. These dunes range from frontal dunes near the beach to stabilized dunes further inland, forming natural barriers against coastal erosion. Vegetation varies across this gradient, reflecting soil conditions and exposure levels. Additionally, freshwater sedge swamps and mangroves contribute to the landscape's biodiversity, enhancing its ecological significance (Mitchell 2002).

### 2.1.3 Native vegetation cover

Vegetation within the assessment area (within the 1500 metre buffer area) was assessed using aerial photographic interpretation, field survey results and existing vegetation mapping

The total area of the 1500 metre buffer around the subject land is 1,814 hectares, with the area of native vegetation mapped within the buffer being 37.61 hectares (Figure 2-3). This is a native vegetation cover of 2.07% (rounded to 2.10%) (within the 0–10% class as defined in Section 3.2.3 of the BAM (DPIE 2020))) and this value was entered into the BAM calculator.

### 2.1.4 IBRA Bioregions and subregions

The assessment area occurs within the Sydney Basin IBRA bioregion and the Pittwater IBRA subregion. The Sydney Basin bioregion lies on the central east coast of NSW and covers an area of approximately 3,624,008 ha. It occupies about 4.53% of NSW and is one of two bioregions contained wholly within the state. The bioregion extends from just north of Batemans Bay to Nelson Bay on the central coast, and almost as far west as Mudgee. The bioregion is bordered to the north by the North Coast and Brigalow Belt South bioregions, to the south by the South East Corner Bioregion and to the west by the South Eastern Highlands and South Western Slopes bioregions. The Sydney Basin Bioregion is one of the most species diverse in Australia. This is a result of the variety of rock types, topography and climates in the bioregion (OEH 2016).

### 2.1.5 Waterways

The subject land is located within the Greater Sydney LLS region and the Georges River catchment. The nearest river mouth is the Georges River, located approximately 7 km to the south-west of the subject land, discharging into the western side of Botany Bay. The closest major waterbody is Botany Bay itself, which directly adjoins the subject land to the north, south, and west. There are no freshwater watercourses or tributaries originating from, or passing through, the subject land.

The subject land is entirely within a coastal marine setting, dominated by estuarine and oceanic environments. Marine habitats in proximity to the subject landform part of a broader mosaic of natural and modified features within Botany Bay, including Port Botany, Yarra Bay, Foreshore Beach, Bare Island, La Perouse Point, and the channel downstream of Penrhyn Estuary. These environments support a range of aquatic habitats, including extensive areas of unconsolidated soft sediment. These areas are classified as Type 3 Key Fish Habitat (KFH) on the *Fisheries NSW Spatial Data Portal* (DPI 2025).

Further detail on the marine ecology, habitat distribution, and potential environmental sensitivities associated with these waterways is provided in the Marine Ecology Report (Stantec 2025a), which should be read in conjunction with this BDAR.



### 2.1.6 Wetlands

The Towra Point Nature Reserve, which contains the Towra Point Estuarine Wetlands, is located 3.2 kilometres, to the south west of the subject land (Figure 2-1). This reserve and its wetlands is included in the DoI of Australia (Cth DCCEEW 2019) for the following reasons:

- It is a good example of a wetland type occurring within a biogeographic region in Australia.
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles or provides a refuge when adverse conditions such as drought prevail.
- The wetland supports 1% or more of the national populations of any native plant or animal taxa.
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level.
- The wetland is of outstanding historical or cultural significance.

Towra Point Estuarine Wetlands is listed as a Ramsar wetland, recognising its international importance. Ramsar wetlands are those that are representative, rare or unique, or that play a critical role in conserving biodiversity. Towra Point was listed on the Ramsar Register of Wetlands of International Importance for the following reasons:

- Criterion 2: Threatened species or ecological communities.
- Criterion 3: Populations of plants and/or animals important for maintaining biodiversity of a particular bioregion.
- Criterion 4: Supports species at a critical stage of their life cycle or provides refuge in adverse conditions.
- Criterion 8: Food source, nursery, or migration path for fish.

The subject land is completely separated from the Towra Point Wetland by open marine waters, with no shared ecological corridors linking the two areas. Given this geographic separation and the intervening marine environment, the proposed works will not result in any direct or indirect impacts. Mention of this wetland in this report is provided for contextual purposes only, and it does not form part of the area potentially affected by the proposal.

Penrhyn Estuary, although small and highly modified, supports important biodiversity values within the Port Botany landscape. It provides critical foraging and roosting habitat for a range of migratory shorebirds protected under international agreements such as the Japan–Australia Migratory Bird Agreement (JAMBA), the China–Australia Migratory Bird Agreement (CAMBA), and the Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA), as well as the EPBC Act. Species recorded include the Bar-tailed Godwit, Red-necked Stint, Curlew Sandpiper, and Pacific Golden Plover. The estuary's intertidal mudflats and shallow waters support invertebrate communities that provide key food resources for these shorebirds, while saltmarsh and mangrove fringes contribute additional ecological diversity. Restoration and management works undertaken as part of the Port Botany expansion have enhanced the estuary's capacity to sustain these values, with programs for vegetation management, predator control, and monitoring of bird usage. In this context, Penrhyn Estuary functions as a highly valuable remnant habitat patch within an otherwise industrialised coastal precinct, serving as a refuge for migratory and resident shorebirds and helping to maintain ecological connectivity across Botany Bay.

### 2.1.7 Geological features of significance

There were no recorded karst, caves, crevices, cliffs, or other areas of geological significance within the subject land.

### 2.1.8 Areas of outstanding biodiversity value

There are no areas of outstanding biodiversity value (AOBV) mapped within the subject land (NSW DCCEEW 2024d). The closest AOBV is the '*Endangered Population of Little Penguins at Manly*' that occurs over 30 kilometres north of the subject land, in the coastal areas of Manly (Cannae Point).

Little Penguins are marine, foraging seabirds and are known to range and feed throughout Sydney Harbour and adjacent coastal waters (sightings have been reported around Botany Bay), however breeding colonies are restricted to specific island and mainland sites (for example Manly). Their presence in local waters does not imply breeding or roosting habitat is present at Port Botany.

While individual Little Penguins may transit or forage through Botany Bay waters, there is no documented breeding colony within the Port Botany lease area and no feasible pathway by which the proposed works would cause direct loss of breeding habitat or measurable population-level effects on the Manly endangered population. For further details on marine habitat sensitivities, and recommendations, refer to the Marine Ecology Report (Stantec 2025a).

### 2.1.9 Mapped Important Areas

Areas of mapped Important Habitat for shorebirds, specifically the Bar-tailed Godwit *Limosa lapponica* and Eastern Curlew *Numenius madagascariensis*, are present within the marine areas of the subject land (Figure 4-2).

However, these mapped 'important' areas occur entirely as open water zones. Dredging of Brotherson Dock and construction of associated infrastructure occurs within these marine areas, but will not affect terrestrial vegetation or terrestrial habitat used by threatened species. The Bar-tailed Godwit and Eastern Curlew are dependent on undisturbed intertidal mudflats, sandflats, and shallow waters for feeding, as well as coastal roosting sites, none of which will be impacted by the Project. As such, the Project will not result in any measurable reduction in the availability, quality, or accessibility of breeding or foraging habitat for either species. Potential habitats for these species are discussed further in Section 4 of this BDAR.

It is important to note that the Eastern Curlew is a species potentially subject to Serious and Irreversible Impacts (SAIL). This matter is addressed further in Section 8 of this BDAR.

### 2.1.10 Connectivity

The subject land is situated within a highly modified industrial and marine environment with limited direct connectivity to terrestrial natural habitats. The most significant faunal connectivity associated with the subject land relates to highly mobile shorebirds. While the subject land itself does not provide suitable foraging or roosting habitat due to extensive port infrastructure and lack of native vegetation, shorebirds are expected to move regularly between key habitats such as the Towra Point Wetland on the southern side of the Bay and the Penrhyn Estuary located to the north of the subject land. Penrhyn Estuary is a significant shorebird habitat and likely serves as a primary source and recipient of shorebird movements in the northern Botany Bay area.

Sydney (Kingsford Smith) Airport, located north of Botany Bay, would also likely influence local fauna movement patterns. Flight paths and associated aircraft operations may deter persistent roosting or congregation of birds near flight corridors. However, while these aviation activities can alter the behaviour of some species, they do not create direct barriers to the highly mobile shorebird populations that transit across Botany Bay waters.

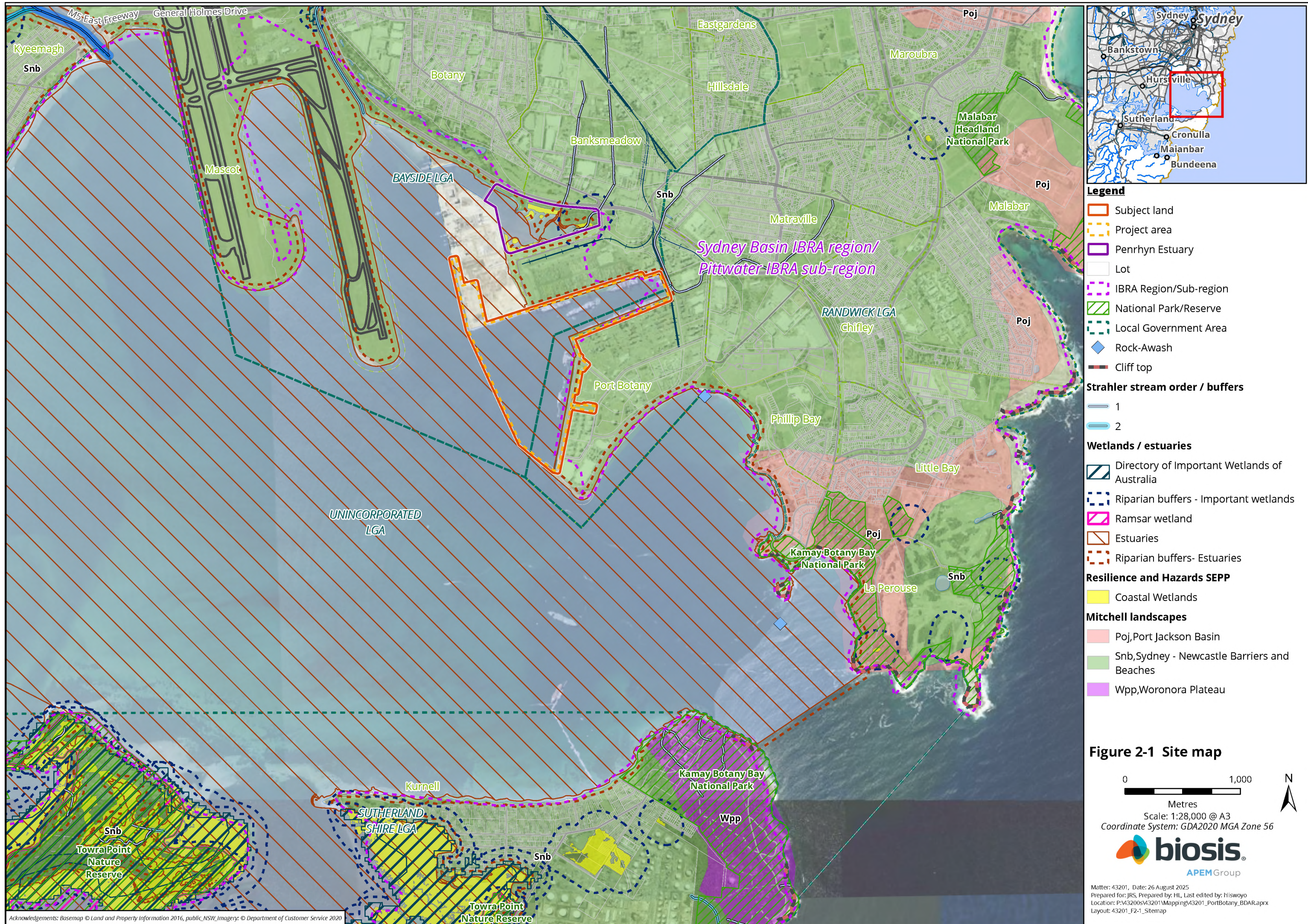
To the north of the subject land also lies a riparian corridor (Mills Stream) which may provide some movement pathways for fauna. However, this corridor is not directly connected to the subject land and is separated by infrastructure and industrial land uses, limiting its function as a connectivity link for terrestrial fauna.

Connectivity areas and potential fauna movement corridors are displayed on Figure 2-3.

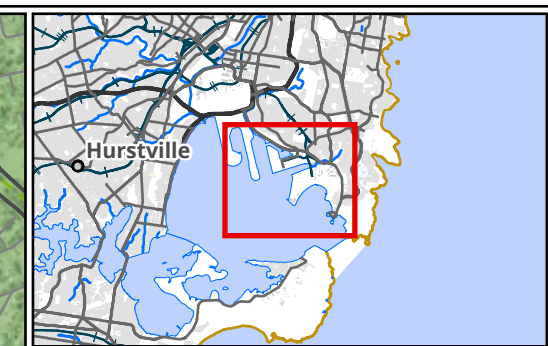
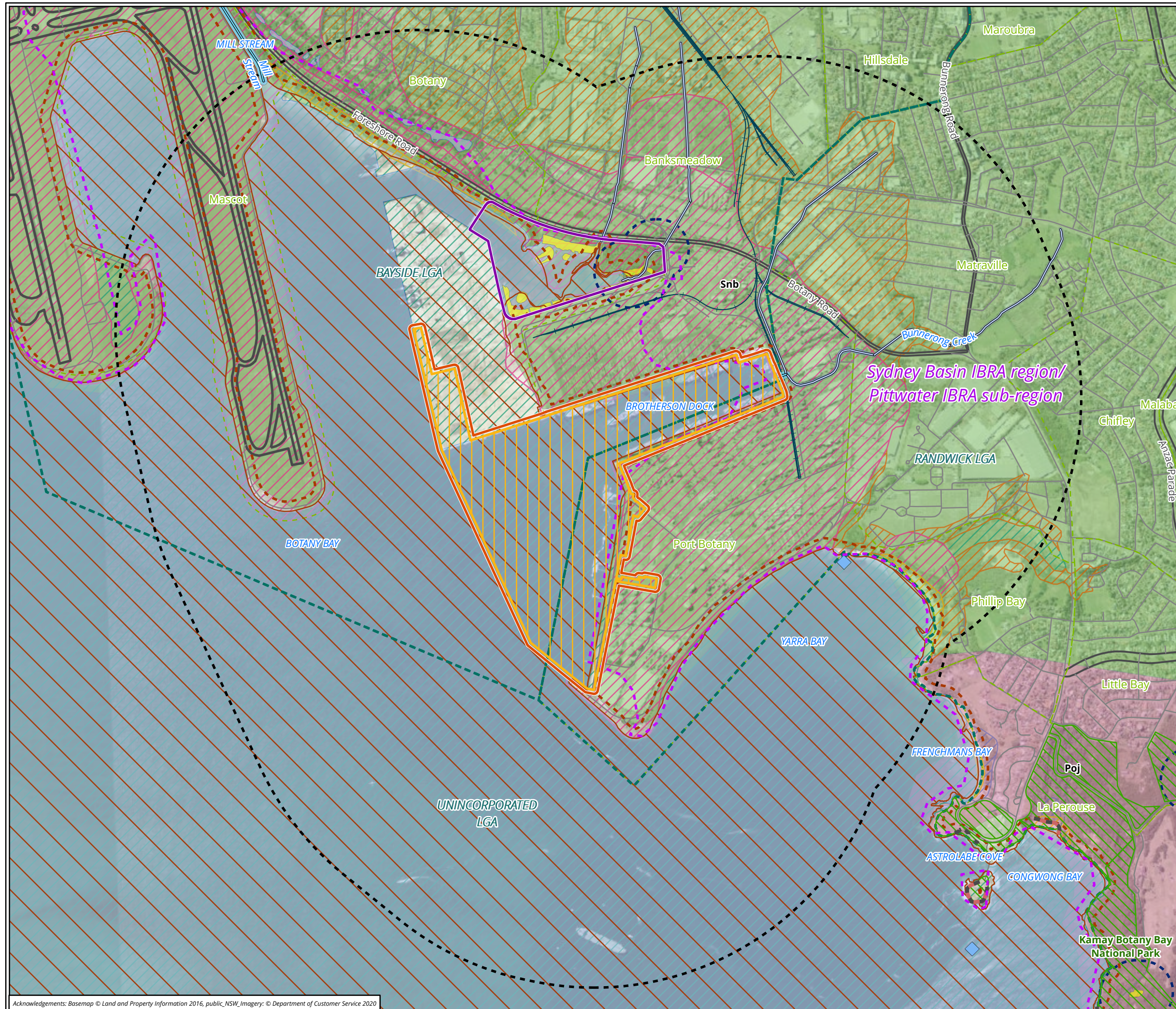
### **2.1.11 Additional landscape features**

Within the wider Botany Bay system, Penrhyn Estuary represents an area of notable biodiversity value. Situated approximately 350 metres to the north of the subject land (at its closest point), the estuary contains intertidal mudflats and coastal saltmarsh, which supports a range of resident and migratory shorebirds. While geographically separated from the subject land, the estuary contributes to the overall ecological character of the Port Botany foreshore and forms part of the broader environmental context in which the proposed works are situated.

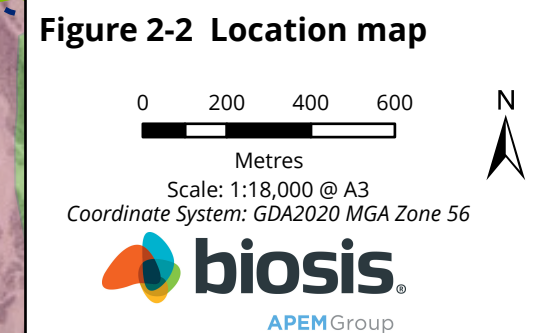






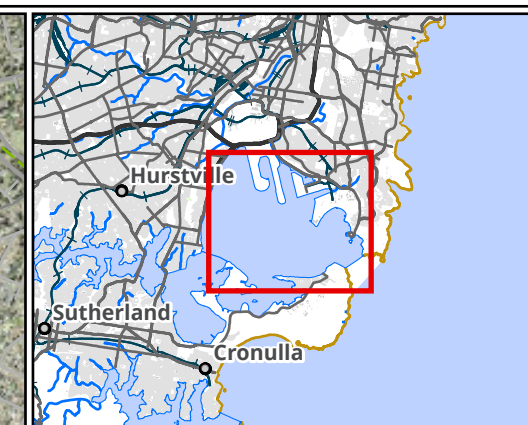


- Legend**
- Subject land
  - Project area
  - Assessment area
  - IBRA Region/Sub-region
  - National Park/Reserve
  - Penrhyn Estuary
- Distinctive Land Surface**
- Rock-Awash
  - Cliff top
- Wetlands /estuaries**
- Riparian buffers - Important wetlands
  - Riparian buffer - Estuaries
  - Estuaries
- Resilience and Hazards SEPP**
- Coastal Wetlands
- Strahler stream order / buffers**
- 1
  - 2
- Mitchell landscapes**
- Poj, Port Jackson Basin
  - Snb, Sydney - Newcastle Barriers and Beaches
- Acid sulfate soil hazard**
- High probability of occurrence
  - Low probability of occurrence
  - No known occurrence
  - Disturbed Terrain
  - Beach



Matter: 43201, Date: 26 August 2025  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F2-2\_Location

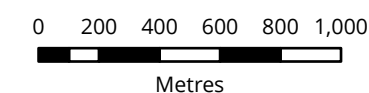




#### Legend

- Subject land
- Project area
- Assessment area
- Habitat connectivity
- Native vegetation

**Figure 2-3 Native vegetation extent**



Scale: 1:25,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56



Matter: 43201, Date: 10 September 2025  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F2-4\_NativeVeg



## 3 Native vegetation

---

The subject land does not support any terrestrial vegetation that is native to NSW. Vegetation within the subject land is limited to isolated patches of exotic weeds, introduced grasses, and landscaped species associated with managed green spaces within the port precinct. The subject land is predominantly comprised of built infrastructure, hardstand areas, dredged marine environments, and engineered shoreline features.

The subject land occurs within a marine and heavily industrialised port setting, bounded by shipping terminals, container yards, and maritime infrastructure. Vegetation composition is largely dominated by anthropogenic plantings and opportunistic exotic species adapted to disturbed and modified soils typical of port operational areas. Due to the industrial nature of the subject land, vegetation condition is uniformly poor, lacking structural complexity, native species diversity, or habitat values associated with natural environments. The nearest extensive native vegetation occurs outside the immediate vicinity of the subject land, including in Penrhyn Estuary, which support native coastal wetlands and saltmarsh habitats.

### 3.1 Native vegetation and habitat assessment

#### 3.1.1 Native vegetation extent

The extent of native vegetation, threatened ecological communities, and vegetation integrity within the subject land was determined using the results of field investigations and Section 4 of the BAM (DPIE 2020).

Figure 2-3 provides a map of the native vegetation extent recorded within the subject land as assessed during field investigations undertaken in August 2025. The figure includes all areas of vegetation within the subject land. Areas not shown as native vegetation cover within Figure 2-3 are considered as 'cleared' and are addressed further below.

#### 3.1.2 Review of existing information

Existing information regarding native vegetation was reviewed to inform field investigations including:

- NSW *State Vegetation Type Map* (NSW DCCEEW 2024c).
- Existing ecological site reports including:
  - Port Botany Quayline Equalisation Project - Marine Ecology Report (Stantec 2025a).
  - Port Botany Quayline Equalisation Project - BDAR Waiver (Stantec 2025b).

Based on the results of the background review and the requirements of the BAM with respect to this BDAR, appropriate surveys were designed for the subject land.

#### 3.1.3 Field investigation of biodiversity values

A systematic biodiversity assessment was conducted 6 August 2025 under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Fauna survey was conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028).

Field assessment in accordance with the BAM was carried out by Accredited Assessor Jake Schwebel (BAAS25013).

The subject land was surveyed in accordance with the BAM (DPIE 2020), which involved:

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database, with reference to information provided in the NSW State Vegetation Type Map (NSW DCCEEW 2024c).
- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020), considering varying condition states and avoidance of ecotones, areas of disturbance, and edges.
- The identification of native and exotic plant species, according to the Flora of NSW (Harden 2002, 1993, 2000, 2002) with reference to recent taxonomic changes.
- Incidental observations using the “random meander” method (Cropper 1993).
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the subject land.
- An assessment of the natural resilience of the vegetation of the subject land.
- Identifying and mapping fauna habitats (e.g., hollow-bearing trees, rock outcropping etc.), assessing their condition and value to threatened fauna species, and considering threatened species’ habitat constraints.
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings).

The conservation significance of plant species and plant communities was determined according to:

- BC Act for significance within NSW
- EPBC Act for significance within Australia.

Detailed field mapping and collection of GPS point locations were conducted using hand-held (uncorrected) tablet units (Samsung Galaxy Tab X) running the ArcGIS Field Maps application, using the inbuilt GPS, and aerial photo interpretation. Spatial locations are therefore considered to have an accuracy of generally  $\pm 5$  metres.

Areas of native vegetation for which a PCT could validly be assigned were identified and delineated in the field, and their condition determined and assigned. Identification of PCTs within the subject land was confirmed with reference to the community profile descriptors (and diagnostic species tests) held within the NSW State Vegetation Type Map (NSW DCCEEW 2024c) and NSW BioNet Vegetation Classification database (NSW DCCEEW 2024b). Locations of floristic plots surveyed are shown on Figure 3-2.

Further details of targeted survey for threatened flora and fauna species are provided in Section 4.2.1 below.

### 3.1.4 Local data

Under Section 1.4.2 of the BAM (DPIE 2020), an assessor may use local appropriate data from relevant published sources or appropriate local reference site to develop a benchmark for a PCT. The assessor may also use more appropriate local data (instead of data from the Threatened Biodiversity Data Collection [TBDC]) when assessing the habitat suitability for threatened species, as detailed in Section 5 of the BAM.

No local data has been used for either the benchmarking of PCTs or the threatened species assessment.



## 3.2 Vegetation results

The subject land supports vegetation dominated by exotic weeds, introduced grasses, and landscaped species commonly associated with the heavily modified industrial and marine port environment. No native terrestrial vegetation or ecological vegetation communities were identified within the subject land.

The vegetation present is uniformly in poor condition, reflecting extensive historical disturbance (see Section 2.1.1), landform modification, and ongoing operational activities. This vegetation largely consists of opportunistic, non-native species adapted to disturbed soils and managed landscapes.

Due to the extensive disturbance and dominance of exotic species, the vegetation present could not be reasonably assigned to any established PCT. The highly altered condition and lack of native species preclude reliable identification of a 'best-fit' PCT under current classification frameworks.

Table 5 provides detailed descriptions of the vegetation recorded within the subject land. Areas of vegetation are also displayed on Figure 3-1.

**Table 5 Urban native/exotic vegetation**

| Urban native/exotic vegetation    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Extent within subject land</b> | 4.35 ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>                | <p>Urban native/exotic vegetation within the subject land varies between two main areas. In the northern portion of the subject land, dense stands of Golden Wreath Wattle <i>Acacia saligna</i> (a Western Australian species) occur, with an understorey dominated by Pampas Grass <i>Cortaderia selloana</i>. In contrast, the southern portion of the subject land is characterised primarily by exotic grasses, with occasional scattered individuals of Golden Wreath Wattle.</p> <p>The ground layer throughout both areas frequently includes exotic grasses such as Winter Grass <i>Poa annua</i>, Panicum Veldtgrass <i>Ehrharta erecta</i>, Nutgrass <i>Cyperus rotundus</i>, Crab Grass <i>Digitaria sanguinalis</i> and Kikuyu Grass <i>Cenchrus clandestinus</i>. Various herbaceous weeds also occur, such as Lamb's Tongues <i>Plantago lanceolata</i>, Common Sowthistle <i>Sonchus oleraceus</i>, White Clover <i>Trifolium repens</i>, Mouse-ear Chickweed <i>Cerastium glomeratum</i>, Moth Vine <i>Araujia sericifera</i>, and Fireweed <i>Senecio madagascariensis</i>. The occasional presence of native Weeping Grass <i>Microlaena stipoides</i> and <i>Juncus usitatus</i> was recorded, as was a high cover of Couch <i>Cynodon dactylon</i> in restricted patches.</p> <p>Overall, the vegetation is primarily dominated by exotic and invasive species, reflecting the highly disturbed and industrial nature of the subject land. Native NSW species are primarily absent, and the vegetation provides minimal ecological value.</p> |
| <b>Survey effort</b>              | Two BAM plots (B01 and B02) were collected over the course of the field assessment (Figure 3-2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Urban native/exotic vegetation

### Photos



**Photo 3-1** Urban native / exotic vegetation in BAM plot B01



**Photo 3-2** Urban native/exotic vegetation in BAM plot B02

### 3.2.1 Threatened ecological communities

Vegetation within the subject land does not represent any listed under the NSW BC Act or the Commonwealth EPBC Act.

## 3.3 Vegetation integrity assessment

### 3.3.1 Vegetation zones and patch size class

Vegetation within the subject land was stratified based on broad condition state and species composition, resulting in the identification of a single vegetation zone classified as urban native/exotic vegetation, consistent with the framework outlined in Section 4.3 of the BAM.

The patch size class for this vegetation zone was assessed as per Section 4.3.2 of the BAM (DPIE 2020) using a select process in ArcGIS. All native vegetation with a gap of less than 100 metres from the next area of native vegetation (or  $\leq 30$  metres for non-woody ecosystems), is considered a single patch, with a patch able to extend onto adjoining land.

**Table 6** Vegetation zones within the subject land

| Vegetation zone     | Plant Community Type | BAM plots completed | Area (ha) |
|---------------------|----------------------|---------------------|-----------|
| Urban native/exotic | N/A                  | 2                   | 4.35      |

### 3.3.2 Vegetation integrity

Vegetation integrity, or condition, was assessed using data obtained from undertaking BAM plots within the vegetation zones, as per Section 4.3.4 of the BAM (DPIE 2020). Plot data was collected via:

- A 20 metre x 50 metre quadrat and 50 metre transect for assessment of site attributes and function.
- A 20 metre x 20 metre quadrat, nested within the larger quadrat for full floristic survey to determine composition and structure of the PCT.

The minimum number of BAM plots per vegetation zone was determined using Table 3 of the BAM (DPIE 2020). In total, two BAM plots have been completed within the vegetation zones present within the subject land, details are provided in Table 7 and shown on Figure 3-2.

For one plot (B01), placement was limited due to the operational nature of the subject land, which is located within an active port area containing extensive infrastructure and security fencing. Safety and access considerations restricted the area in which the plot centre line could be established, as multiple fences prevented straightforward placement. This limitation was addressed by adjusting the plot location to the closest feasible position while maintaining the plot dimensions and orientation. Despite these constraints, the data collected from plot B01 remains representative of the vegetation within that zone and provides a reliable basis for condition assessment.

**Table 7** BAM plots completed within the subject land

| BAM plot reference | Vegetation zone     |
|--------------------|---------------------|
| 43201_B01          | Urban native/exotic |
| 43201_B02          | Urban native/exotic |

One additional BAM plot (43201\_B03) was established within native vegetation in the Penrhyn Estuary, located outside the subject land boundary. This plot does not represent vegetation within the subject land, as no native vegetation was present onsite suitable for sampling. Instead, the plot was collected to provide relevant reference data on native vegetation communities in the surrounding area, which supported the threatened species assessment. The location of this plot is shown on Figure 3-2, and further details are provided in Section 4.

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database (NSW DCCEEW 2024b). A list of flora species was compiled for each BAM plot completed and is included in Appendix 3. Records of all flora species will be submitted to EES for incorporation into the Atlas of NSW Wildlife.

### 3.3.3 Vegetation integrity score

Plot data was entered into the BAM calculator to determine vegetation integrity scores for the vegetation zone present within the subject land. Typically, vegetation integrity assessments are conducted for native PCTs and involve quantitative comparisons of composition, structure, and functional attributes against



established benchmarks, as outlined in Section 4.3.3 of the BAM (DPIE 2020). These benchmarks are derived from reference sites representing each PCT and provide a standard for evaluating vegetation condition.

In the case of the current assessment, no native PCT could be confidently assigned to areas of vegetation due to its highly disturbed nature and dominance of exotic species. Consequently, the vegetation present did not meet the criteria for standard PCT-based assessment. To address this, the closest ecologically comparable PCT was selected for use as a benchmark to provide a meaningful context for vegetation integrity scoring. The selected PCT was PCT 3806 *Sydney Coastal Sand Mantle Heath*, which is locally mapped (NSW DCCEEW 2024c) as occurring in the nearby Penrhyn Estuary. This selection is strictly for the purpose of providing a relevant reference against which the condition of the highly modified vegetation could be assessed.

This choice was justified on the basis that the vegetation within the subject land, although highly modified, exhibited soil and environmental characteristics broadly consistent with sandy substrate conditions typical of PCT 3806. It is important to emphasise that the vegetation within the subject land does not correspond to the ecological values or species composition of PCT 3806. Using this reference provided a relevant framework for assessing vegetation integrity despite the absence of native vegetation within the subject land. This approach aligns with BAM guidance that allows the use of local reference data or published benchmarks where direct PCT assignment is not possible. It is also worth noting that the high cover of Couch grass in plot B01 has inflated the VI score slightly as this species is treated as native.

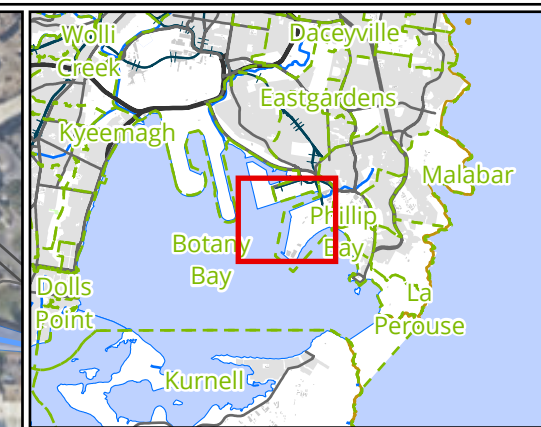
Further details of the plot data and vegetation integrity scores are presented in Appendix 3, with vegetation integrity scores for each vegetation zones provided in Table 8.

**Table 8**      **Vegetation zone integrity scores**

| Vegetation zone     | Composition score | Structure score | Function score | VI score* |
|---------------------|-------------------|-----------------|----------------|-----------|
| Urban native/exotic | 11.6              | 10.3            | 22.5           | 13.9      |

\*Benchmark (pristine) condition vegetation would receive a VI score of 100.





**Legend**

Subject land

Project area

**Vegetation communities - Biosis**

Urban Native/Exotic

**Figure 3-1 Vegetation within the subject land**

0 100 200 300

Metres

Scale: 1:8,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

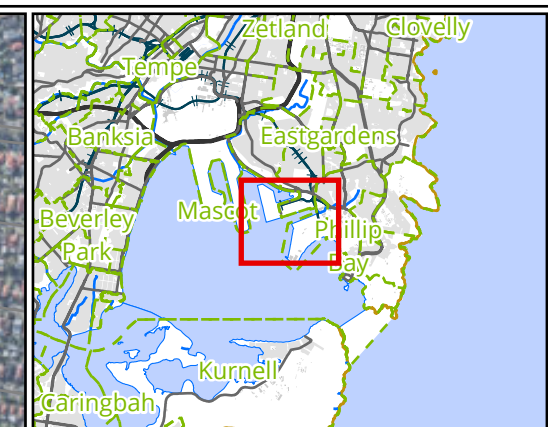
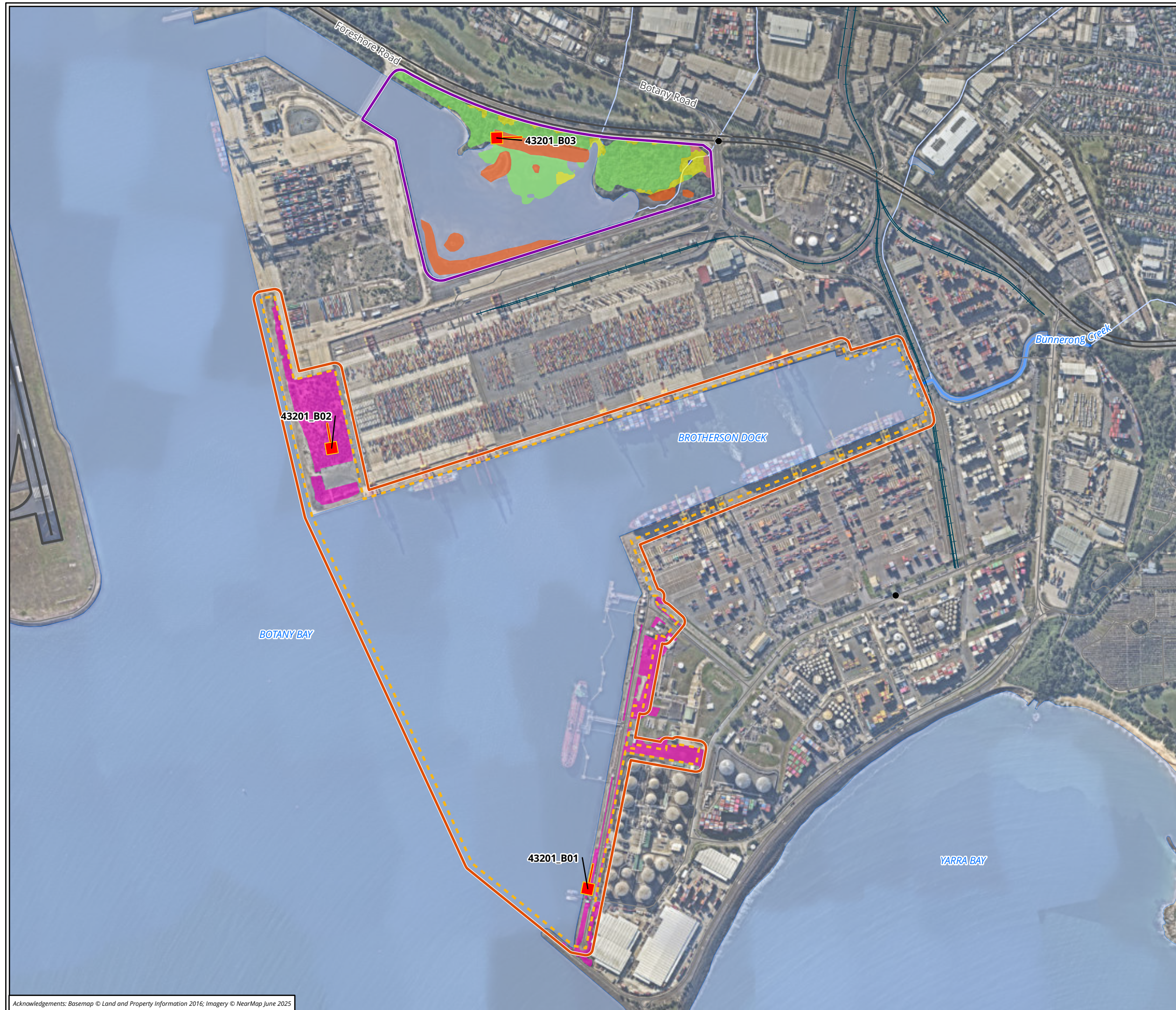
N

 **biosis**

APEM Group

Matter: 43201, Date: 21 August 2025  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F3-1\_BiosisVeg





**Legend**

- Subject land
- Project area
- Penrhyn Estuary
- BAM plot

**Vegetation zones - Biosis**

- Urban Native/Exotic
- 4097

**Vegetation zones - SVTM**

- 3806
- 3972
- 4097

Figure 3-2 Vegetation zones and plot locations

0 100 200 300 400 Metres

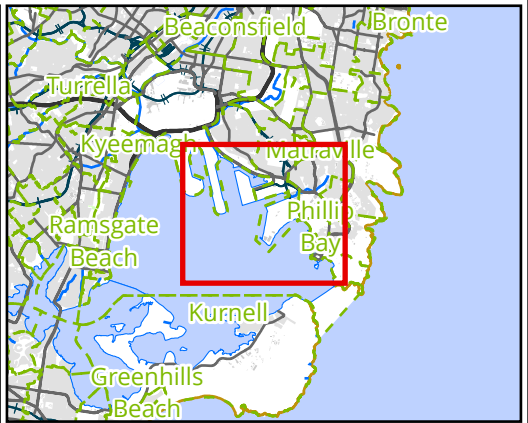
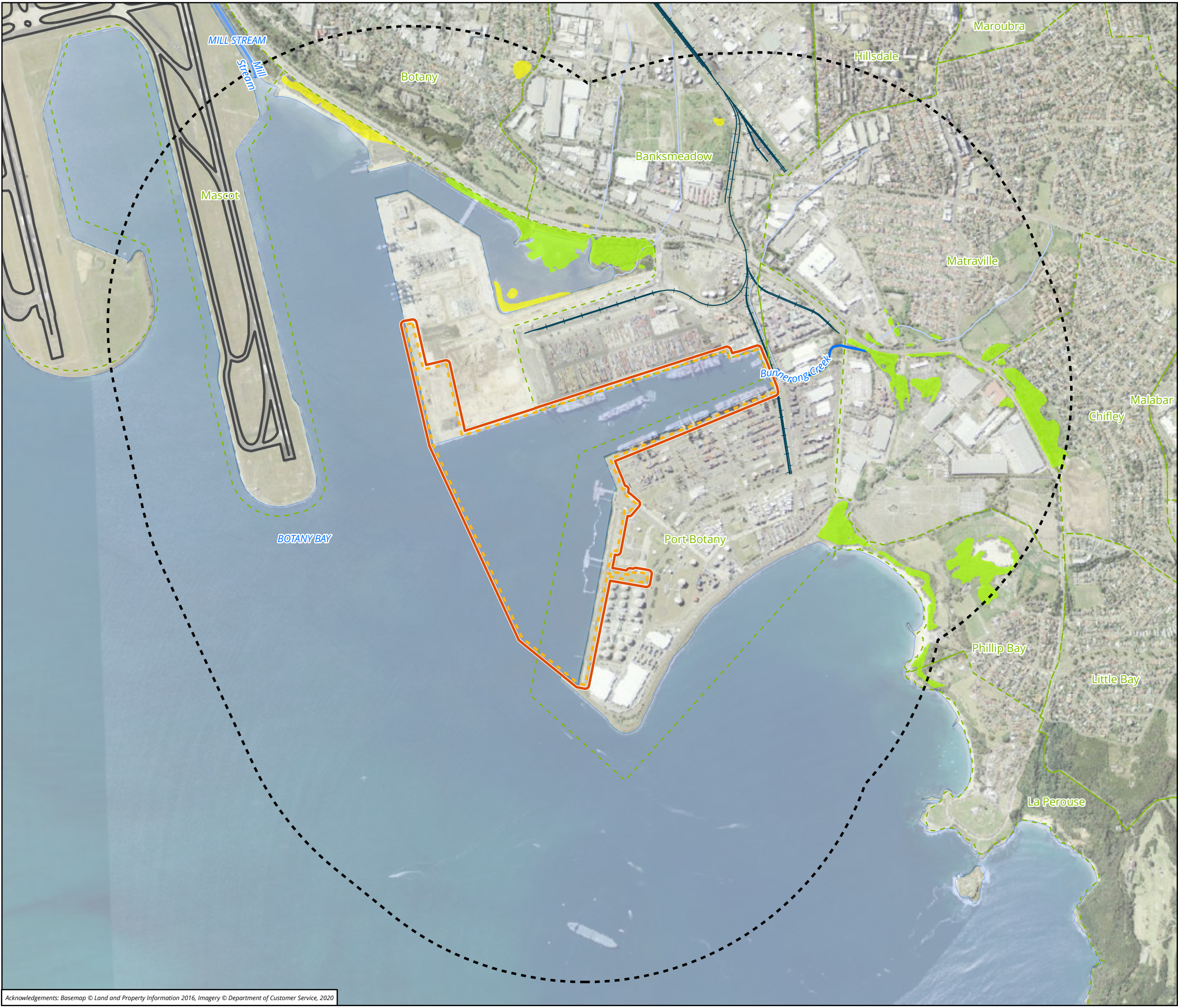
Scale: 1:10,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

**biosis**  
APEM Group

Matter: 43201,  
Date: 21 August 2025,  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.mxd





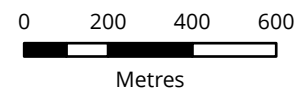
**Legend**

- Subject land
- Project area
- Assessment area

**Patch sizes**

- <5ha (PCT 3806, PCT 4097)
- 5 ha - <25 ha (PCT 3410, PCT 3545, PCT 3546, PCT 3805, PCT 3806, PCT 3810, PCT 3972, PCT 4097)

**Figure 3-3 Patch size locations**



Scale: 1:18,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56



Matter: 43201, Date: 26 August 2025  
Prepared for: JRS, Prepared by: HL Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F3-3\_PatchSize



## 4 Threatened species

---

This section details the assessment of threatened species in accordance with Section 5 of the BAM (DPIE 2020). The purpose of this assessment is to identify and evaluate species that may be present or impacted by the Project, based on habitat suitability and relevant vegetation data.

The identification of threatened species requiring assessment is typically based on habitat suitability derived from native PCTs mapped on the subject land and entered into the BAM-C. In the case of the current assessment, no native PCT could be confidently assigned within the subject land due to the absence of NSW native vegetation and the dominance of highly disturbed exotic species, widely cultivated native species and urban plant communities. Therefore, an alternative approach was adopted involving a desktop review of native vegetation communities occurring in the broader landscape surrounding the subject land, specifically within the adjacent Penrhyn Estuary. This review identified two relevant PCTs present in nearby native vegetation within the Penrhyn Estuary, including:

- PCT 3806 Sydney Coastal Sand Mantle Heath.
- PCT 4097 Samphire Saltmarsh.

To inform the threatened species assessment, one BAM plot (43201\_B03) was collected within PCT 4097 in the Penrhyn Estuary. This plot provided site-specific data to accurately characterise the vegetation condition for this community. Conversely, no BAM plots were completed within PCT 3806 due to access limitations within that vegetation zone. Therefore, benchmark condition data for PCT 3806 obtained from BioNet have been used.

Both the locally collected plot data for PCT 4097 and the benchmark condition data for PCT 3806 were entered into the BAM-C to generate a list of threatened species to be considered for assessment. A conservative native vegetation cover score of greater than 70% was also applied in the BAM-C to ensure that no species were excluded from consideration due to low vegetation cover thresholds. The species identified through this method have been further assessed in Section 4.1 (ecosystem credit species) and Section 4.2 (species credit species) below.

### 4.1 Ecosystem credit species

A list of predicted ecosystem credit species potentially occurring within the broader landscape surrounding the subject land was generated using the methodology described above and in accordance with Section 5 of the BAM (DPIE 2020).

Given the absence of native vegetation and assigned PCTs within the subject land itself, these species are assumed to be present based on habitat suitability in adjacent native vegetation communities, particularly those identified within the nearby Penrhyn Estuary.

Impacts to these species require assessment under the BAM, however targeted survey is not required as these species are assumed to occur, based on the occurrence of the PCTs, habitat constraints, native vegetation cover in the landscape and calculated patch sizes. These species are identified as ecosystem credit species in the Threatened Biodiversity Data Collection (TBDC). Table 9 lists the ecosystem credit species generated by the BAM-C.

These species were considered when prescribing management and mitigation measures for the Project.



**Table 9 Ecosystem credit species (predicted species) with potential to occur**

| Common name                         | Scientific name                        |
|-------------------------------------|----------------------------------------|
| Australasian Bittern                | <i>Botaurus poiciloptilus</i>          |
| Australian Painted Snipe            | <i>Rostratula australis</i>            |
| Bar-tailed Godwit (baueri)          | <i>Limosa lapponica baueri</i>         |
| Beach Stone-curlew                  | <i>Esacus magnirostris</i>             |
| Black Bittern                       | <i>Ixobrychus flavicollis</i>          |
| Black-tailed Godwit                 | <i>Limosa limosa</i>                   |
| Curlew Sandpiper                    | <i>Calidris ferruginea</i>             |
| Dusky Woodswallow                   | <i>Artamus cyanopterus cyanopterus</i> |
| Eastern Chestnut Mouse              | <i>Pseudomys gracilicaudatus</i>       |
| Eastern Coastal Free-tailed Bat     | <i>Micronomus norfolkensis</i>         |
| Eastern Curlew                      | <i>Numenius madagascariensis</i>       |
| Eastern Grass Owl                   | <i>Tyto longimembris</i>               |
| Eastern Osprey                      | <i>Pandion cristatus</i>               |
| Gang-gang Cockatoo                  | <i>Callocephalon fimbriatum</i>        |
| Great Knot                          | <i>Calidris tenuirostris</i>           |
| Greater Sand-plover                 | <i>Charadrius leschenaultii</i>        |
| Grey-headed Flying-fox              | <i>Pteropus poliocephalus</i>          |
| Large Bent-winged Bat               | <i>Miniopterus orianae oceanensis</i>  |
| Lesser Sand-plover                  | <i>Charadrius mongolus</i>             |
| Little Bent-winged Bat              | <i>Miniopterus australis</i>           |
| Little Eagle                        | <i>Hieraaetus morphnoides</i>          |
| Little Lorikeet                     | <i>Glossopsitta pusilla</i>            |
| Little Tern                         | <i>Sternula albifrons</i>              |
| Red Knot                            | <i>Calidris canutus</i>                |
| Rosenberg's Goanna                  | <i>Varanus rosenbergi</i>              |
| Sanderling                          | <i>Calidris alba</i>                   |
| South-eastern Glossy Black-Cockatoo | <i>Calyptorhynchus lathami lathami</i> |
| Spotted Harrier                     | <i>Circus assimilis</i>                |
| Spotted-tailed Quoll                | <i>Dasyurus maculatus</i>              |
| Square-tailed Kite                  | <i>Lophoictinia isura</i>              |
| Swift Parrot                        | <i>Lathamus discolor</i>               |
| Terek Sandpiper                     | <i>Xenus cinereus</i>                  |
| Turquoise Parrot                    | <i>Neophema pulchella</i>              |
| Varied Sittella                     | <i>Daphoenositta chrysoptera</i>       |
| White-bellied Sea-Eagle             | <i>Haliaeetus leucogaster</i>          |

| Common name               | Scientific name              |
|---------------------------|------------------------------|
| White-throated Needletail | <i>Hirundapus caudacutus</i> |

## 4.2 Species credit species

Species credit species are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence, or components of their habitat. These candidate species are identified as species credit species in the TBDC. Confirmation of their presence on the subject land typically requires targeted surveys or expert reports, or alternatively, species may be conservatively assumed present (DPIE 2020).

Appendix 2 provides the lists of species credit species predicted to occur within the subject land based on the IBRA subregion within which the subject land occurs, the native vegetation cover present within the 1,500-metre buffer assessment area, the PCTs present within the subject land, and patch sizes.

Due to the absence of assignable native PCTs within the subject land, and the dominance of exotic and disturbed vegetation, the species credit assessment was informed by reviewing native vegetation communities within the broader surrounding landscape, particularly the adjacent Penrhyn Estuary.

The SAAM, as outlined in Appendix C of the BAM (DPIE 2020), provides a streamlined process for assessing the biodiversity values of small area developments, their potential impacts, and the associated offset requirements. The BAM specifies that the SAAM can only be applied where clearing does not exceed the thresholds in Appendix C of the BAM. As the proposed impacts fall within these thresholds and the subject land does not contain core koala habitat, application of the SAAM is appropriate in this instance.

Given that this BDAR is utilising the SAAM module in line with Appendix C of the BAM (DPIE 2020), only species credit species that are at risk of a SAIL are required to be considered. Candidate species credit species that are not at risk of an SAIL and that are not incidentally recorded on the subject land do not require further assessment when applying the SAAM module.

Two additional species were added to the BAM-C, being the Bar-tailed Godwit *Limosa lapponica baueri*, due to the presence of important habitat within the subject land, and the Eastern Osprey *Pandion cristatus*, which was incidentally recorded during field investigations, with a known nest also occurring to the north of the subject land (see Section 4.2.4).

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM (DPIE 2020) and species with geographical restrictions, or habitat constraints not present, were not required to be assessed. A total of eight species credit species have been excluded from occurring within the subject land based on habitat constraints detailed within the BAM-C (such as lack of important area mapping within the subject land or lack of suitable hollow-bearing trees), geographic limitations, or substantial degradation of potential habitat. A summary of excluded species is provided in Table 10 and further rationale is included in Appendix 2.

**Table 10 Excluded candidate species credit species**

| Species name                      | Common name               | Exclusion rationale / justification                                                                         |
|-----------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Flora</b>                      |                           |                                                                                                             |
| <i>Pterostylis</i> sp. Botany Bay | Botany Bay Bearded Orchid | Habitat degraded - The subject land lacks the moist, sandy coastal heath habitat required by the Botany Bay |



| Species name                          | Common name                       | Exclusion rationale / justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |                                   | Bearded Orchid. Vegetation is highly disturbed and dominated by exotic species within an active port environment, outside the orchid's known restricted range.                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Birds</b>                          |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>Esacus magnirostris</i>            | Beach Stone-curlew (breeding)     | Habitat degraded - The subject land lacks the intertidal beach, estuarine, or mangrove habitats essential for the Beach Stone-curlew. It is an active port area with no suitable coastal or nesting environments.                                                                                                                                                                                                                                                                                                                                                    |
| <i>Calidris ferruginea</i>            | Curlew Sandpiper (breeding)       | Habitat constraints (important area mapping). No mapped important habitat for this species occurs within the subject land.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <i>Neophema chrysogaster</i>          | Orange Bellied Parrot             | Habitat degraded - The subject land occurs at the northern fringe of their winter range, with most regular wintering grounds being in Victoria and South Australia. Records in NSW are extremely rare, generally from the Far South Coast (e.g. Eden, Bermagui, Nadgee Nature Reserve) and are considered irregular vagrants rather than part of the core wintering population. The subject land lacks the saltmarsh, dune, and coastal shrubland habitats used by the Orange-bellied Parrot. Vegetation is highly modified and unsuitable for foraging or roosting. |
| <i>Lathamus discolor</i>              | Swift Parrot                      | Habitat constraints (important area mapping). No mapped important habitat for this species occurs within the subject land.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Mammals</b>                        |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>Miniopterus australis</i>          | Little Bent-winged Bat (breeding) | Habitat degraded - No caves, tunnels, mines, or other suitable roosting structures are present within the subject land, and there are no known maternity colonies in the region. The highly modified environment lacks the dense vegetation and foraging habitat required for these species.                                                                                                                                                                                                                                                                         |
| <i>Miniopterus orianae oceanensis</i> | Large Bent-winged Bat (breeding)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Threatened flora

Habitats for threatened flora species within the subject land are largely considered degraded due to the high degree of development, past vegetation clearing, and current land use. As such, many of the vegetated areas within the development footprint are comprised of urban native/exotic vegetation. The vegetation across the subject land was largely disturbed, containing a moderate to high cover of exotic species. Overall, most of the vegetation within the subject land is highly fragmented and subject to edge effects and other disturbance.

Given these conditions, no species credit flora species were considered to have suitable habitat within the subject land. Accordingly, no targeted flora surveys were undertaken.

## Threatened fauna

Fauna habitat assessment was undertaken to determine whether the vegetation to be impacted by the proposed development contained microhabitats suitable to support the candidate fauna species credit species, as outlined in Appendix 2.

Similar to threatened flora, habitats for threatened fauna species within the subject land are largely considered degraded due to the high degree of development, past vegetation clearing, and current land use. As such, much of the vegetated areas within the development footprint are comprised of urban native/exotic vegetation.

While the vegetation is generally of poor condition and provides limited suitability for threatened fauna, built structures within the subject land are considered to offer important habitat for certain species, primarily threatened raptors such as the Eastern Osprey. Eastern Osprey commonly nest on elevated man-made structures that provide clear vantage points and proximity to foraging areas. In the subject land, features such as light towers present suitable nesting platforms that support their breeding and roosting requirements.

Table 11 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below and shown on Figure 4-1.

**Table 11 Candidate fauna species credit species**

| Species name                     | Common name       | Method of assessment                                                                                                  | Survey period    |
|----------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------|------------------|
| <i>Limosa lapponica baueri</i>   | Bar-tailed Godwit | Assumed present based on important habitat mapping.                                                                   | N/A              |
| <i>Numenius madagascariensis</i> | Eastern Curlew    | Assumed present based on important habitat mapping                                                                    | N/A              |
| <i>Pandion cristatus</i>         | Eastern Osprey    | Diurnal bird survey - inspection of elevated structures such as lighting towers, pylons, and other man-made features. | April - November |

### 4.2.1 Threatened species survey details

Threatened species surveys of the subject land were undertaken on 6 August 2025. Weather observations for are shown in Table 12.

**Table 12 Weather observations during targeted flora and fauna surveys (Sydney, NSW)**

| Survey undertaken                    | Survey date | Temperature (°C) |      | Rain (mm) |
|--------------------------------------|-------------|------------------|------|-----------|
|                                      |             | Min.             | Max. |           |
| Diurnal bird survey (Eastern Osprey) | 06/08/2025  | 10.3             | 19.4 | 0         |

Information from the Australia Government Bureau of Meteorology website.

Details of surveys undertaken as part of the current assessment are provided below.



## Fauna habitat assessments

Fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all fauna species outlined in Table 11 and Appendix 2. Habitat assessments focussed on the presence of the following features within the subject land:

- Habitat trees including large and/or hollow-bearing trees, stick nests, availability of flowering shrubs and canopy/understorey feed tree species.
- Soil type and presence of cliffs, overhangs and other rocky areas.
- Condition and type of native vegetation and the presence of exotic species.
- Presence and condition of pools and waterways.
- Quantity of ground litter and woody debris.
- Searches for indirect evidence of fauna (i.e. feathers, tracks and scats).
- General degradation of the subject land as a result of past and current disturbances such as vegetation clearing and industrial land management practices.
- Topography and landscape morphology.

Several habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 13.

**Table 13      Habitat features with potential to support threatened species credit species**

| Habitat feature                                                 | Presence within the subject land                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hollow-bearing trees</b>                                     | No hollow-bearing trees are present within the subject land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Feed tree species</b>                                        | Limited presence of Acacia species occurs within the subject land. While Acacias are not typically considered key feed trees for many threatened fauna, they can provide food resources such as nectar and seeds, which may be utilised by some bird and insect species. However, the overall availability and suitability of feed trees within the subject land is considered low due to the dominance of exotic and disturbed vegetation.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Caves and rocky overhangs and man-made structures</b>        | No natural caves or rocky overhangs are present within the subject land that could provide habitat for fauna such as microbats or other fauna species reliant on such features.<br><br>Several man-made structures occur within the subject land, primarily associated with the port and wharf infrastructure. Some of these structures are scheduled for demolition as part of the proposed Project works. These demolition activities are largely confined to wharf areas within a marine environment.<br><br>The undersides of these wharf structures are regularly exposed to tidal action and wave impacts, resulting in highly disturbed conditions that are unsuitable for fauna habitat, including microbat roosting or foraging. As such, the man-made structures within the subject land do not currently support significant fauna habitat values. |
| <b>Rocky outcrops and sandstone crevices</b>                    | There were no rocky outcrops or sandstone crevices within the subject land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Major and minor watercourses and waterbodies (i.e. dams)</b> | The subject land is situated within a coastal marine environment directly adjoining Botany Bay, with no freshwater watercourses or tributaries present on the subject land. Adjacent marine habitats include estuarine and oceanic environments that form part of the larger Botany Bay system, supporting diverse aquatic habitats such as extensive soft sediment areas classified as Type 3 Key Fish Habitat (DPI 2025).                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Habitat feature                     | Presence within the subject land                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | For detailed information regarding the regional hydrology, marine habitat distribution, and environmental sensitivities, refer to Section 2.1.4 of this report and the Marine Ecology Report (Stantec 2025a), which should be read in conjunction with this BDAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Woody debris and leaf litter</b> | <p>Woody debris and leaf litter within the subject land are generally sparse and fragmented, reflecting the heavily disturbed and urbanised nature of the subject land. The limited presence of coarse woody debris reduces the availability of critical microhabitats for many terrestrial fauna species, including reptiles, amphibians, and invertebrates. Similarly, leaf litter cover is minimal and patchy, further limiting habitat complexity and nutrient cycling processes typically associated with more intact native vegetation communities.</p> <p>The degraded condition of these habitat features aligns with the overall low ecological integrity observed across the subject land and is consistent with the predominance of urban native/exotic vegetation communities present.</p> |
| <b>Estuaries</b>                    | Penrhyn Estuary, located on the northern shoreline of Botany Bay adjacent to Port Botany, however outside of the subject land, is a rehabilitated coastal wetland of high ecological value. Originally heavily modified during port construction, the estuary has undergone significant restoration to reinstate tidal exchange, improve water quality, and create purpose-built habitats such as mudflats, saltmarsh, and roosting islands. These habitats provide essential foraging and roosting opportunities for migratory and resident shorebirds. The estuary also contributes to the broader Botany Bay wetland network. The biodiversity values of Penrhyn Estuary are reflected in the diversity and conservation status of the species it supports.                                         |

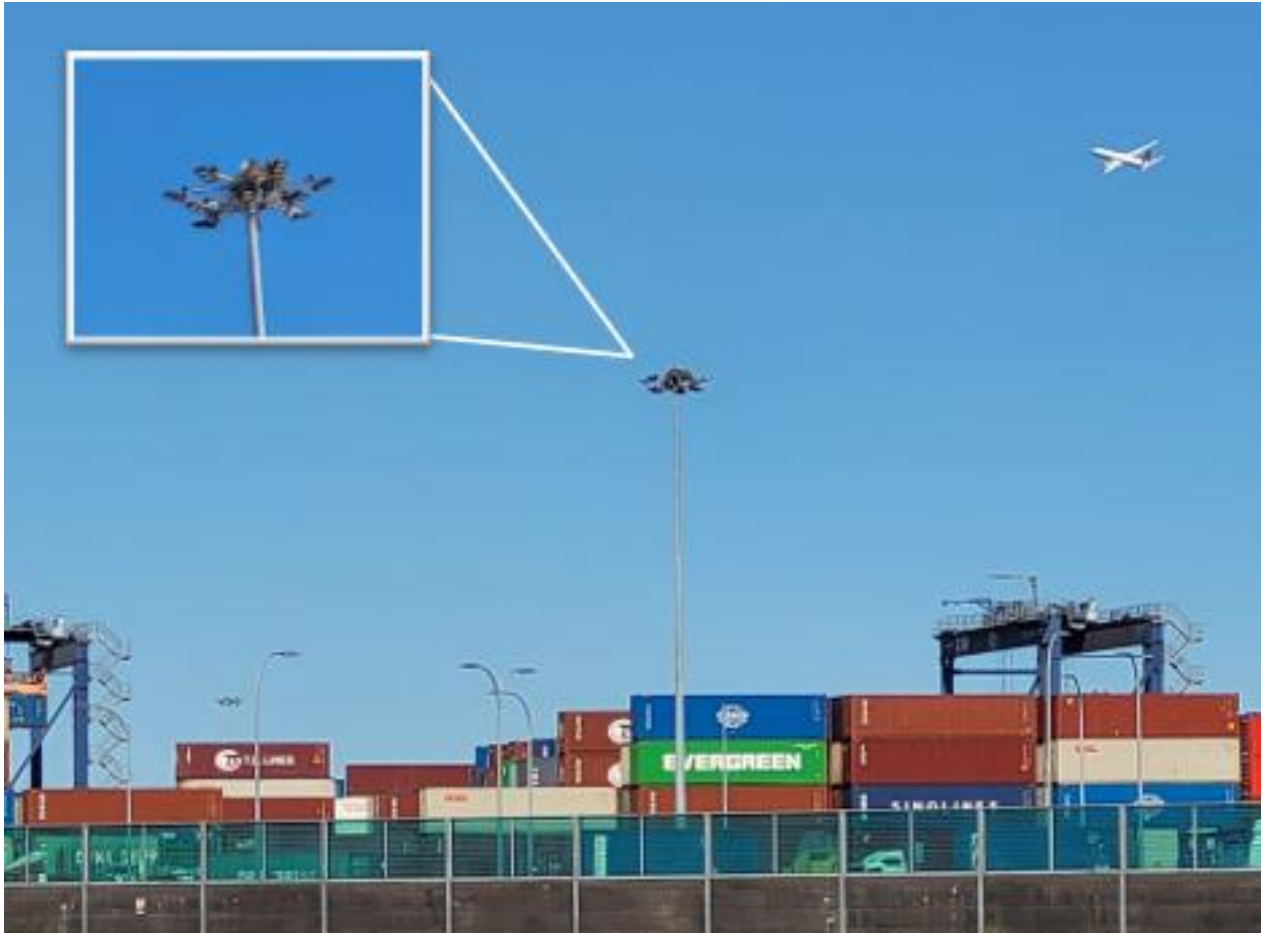
Field capture of detailed fauna habitat information allowed for confirmation of habitat features and microhabitats for a range of candidate threatened species across surveyed portions of the development footprint. Fauna habitat assessments were captured using ArcGIS polygons attributed with specific habitat criteria that allowed for planning of further targeted survey for select species, or the exclusion of the potential for occurrence of various candidate species from the subject land.

### Diurnal birds

Targeted surveys for threatened avifauna using standardised techniques such as census survey, area or transect search, or call playbacks were not undertaken. However, ecologists who were suitably qualified to identify threatened bird species attended site on 6 August 2025. During this time, ecologists were onsite for a cumulative total of 16 person-hours.

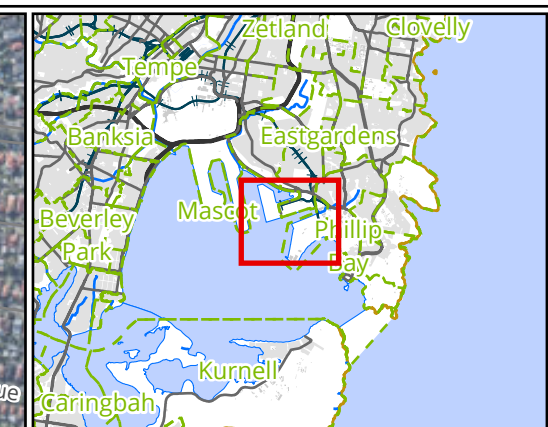
During the diurnal bird survey, a nest supporting an Eastern Osprey was identified approximately 400 metres north of the subject land. The nest is situated atop a man-made structure between existing industrial infrastructure at Hayes Dock, in close proximity to operational port and airport activities.. This is consistent with the species' known nesting preferences. Eastern Ospreys typically build large nests composed of sticks, often on elevated platforms such as light towers, which provide a clear line of sight over water bodies for hunting. The Eastern Osprey nest is displayed below in Photo 4-1.





**Photo 4-1** Eastern Osprey Nest adjacent to the subject land





- Legend**
- Subject land
  - Project area
  - Penrhyn Estuary
  - Survey track
  - Osprey nest

**Figure 4-1 Survey effort**

0 100 200 300 400  
Metres  
Scale: 1:10,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56

**biosis**  
APEM Group  
Matter: 43201, Date: 21 August 2025  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F4-1\_TargetedSurveys



## 4.2.2 Appropriate Local data

Under Section 5 of the BAM (DPIE 2020), an assessor may use more appropriate local data (instead of data from the TBDC) when assessing the habitat suitability for threatened species. No such local data has been used for threatened species assessment.

## 4.2.3 Expert reports

Sections 5.2 and 5.3 of the BAM outlines that an expert report may be obtained instead of undertaking a species survey for a Project, where the expert report is prepared by a person who, in the opinion of the Environment Agency Head, possesses specialised knowledge based on training, study or experience to provide an expert opinion in relation to the biodiversity values to which an expert report relates (DPIE 2020).

No expert reports were utilised for the current assessment.

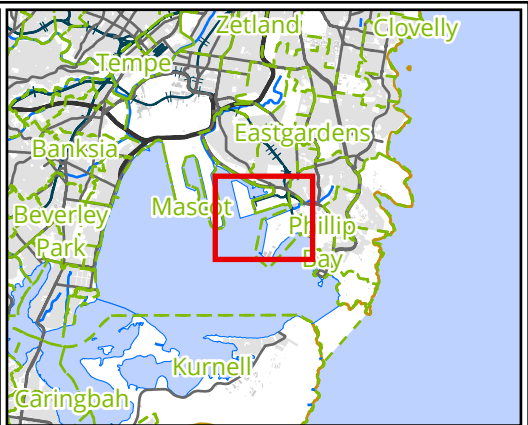
## 4.2.4 Threatened species summary and polygons

Table 14 provides details of threatened species recorded during field investigations or assumed to occur (based on the presence of 'Important Habitat' mapping). The relevant species polygon for each species is also outlined below and illustrated in Figure 4-2.

**Table 14 Threatened species polygons within the development footprint**

| Threatened species       | Impact (ha)                              | Biodiversity risk weighting | Polygon attributes                      |
|--------------------------|------------------------------------------|-----------------------------|-----------------------------------------|
| <b>Fauna</b>             |                                          |                             |                                         |
| <b>Bar-tailed Godwit</b> | n/a – no impact expected (see Section 6) | High (2.0)                  | Area within the 'Important Habitat' map |
| <b>Eastern Curlew</b>    | n/a – no impact expected (see Section 6) | Very High (3.0)             | Area within the 'Important Habitat' map |
| <b>Eastern Osprey</b>    | n/a – no impact expected (see Section 6) | Moderate (1.5)              | 100 m radius around the known nest      |





**Legend**

- Subject land
- Project area
- Osprey nest

**Threatened species polygons**

- Eastern Osprey
- Bar-tailed Godwit and Eastern Curlew

**Figure 4-2 Threatened species polygons**

0 100 200 300 400  
Metres  
Scale: 1:10,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56

**biosis**  
APEM Group

Matter: 43201,  
Date: 21 August 2025,  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.mxd



## Stage 2 — Impact assessment (Biodiversity Values)

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## 5 Avoid and minimise impacts

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This section demonstrates the efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the Project in accordance with BAM, including an analysis of:

- Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.
- Routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route.
- Alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location.
- Alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site.
- Efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.
- Site constraints that have been considered in determining the location and design of the proposed development.

### 5.1 Actions to avoid/minimise Project impacts

The proposed works are located entirely within Port Botany, an area extensively modified by existing port infrastructure and industrial land uses. The subject land is predominantly comprised of urban native/exotic vegetation of low ecological integrity and limited habitat values. By situating the development within this already highly disturbed footprint rather than adjacent areas of more intact native, the Project inherently minimises biodiversity impacts.

The development footprint was carefully defined to avoid adjacent areas of higher ecological value, including the Penrhyn Estuary, which supports more intact native vegetation and important threatened species habitat. Notably, one small portion of land previously included within the subject area was removed following detailed ecological assessment and stakeholder consultation. This area was situated closer to the Eastern Osprey nest and the Penrhyn Estuary, and its exclusion from the Project represents a significant avoidance outcome. Removing this portion avoids potential for any indirect and prescribed impacts, on important habitat for the Eastern Osprey and associated fauna. This change in design is illustrated on Figure 5-1.

Design and construction activities have been planned to minimise ground disturbance and vegetation clearing to the greatest extent practicable within the constrained industrial setting of Port Botany. Infrastructure has been sited to avoid remnant native vegetation, with access provided via existing arterial roads. The Project will also utilise established technologies and operational procedures to limit environmental disturbance, including sediment and erosion controls, containment of construction-related runoff, and management of noise and light spill that could affect fauna. Existing infrastructure will be upgraded or modified where possible. As a result, no native vegetation will need to be removed to accommodate the Project.

Any potential impacts associated with threatened species habitat are largely avoided and minimised by:

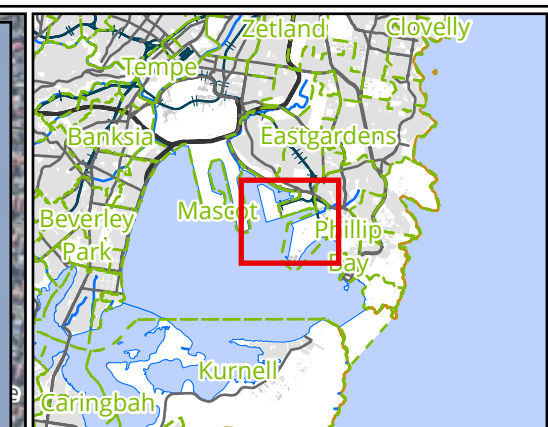
- Locating the proposed works within an area that lacks significant biodiversity values.



- Avoiding any areas of vegetation that are mapped on the important habitat map.
- Avoiding areas of breeding habitat for the Eastern Osprey.
- Avoiding any identified breeding habitat for threatened species (such as nest trees or caves).

Recommendations are provided in Section 7 of this BDAR which include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered.





#### Legend

- Subject land
- Project area
- Removed area
- Osprey nest
- Project components**
- New infrastructure
- Existing infrastructure to be removed
- Dredging of Brotherson Dock
- Compound site
- Existing bulk liquids pipeline corridor
- Extension of existing bulk liquids pipeline corridor

#### Vegetation zones - Biosis

- Urban Native/Exotic
- 4097\_High

#### Vegetation zones - SVTM

- 3806
- 3972
- 4097

**Figure 5-1 Final footprint and alternate options**

0 100 200 300 400

Metres

Scale: 1:10,000 @ A3

Coordinate System: GDA2020 MGA Zone 56



Matter: 43201, Date: 21 August 2025  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_FS-1\_FinalFootprint



## 6 Impacts that are unable to be avoided

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Assessment of direct and indirect impacts unable to be avoided has been undertaken in accordance with the BAM (DPIE 2020). The following direct and indirect impacts are unable to be avoided in progressing the proposed development.

### 6.1 Direct impacts

Direct impacts from the Project are limited to the removal of approximately 4.35 hectares of urban native/exotic vegetation within the subject land. No native PCTs or TECs occur within the subject land, and no direct clearing of native vegetation is proposed. The vegetation present is highly disturbed, comprising predominantly exotic species and urban planting, which was assessed as lacking habitat suitable for threatened flora or fauna species.

No threatened flora or fauna species were recorded within the development footprint, nor is any direct impact expected to occur to known threatened species or their habitat. Specifically, no direct impacts are proposed to important habitat areas or critical microhabitats such as hollow-bearing trees, rock outcrops, or aquatic environments.

The only physical disturbances associated with the Project are related to infrastructure upgrades within an already heavily modified port environment. This includes the removal or modification of built structures and urban vegetation with negligible biodiversity value. Direct impacts to marine environments are assessed separately in the Marine Ecology Report (Stantec 2025a), which identifies that the existing marine environment within the Project footprint is predominantly open water at Brotherson Dock with limited benthic habitat.

'Important habitat mapping' (as described in Section 2.1.9 and shown on Figure 4-2) for the Eastern Curlew and Bar-tailed Godwit is present within the Project area. However, these mapped important areas occur entirely as open water zones. The proposed dredging of Brotherson Dock and construction of associated infrastructure is proposed to occur within these marine areas, but will not affect terrestrial vegetation or terrestrial habitat. The Bar-tailed Godwit and Eastern Curlew are dependent on undisturbed intertidal mudflats, sandflats, and shallow waters for feeding, as well as coastal roosting sites, none of which will be impacted by the Project. As such, the Project will not result in any measurable reduction in the availability, quality, or accessibility of breeding or foraging habitat for either species. Potential habitats for these species are discussed further in Section 4 of this BDAR. In summary, the Project does not result in direct impacts to native vegetation or threatened species habitat.

### 6.2 Indirect impacts

Indirect impacts are potential effects on biodiversity values that occur beyond the immediate footprint of the proposed development, often arising through changes in surrounding environmental conditions or disturbance regimes.

Although the subject land does not contain native vegetation or habitat for threatened species, its proximity to sensitive ecological values necessitates careful assessment of potential indirect impacts. Potential indirect impacts arising from the Project are outlined and addressed below and shown in Figure 6-1.

### 6.2.1 Inadvertent impacts on adjacent habitat or vegetation

The subject land is highly disturbed and lacks native vegetation. Therefore, the risk of inadvertent impacts to adjacent native habitats or vegetation during construction and operation is considered negligible.

Adjacent habitats, including the Penrhyn Estuary, are separated from the subject land by existing infrastructure and physical buffers. These natural and built barriers reduce the likelihood of indirect impacts. Additionally, site management measures described in the Construction Environmental Management Plan (CEMP) will help to prevent any accidental damage to offsite vegetation.

To further consider adjacent sensitive habitats, a precautionary indirect impact buffer of 300 metres has been applied around the Penrhyn Estuary and a 100 metre buffer has been applied around the Eastern Osprey nest located north of the subject land (Figure 6-1). These buffers are not intended to represent exclusion areas, but have been applied to demonstrate that the Project is sufficiently distanced from these ecological features to avoid indirect impacts. The 100 metre buffer applied to the Eastern Osprey nest is consistent with the species polygon buffer applied to records of this species in the NSW BioNet database, which is widely used as the standard for assessing potential spatial impacts to threatened Raptor species. The 300 metre buffer applied to Penrhyn Estuary was adopted to demonstrate a precautionary approach to managing potential indirect disturbance impacts on shorebirds and associated wetland habitats. A 200-metre buffer is typically applied to account for such impacts (e.g. from light, noise and vibration). However, in the current assessment, the buffer was extended to 300 metres to provide an additional margin of separation and to clearly demonstrate that the Project footprint remains outside the buffer area. The nearest Project activities are located approximately 77 metres beyond the estuary buffer and 346 metres beyond the Osprey buffer, providing a clear margin above the adopted distances. Accordingly, no indirect impacts to the Penrhyn Estuary or the Eastern Osprey nest are anticipated.

The combination of natural physical barriers, these defined buffer zones, and adherence to environmental management practices provides strong confidence that indirect impacts to adjacent vegetation and sensitive habitats will be avoided or remain negligible throughout the Project lifecycle.

### 6.2.2 Reduced viability of adjacent habitat due to edge effects

Given that the subject land contains no native vegetation or remnant habitat, the potential for edge effects to reduce the viability of adjacent habitats is considered negligible. There are no vegetation communities immediately adjoining the development footprint where edge-related impacts such as altered microclimate, weed invasion, or increased predation could occur.

### 6.2.3 Reduced viability of adjacent habitat due to noise, dust or light spill

Reduced viability of adjacent habitat can result from indirect disturbances such as noise, dust, or light spill originating from the Project Area. These factors have the potential to alter habitat quality, disrupt species behaviour, and degrade ecological functions in nearby areas, thereby impacting the survival and reproductive success of sensitive flora and fauna. Assessing these impacts is critical to understanding the full extent of the Project's ecological footprint beyond the immediate Project Area.

Regarding dust and light spill, the Project would not materially alter existing lighting within Port Botany during construction or operation. Lighting would be selected to be consistent with or less than existing illumination levels and designed to avoid light spill outside the port. Consistent with the height of structures, lighting is also designed to not have adverse impact on operations from the adjacent Sydney Kingsford Smith Airport. Indirect visual and lighting impacts from the Project beyond those already generated by Port Botany



would not occur. The Project would not have a negligible adverse indirect impact on the habitat needs of threatened species protected. Furthermore, construction-related dust emissions would be controlled through the implementation of effective dust suppression techniques and will be managed in accordance with accepted mitigation measures detailed within a CEMP.

Regarding noise impacts, areas within and around Port Botany, including Penrhyn Estuary, are subject to existing and established airborne noise and vibration impacts from operation of the port and adjacent Sydney Kingsford Smith Airport. The subject land contains no native vegetation or suitable fauna habitat, therefore, the primary concern regarding noise impacts relates to vegetation and fauna within the surrounding locality, such as that present in the Penrhyn Estuary.

The analysis below in Table 13 provides an indication of the current noise environment at the estuary and compares this to the noise impact predictions identified for the Project. Both the Patrick container terminal and the Hutchison container terminal are subject to operational noise compliance monitoring, with monitoring results made publicly available (Hutchison Ports 2025, Patrick 2025). Relevantly, both container terminals monitor operational noise at receiver locations to the north of Port Botany, with the Penrhyn Estuary located between the container terminals and those receiver locations. Table 13 summarises noise monitoring results at select receiver locations to the north of Port Botany (26 and 36 Dent Street, Matraville and 1424 Botany Road, Botany).

**Table 15 Median unattended noise monitoring results – Patrick and Hutchison container terminals**

| Location                            | Day (7:00am – 6:00pm)                    |                                       | Evening (6:00pm – 10:00pm)              |                                       | Night (10:00pm – 7:00am)                |                                       |
|-------------------------------------|------------------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|
|                                     | LA <sub>eq</sub> (15 minute)<br>(dB(A))* | LA <sub>1</sub> (1 minute)<br>(dB(A)) | LA <sub>eq</sub> (15 minute)<br>(dB(A)) | LA <sub>1</sub> (1 minute)<br>(dB(A)) | LA <sub>eq</sub> (15 minute)<br>(dB(A)) | LA <sub>1</sub> (1 minute)<br>(dB(A)) |
| <b>Patrick container terminal</b>   |                                          |                                       |                                         |                                       |                                         |                                       |
| 36 Dent Street<br>(November 2024)   | 57.5                                     | 64.8                                  | 54.1                                    | 61.7                                  | 52.9                                    | 56.7                                  |
| 36 Dent Street<br>(August 2024)     | 58.4                                     | 65.8                                  | 56.9                                    | 65.7                                  | 54.3                                    | 58.4                                  |
| 36 Dent Street<br>(November 2023)   | 56.4                                     | 62.7                                  | 56.0                                    | 62.2                                  | 51.0                                    | 55.8                                  |
| 1424 Botany Road<br>(November 2024) | 53.4                                     | 59.3                                  | 53.2                                    | 58.1                                  | 49.9                                    | 54.4                                  |
| 1424 Botany Road<br>(August 2024)   | 55.7                                     | 63.3                                  | 55.0                                    | 63.9                                  | 52.5                                    | 57.0                                  |
| 1424 Botany Road<br>(November 2023) | 53.5                                     | 59.9                                  | 51.5                                    | 58.2                                  | 49.2                                    | 54.0                                  |
| <b>Hutchison container terminal</b> |                                          |                                       |                                         |                                       |                                         |                                       |
| 26 Dent Street<br>(January 2024)    | 58.8                                     | 64.9                                  | 60.3                                    | 62.7                                  | 54.1                                    | 58.1                                  |
| 26 Dent Street<br>(January 2023)    | 59.8                                     | 64.5                                  | 60.0                                    | 62.5                                  | 52.3                                    | 53.7                                  |
| 1424 Botany Road                    | 55.3                                     | 60.4                                  | 53.6                                    | 55.3                                  | 51.7                                    | 54.8                                  |

| Location                           | Day (7:00am – 6:00pm)                          |                                             | Evening (6:00pm – 10:00pm)                    |                                             | Night (10:00pm – 7:00am)                      |                                             |
|------------------------------------|------------------------------------------------|---------------------------------------------|-----------------------------------------------|---------------------------------------------|-----------------------------------------------|---------------------------------------------|
|                                    | <b>LA<sub>eq</sub>(15 minute)<br/>(dB(A))*</b> | <b>LA<sub>1</sub>(1 minute)<br/>(dB(A))</b> | <b>LA<sub>eq</sub>(15 minute)<br/>(dB(A))</b> | <b>LA<sub>1</sub>(1 minute)<br/>(dB(A))</b> | <b>LA<sub>eq</sub>(15 minute)<br/>(dB(A))</b> | <b>LA<sub>1</sub>(1 minute)<br/>(dB(A))</b> |
| (January 2024)                     |                                                |                                             |                                               |                                             |                                               |                                             |
| 1424 Botany Road<br>(January 2023) | 53.1                                           | 55.5                                        | 53.0                                          | 54.4                                        | 50.9                                          | 51.0                                        |

\* *LA<sub>eq</sub>* = Equivalent Continuous A-weighted Sound Level, (dB(A)) = decibels with A-weighting.

The data presented in Table 13 shows that:

- Noise at Dent Street is around 55-60 dB(A) (*LA<sub>eq</sub>*(15 minute)) during the daytime, and slightly lower (51-54 dB(A)) at night. Short duration noise levels (*LA<sub>1</sub>*(1 minute)) can be up to 65 dB(A) during the daytime and up to 58 dB(A) at night.
- Noise at Botany Road is around 53-55 dB(A) (*LA<sub>eq</sub>*(15 minute)) during the daytime, and slightly lower (50-52 dB(A)) at night. Short duration noise levels (*LA<sub>1</sub>*(1 minute)) can be up to 60 dB(A) during the daytime and up to 55 dB(A) at night.

Penrhyn Estuary is located between the Patrick and Hutchison container terminals and the monitoring locations, placing it about half the distance from the terminals relative to the monitoring locations.. Based on the inverse square attenuation of noise by distance from a noise source, the operational monitoring data from the container terminals indicates that noise levels within the estuary could currently be up to around 60-65 dB(A) during the daytime, and up to around 55-60 dB(A) at night.

The airborne noise and vibration impact assessment prepared for the Project (AECOM 2025b) includes noise modelling for several construction scenarios. These scenarios are conservative and assume concurrent operation of all construction plant and equipment within construction sites over a continuous 15-minute period, and at the closest point to residential receivers (and therefore also the closest point to Penrhyn Estuary). Of these scenarios, Scenario 3 (BLB Piling) represents the greatest potential noise impact during the day while Scenario 4 (Construction of bund wall, dredging and reclamation, which also encompasses the use of the waterside construction compound) represents the peak construction noise impacts during the evening.

The construction noise contours generated from modelling of Scenario 3 determined that the conservative peak construction noise levels in Penrhyn Estuary are around 55-60 dB(A) during the daytime. The construction noise contours generated from modelling of Scenario 4 show conservative peak construction noise levels in Penrhyn Estuary around 50-55 dB(A) with some areas further from the port around 45-50 dB(A). These predicted noise levels are at least 5dB(A) and 10dB(A) less respectively than existing noise levels in Penrhyn Estuary based on monitoring carried out for the Patrick and Hutchison container terminals. The modelling being is conservative in nature. Nonetheless, it is anticipated that even the conservative peak construction noise levels from the Project would be indiscernible relative to existing container terminal noise.

Further, construction noise modelling carried out for the Project indicates that conservative peak construction noise would be:

- At 26-36 Dent Street, Botany – 54 dB(A) (*LA<sub>eq</sub>*(15 minute)) with short term noise levels (*LA<sub>1</sub>*(1 minute)) up to 62 dB(A)
- At 1424 Botany Road, Botany – 53 dB(A) (*LA<sub>eq</sub>*(15 minute)) with short term noise levels (*LA<sub>1</sub>*(1 minute)) up to 61 dB(A)



Comparison of these values with operational noise monitoring data in Table 13 indicates that conservative peak construction noise from the Project would be similar to or lower than existing operational noise from container terminal operations. On this basis, construction noise from the Project would not be discernible above existing container terminal operational noise and therefore would have no impact on fauna residing within the Penrhyn Estuary.

During field investigations, an Eastern Osprey nest was identified on a light pole within the operational Hutchison container terminal, outside of and well beyond the subject land (see Section 4.2.4). This nest was established after and despite the operation of the container terminal. Consistent with the analysis above in relation to Penrhyn Estuary, the Eastern Osprey nest is subject to existing operational container terminal noise above conservative peak construction noise levels predicted from the Project. Notably, the nest is much closer to container terminal noise sources than Project construction noise sources being located over half a kilometre from the main construction site. Project construction noise will not be to be discernible above existing container terminal noise and use of the nest appears to be uncorrelated with exposure to heavy industrial noise.

Both the Eastern Osprey nest and Penrhyn Estuary are well beyond the extent of potential vibration impacts from the Project.

Monitoring results across Botany Bay at Kurnell were undertaken as part of the Kamay Ferry Wharves Project. The noise measurements below were undertaken in 2020 during COVID 19, therefore there they are likely to represent a lower road traffic and aircraft noise environment. Nonetheless the noise monitoring shows that:

- Noise at 3/1 Captain Cook Drive, Kurnell is around 58 dB ( $L_{Aeq(period)}$ ) during the daytime, and slightly lower 53 dB ( $L_{Aeq(period)}$ ) during the night
- Noise behind 11 Goolagong Place, Kurnell is around 52 dB(A) ( $L_{Aeq(15\text{ minute})}$ ) during the daytime and main noise sources are music, breeze and aircraft noise.

Construction noise modelling carried out for the construction of BLB3, indicates that conservative measures of noise would be lower than existing noise levels across the bay at Kurnell.

The western half of Penrhyn Estuary is located between the 20 and 25 Aircraft Noise Exposure Forecast (ANEF) contours around Sydney Kingsford Smith Airport. The ANEF represents the cumulative noise exposure from aircraft over a one year period. Based on *AS 2021-2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction* (AS 2021-2015) (Council of Australian Standards 2015), noise sensitive developments including residential premises, commercial accommodation (hotels, motels, hostels), and educational and medical facilities would generally not be considered acceptable in this area based on human amenity considerations. While AS 2021-2015 does not apply to ecological receivers, it does suggest that parts of Penrhyn Estuary between the 20 and 25 ANEF contours are currently affected by elevated levels of aircraft noise. To the extent that ecological receivers, including shorebirds using Penrhyn Estuary, are affected by aircraft noise, these impacts already occur and have occurred for an extended period of time during current and historical operation of the airport.

Indirect airborne noise and vibration impacts from the Project would therefore not affect Penrhyn Estuary, and the habitat values it provides. The Project would not have an indirect impact on the habitat needs of threatened species due to airborne noise or vibration.

In summary, impacts from airborne noise and vibration as a result of the Project would have negligible adverse impact on threatened species due to:

- **Habitat suitability:**
  - The Project is a highly trafficked and industrial landscape of the Study Area and surrounds. There is no increase in terrestrial noise above existing operational noise during construction as demonstrated by the supporting noise modelling.
- **Threatened species abundance:**
  - Shorebirds may use Botany Bay, Penrhyn Estuary, Foreshore Beach and artificial rocky shore in the channel leading to Penrhyn Estuary.
  - Shorebirds within the locality are already habituated to elevated ambient noise levels associated with the operation of Port Botany. Conservative acoustic modelling demonstrates that noise emissions from the Project would remain within the existing acoustic environment and would not result in a discernible increase within the subject land and at the estuary. Accordingly, construction-related airborne noise and vibration are not expected to result increased disturbance to shorebird populations.
- The noise data shows that construction noise would be similar or lower than existing operational noise, including at Penrhyn Estuary, Foreshore Beach and the channel between.

#### 6.2.4 Underwater noise and vibration

A dedicated Marine Noise and Vibration Assessment was prepared to support EIS for the Project (AECOM 2025c). This assessment evaluates potential underwater noise and vibration generated during construction activities, including dredging, pile driving, and vessel movements, and considers the potential for impacts on aquatic fauna and key ecological receptors within and surrounding the Project Area. Although impacts to marine species have been captured in the marine assessment, there remain BC Act listed marine species that require consideration in the context of this BDAR.

The Marine Noise and Vibration Assessment considered potential effect zones for behavioural and auditory impacts based on the Underwater Piling and Dredging Noise Guidelines (Department of Infrastructure and Transport 2023). While thresholds for auditory injury in marine birds are largely unknown, nine species that may dive or consume fish in their diet spend only short periods submerged (typically 1–3 seconds, up to 10 seconds). Given their highly mobile nature and the availability of suitable foraging areas throughout Botany Bay, the likelihood of these shorebirds being impacted by piling noise is considered to be negligible.

The potential for adverse impacts on shorebirds from underwater noise and vibration during construction is negligible. Further detail on the assessment methodology, modelling, and management zones is provided in the Marine Noise and Vibration Assessment (AECOM 2025c).

#### 6.2.5 Transport of weeds and pathogens from the site to adjacent vegetation

The risk of transporting weeds and pathogens from the subject land to adjacent vegetation is considered low due to the predominantly urban and disturbed nature of the subject land, which currently supports mainly exotic and non-native plant species. Nonetheless, standard biosecurity measures will be implemented to prevent any potential spread.

Weed and pathogen management would be addressed through CEMP, which would accepted and reliable protocols such as cleaning of machinery and equipment prior to entering and leaving the subject land, managing stockpiles to avoid contamination, and monitoring for invasive species throughout construction phases. These measures will help minimise the risk of introducing or spreading weeds and pathogens to nearby native vegetation, supporting the protection of surrounding ecological values.



### **6.2.6 Increased risk of starvation, exposure and loss of shade or shelter**

Given the highly disturbed and urban nature of the subject land, which lacks significant native vegetation or structural habitat features, the risk of increased starvation, exposure, or loss of shade and shelter to fauna in adjacent habitats is considered negligible.

There is no remnant habitat on the subject land that provides critical shelter or food resources for threatened or other native fauna species. Furthermore, the Project footprint is located at a sufficient distance from key habitats such as the Penrhyn Estuary and the Eastern Osprey nest to avoid any indirect impacts related to habitat loss or degradation of microhabitats essential for shelter and foraging.

Overall, no significant increase in risk to fauna from starvation, exposure, or loss of shelter is anticipated as a result of the Project.

### **6.2.7 Loss of breeding habitats**

The subject land does not contain native vegetation or features that provide breeding habitat for threatened or other native fauna species. Notably, the Eastern Osprey nest identified near the subject land is located approximately 400 metres away and will not be directly or indirectly impacted by the Project.

Given the absence of suitable breeding habitat within the development footprint and the implementation of appropriate buffers, the risk of loss or disturbance to breeding habitats from the Project is considered negligible.

### **6.2.8 Trampling of threatened flora species**

No threatened flora species or suitable habitat for such species were recorded within the subject land during surveys, and the vegetation present is predominantly urban native and exotic species of low conservation value. Consequently, the risk of trampling or physical disturbance to threatened flora species during construction or operation is considered negligible.

### **6.2.9 Inhibition of nitrogen fixation and increased soil salinity**

Given the absence of native vegetation or threatened flora habitat within the subject land, the risk of impacts such as inhibition of nitrogen fixation or increased soil salinity affecting sensitive plant communities is considered negligible.

Furthermore, the highly modified urban and marine-influenced environment reduces the likelihood of soil processes being altered to a degree that would affect adjacent vegetation or habitats. Any potential soil disturbance will be managed in accordance with CEMP.

### **6.2.10 Fertiliser drift**

The subject land does not currently support native vegetation or threatened flora that would be susceptible to fertiliser drift. Additionally, given the subject land's industrial and marine context, fertiliser use within or adjacent to the Project Area is minimal or non-existent.

Consequently, the risk of fertiliser drift impacting adjacent habitats or vegetation is considered negligible. Standard environmental management practices outlined in a CEMP will be implemented to ensure no inadvertent chemical runoff or drift occurs during construction activities.

### **6.2.11 Rubbish dumping**

Given the industrial and highly managed nature of the subject land, along with the absence of native vegetation or sensitive threatened species habitat, the risk of rubbish dumping impacting adjacent ecological values is considered low.

Site management protocols and good housekeeping practices outlined in a CEMP will be strictly enforced to prevent rubbish accumulation or illegal dumping during both construction and operational phases. These measures will minimise the potential for rubbish to degrade adjacent habitats or create hazards for local fauna.

### **6.2.12 Wood collection**

The subject land consists predominantly of urban and industrial infrastructure with limited native vegetation and minimal woody debris. There are no woodland habitats present that would be susceptible to wood collection by local fauna or humans. Consequently, the risk of wood collection causing indirect impacts on adjacent vegetation or fauna habitats is considered negligible.

### **6.2.13 Removal and disturbance of rocks, including bush rock**

Natural rocky substrates, including bush rock commonly used as shelter by reptiles and invertebrates, are absent within the subject land due to previous industrial development and ongoing disturbance. Therefore, there is no risk of inadvertent removal or disturbance of rocks affecting local biodiversity values. Adjacent natural areas that may contain such features remain outside the direct or indirect impact zones of the Project.

### **6.2.14 Increase in predators**

The subject land operates as an active working port and dock, an environment typically dominated by industrial activity with high human presence and limited natural habitat connectivity. These conditions are generally inhospitable to native fauna and limit the presence and proliferation of introduced predators such as feral cats and foxes. Furthermore, strict operational controls and waste management practices are implemented to minimise attractants for pest predators. As a result, the Project has a negligible likelihood to cause any increase in predator populations.

### **6.2.15 Increase in pest animal populations**

Pest species such as rodents or invasive birds may be present due to urban and industrial influences. However, the working port environment includes ongoing pest control programs as part of standard operational biosecurity measures, effectively managing pest populations. These programs, combined with the lack of suitable habitat on the subject land, ensure the Project will not contribute to an increase in pest populations or cause indirect impacts on surrounding ecosystems.

### **6.2.16 Changed fire regimes**

There is no remnant native vegetation or significant fuel loads within the subject land due to its extensive modification and industrial use. Therefore, the Project will not alter fire frequency, intensity, or extent within the subject land or in adjacent areas. Fire risk management is conducted under strict regulatory requirements appropriate to the port environment, ensuring no increased fire threat to surrounding habitats.



#### **6.2.17 Disturbance to specialist breeding and foraging habitat, e.g. Beach nesting for shorebirds**

While the subject land does not support specialist breeding or foraging habitat, it is adjacent to sensitive coastal environments such as Penrhyn Estuary and Botany Bay, which provide critical habitat for shorebirds. However, indirect disturbances from noise, lighting, and human activity have been assessed as negligible and existing procedures and mitigation measures would be implemented to avoid disturbance impacts.

#### **6.2.18 Fragmentation of movement corridors**

The Project Area is located within a heavily modified industrial port landscape with no continuous native vegetation corridors. The development will not increase habitat fragmentation or impede movement pathways for native fauna. Existing movement corridors remain outside the influence of the Project. Thus, indirect impacts from habitat fragmentation are negligible.

### **6.3 Prescribed impacts**

Identification and assessment of prescribed biodiversity impacts are outlined and addressed in Table 16. Where a potential prescribed impact has been identified, further detail is provided and are shown in Figure 6-2.

**Table 16 Identification of prescribed impacts**

| Prescribed impact                                                                          | Description of relevant habitat features associated with prescribed impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Threatened species likely to utilise habitat features associated with prescribed impact | Significance of habitat feature to impacted species |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Karst, caves, crevices, cliffs, rocks and other geological features of significance</b> | There are no karst, caves, crevices, cliffs, rocks or other geological features of significance within the subject land.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Not applicable – No impact anticipated.                                                 | Not applicable – No impact anticipated.             |
| <b>Occurrences of human-made structures and non-native vegetation</b>                      | <p>The subject land is comprised of several human-made structures to facilitate the port's operations. However, these structures were assessed for potential microbat roosting habitat. The underside wharf structures are inaccessible were significantly impacted due to the high-tide level and provided little to no suitable flyways between the dock and water. No signs of usage of any potential habitat for microbats was observed during field investigations.</p> <p>One floodlight structure approximately 400 metres from the Project Area contained an Eastern Osprey nest. This structure will not be impacted by the construction activities.</p> | Not applicable – No impact anticipated.                                                 | Not applicable – No impact anticipated.             |
| <b>Corridors or other areas of connectivity linking habitat for threatened entities</b>    | The subject land occurs within a heavily modified industrial setting, with no direct connection to natural terrestrial habitats. Although shorebirds are known to transit between key habitats in the broader locality, the subject land itself lacks the physical characteristics required to support foraging or roosting activities. No vegetation or habitat features that contribute to connectivity corridors will be removed as part of the proposed works.                                                                                                                                                                                                | Not applicable – No impact anticipated.                                                 | Not applicable – No impact anticipated.             |



| Prescribed impact                                                                                                                                       | Description of relevant habitat features associated with prescribed impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Threatened species likely to utilise habitat features associated with prescribed impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Significance of habitat feature to impacted species                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Water bodies or any hydrological processes that sustain threatened entities</b>                                                                      | The subject land is situated in a coastal marine environment, dominated by estuarine and oceanic habitats. Nearby marine environments form part of a complex mosaic within Botany Bay, including Port Botany, Yarra Bay, Foreshore Beach, Bare Island, La Perouse Point, and the Penrhyn Estuary channel. These support diverse aquatic habitats, notably extensive unconsolidated soft sediments classified as Type 3 Key Fish Habitat by Fisheries NSW.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Surveys and existing records documented in the Marine Ecology Report (Stantec 2025a) indicate that the Botany Bay and Port Hacking regions regularly support at least 18 species of shorebird. This includes Eastern Curlew, Bar-tailed Godwit, Terek Sandpiper <i>Xenus cinereus</i> , Red Knot <i>Calidris canutus</i> , Great Knot <i>Calidris tenuirostris</i> , Sanderling <i>Calidris alba</i> , Little Tern <i>Sternula albifrons</i> , Pied Oystercatcher <i>Haematopus longirostris</i> and Sooty Oystercatcher <i>Haematopus fuliginosus</i> . | Highly significant for regional shorebird populations, particularly in the Penrhyn Estuary. The subject land does not provide direct habitat, but nearby waters contribute to the viability of important areas. |
| <b>Protected animals that may use the proposed wind farm development site as a flyway or migration route</b>                                            | Not applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Not applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Not applicable.                                                                                                                                                                                                 |
| <b>Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community</b> | <p>The subject land is situated within a highly modified industrial and marine setting dominated by port infrastructure, with no native vegetation or remnant threatened ecological communities present onsite. Habitat features suitable for threatened fauna, including vegetated areas or natural corridors that typically support fauna movement, are absent or highly degraded within the development footprint. The surrounding areas, such as the Penrhyn Estuary located approximately 350 metres north, provide key habitat for some threatened shorebird species, but these habitats are physically separated from the subject land by industrial infrastructure.</p> <p>Vehicular activity associated with the proposed development will be confined to existing port roads and hardstand areas where fauna presence is already minimal due to disturbance and lack of shelter or food resources. Furthermore, the physical separation between the subject land and</p> | The threatened species which may use aquatic habitats (listed above) have very low potential to cross the internal roads, and those that do are capable of flight.                                                                                                                                                                                                                                                                                                                                                                                       | Shorebirds are generally alert when in open spaces and highly mobile, capable of moving out of the way of vehicles.                                                                                             |

| Prescribed impact | Description of relevant habitat features associated with prescribed impacts                                                                                                                                                                                                                                                                    | Threatened species likely to utilise habitat features associated with prescribed impact | Significance of habitat feature to impacted species |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------|
|                   | <p>nearby habitat areas reduces the likelihood of fauna movement through the subject land, thus further lowering the risk of vehicle strikes.</p> <p>Standard operational procedures and site management measures, such as maintaining designated vehicle routes and adherence to speed limits, will continue to mitigate potential risks.</p> |                                                                                         |                                                     |



6.3.1 Water bodies, water quality and hydrological processes

Nature

Brotherson Dock is a highly modified and artificial marine environment with minimal natural habitat features. The dock and immediate waters of Botany Bay may be occasionally used by mobile fauna such as shorebirds. Marine mammals, including occasional sightings of dolphins and seals, may also use these waters. Further details on marine fauna observations are provided in the Marine Ecology Report (Stantec 2025a).

Extent

The Project would involve in-water works within the sheltered marine environment of Brotherson Dock, an engineered harbour basin connected to Botany Bay. Works include extending the southern quayline by approximately 314 metres through reclamation, which would require dredging around 600,000 cubic metres of sediment from the dock for reuse in reclamation. The demolition of the Bulk Liquid Berth wharf and associated structures, along with the reconstruction of maritime infrastructure, would permanently remove existing low-quality aquatic features such as concrete-lined channels. In-water piling (approximately 380 piles) and dredging activities, along with the operation of dredgers, barges, tugboats, jack-up barges, and spud barges, would temporarily increase turbidity, disturb sediments, and alter local hydrodynamics within the dock and adjacent waters of Botany Bay.

Duration

Permanent

Consequences

Detailed in Table 16.

6.3.2 Vehicle strikes

Nature and extent

Over the six-year construction period, traffic generation would vary depending on the construction activity being undertaken. The peak construction stage for road traffic generation would occur in November 2027 when the Project would generate up to 572 vehicle movements per day. It should be noted that traffic movements are calculated for inbound and outbound trips. Table 17 summarises the AM and PM peak hour construction vehicle movements for the Project.

Table 17 Anticipated hourly construction vehicle volumes

| Weekday period | Light vehicles (inbound) | Heavy vehicles (inbound) | Light vehicles (outbound) | Heavy vehicles (inbound) | Total vehicle (inbound and outbound) |
|----------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------------------|
| AM peak hour   | 12                       | 18                       | 12                        | 18                       | 60                                   |
| PM peak hour   | 12                       | 18                       | 12                        | 18                       | 60                                   |

Given that Port Botany currently experiences high volumes of vehicle movements far exceeding the Projected peak construction traffic, the additional 60 peak hour vehicle movements represent a minor increase relative to existing traffic flows.

The subject land is characterised by highly modified industrial infrastructure with negligible native vegetation or habitat connectivity, resulting in very limited fauna presence or movement across the subject land. Consequently, the risk of vehicle strike on threatened fauna is negligible.

Traffic movements will be managed under a Construction Traffic Management Plan developed in consultation with relevant authorities to ensure safe and environmentally responsible operations throughout the construction phase. Overall, the Project's traffic generation is unlikely to materially increase the risk of vehicle strike to fauna in the vicinity. This is further discussed in the Traffic and Transport Impact Assessment (AECOM 2025d).

### Duration

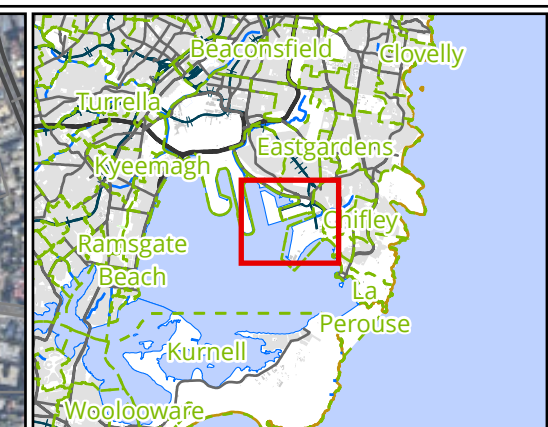
Impacts are expected to be limited to the construction phase only, with increased vehicle movements occurring temporarily during this period. Upon completion of construction, vehicle activity and associated risks will return to existing baseline levels (AECOM 2025d).

### Consequences

Given the subject land's heavily modified industrial context and absence of suitable habitat for threatened fauna within the development footprint, the risk of vehicle strike impacting threatened species is very low. The lack of vegetation and natural corridors on-site means that fauna presence, including that of threatened species, is minimal. Key nearby habitats such as the Penrhyn Estuary are physically separated by infrastructure, further reducing the likelihood of fauna traversing the subject land and encountering vehicles.

Species potentially using adjacent aquatic habitats, such as threatened shorebirds, generally exhibit high mobility and alertness, allowing them to avoid vehicle collisions. Additionally, vehicular movements will be restricted to existing port roads and hardstand areas, where fauna activity is already limited. These factors, combined with established site management practices including designated vehicle routes and speed limits, mean that any consequences of vehicle strike on threatened fauna are expected to be negligible.





- Legend**
- Subject land
  - Project area
  - Penrhyn Estuary
  - Known Shorebird Habitat - Indirect impact buffer
  - Osprey nest - Indirect impact buffer
  - Osprey nest
  - Distance between project area and Penrhyn Estuary (377.4m)
  - Distance between project area and known shorebird habitat buffer (77.4m)
  - Distance between project area and Osprey nest (446.5m)
  - Distance between project area and Osprey nest buffer (346.5m)

**Figure 6-1 Estimated zones of indirect impacts**

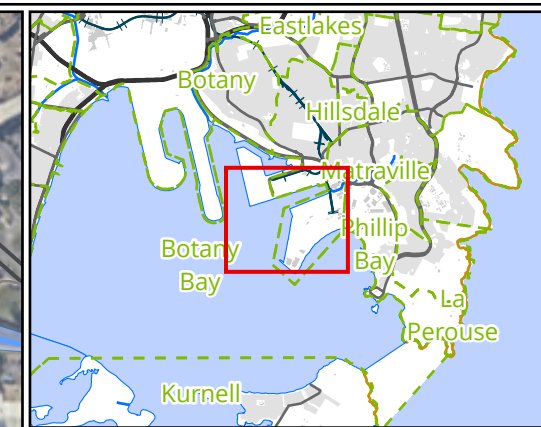
0 100 200 300 400  
Metres

Scale: 1:11,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56

**biosis**  
APEM Group

Matter: 43201,  
Date: 21 August 2025,  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.mxd





- Legend**
- Subject land
  - Project area
  - Existing infrastructure to be removed
  - Aquatic/Marine features

**Figure 6-2 Prescribed impacts**



Metres  
Scale: 1:8,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56



Matter: 43201, Date: 19 August 2025,  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F6-2\_PrescribedImpacts



## 6.4 Assessment of cumulative impacts

Cumulative impacts have the potential to occur when benefits or impacts from a Project overlap or interact with those of other Projects, potentially resulting in a larger overall effect (positive or negative) on the environment or local communities. Cumulative impacts may occur when Projects are constructed or operated concurrently or consecutively.

Projects were reviewed against the following screening criteria for this cumulative impact assessment:

- Spatially relevant (i.e., the development or activity overlaps with, is adjacent to or within two kilometres of the Project Area).
- Scale (i.e., large-scale major development or infrastructure Projects that have the potential to result in cumulative impacts with the proposed modification, as listed on the NSW Government Major Projects website and on the relevant council websites).
- Timing (i.e. the expected timing of its construction and/or operation overlaps or occurs consecutively to construction and/or operation of the proposed modification).
- Status (i.e., Projects in development with sufficient publicly available information to inform this environmental impact statement and with an adequate level of detail to assess the potential cumulative impacts).

Projects identified as contributing to potential cumulative impacts have met these criteria and include:

- CP Group and KLF Group Waste Management Facility, Botany.
- Modification of Orica Chlor-Alkali Plant, Botany Industrial Park.
- Orica Southlands Warehouse Estate Stage 3.
- Stephen Road Multi-level Warehouse, Banksmeadow.

Further assessment of these Projects, with respect to construction, facilitated, and operational impacts, is provided below. The locations of the above Projects are shown on Figure 6-3.

### 6.4.1 Construction

For surrounding Projects located outside of the subject land, the addition of the proposed Project is considered unlikely to contribute significantly to direct impacts on biodiversity. Impacts associated with the Project are negligible, comprising only the removal of highly modified urban/exotic vegetation within the subject land, which is of negligible ecological value and does not support native PCTs or threatened species habitat. As such, the Project would not reduce any important habitat within the locality, nor would it increase the existing disturbance footprint of Port Botany, which has long-standing industrial operations in the area.

Similarly, the Project located would not result in any increase to the existing disturbance footprint of Port Botany. While portions of highly modified vegetation may be removed, these are not expected to impact any threatened species or other sensitive ecological communities within the locality.

Indirect impacts associated with the Project, including dust, noise, and vibration during construction, are expected to be negligible (see Section 6.2). Existing operations within Port Botany already generate similar levels of disturbance, and standard mitigation measures, including those outlined in the CEMP will further ensure that no significant indirect impacts to surrounding biodiversity occur.

Overall, when considered cumulatively with existing and approved development in the locality, the Project's construction impacts on biodiversity are negligible and do not increase the ecological risk beyond the baseline conditions established by long-term industrial activities at Port Botany.

#### **6.4.2 Operation**

Botany Bay has undergone various changes over the years to enable the area as a strategic industrial hub fundamental to supporting and growing Greater Sydney. Cumulative changes that have occurred prior to the Project, such as land reclamation for the Sydney Kingsford Smith Airport runways, Port Botany's expansion, and the recent Kamay Ferry Wharves, have significantly altered the natural landscape over time (see Section 2.1.1).

By being located entirely within the Port Botany Lease Area, the Project ensures alignment with long-term planning strategies and reduces the likelihood of encroachment on surrounding residential or recreational zones.

During operation, potential ecological impacts from the Project are expected to be negligible. No new native vegetation clearing or disturbance of remnant habitats will occur, and all works are contained within highly modified and previously developed areas. Operational activities, including shipping movements, quay operations, and associated port infrastructure, are consistent with existing conditions in Port Botany. Consequently, cumulative operational impacts on local biodiversity and threatened species are expected to be minimal.

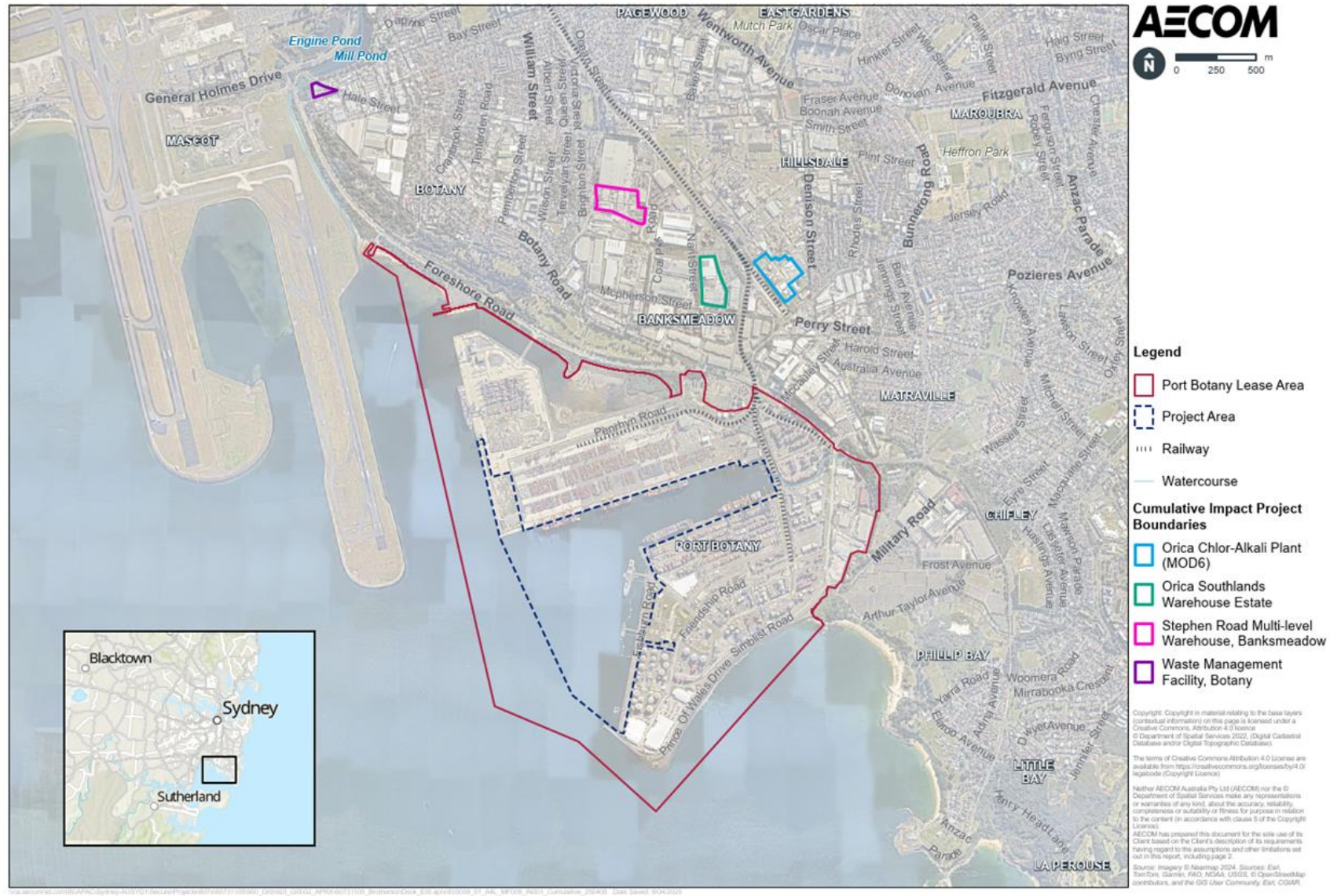
#### **6.4.3 Facilitated impacts**

Whilst NSW Ports does not seek approval for this further development, the Project would facilitate future container operations within the extended quayline and wharf area. The facilitated development is anticipated to include:

- Installation of up to three new quay cranes.
- Installation of quay rail sidings.
- Crane power and control systems.
- Supporting services, including drainage, power supply, lighting, firefighting systems, security, water supply and sewerage, and telecommunications.

The facilitated development reflects potential operational enhancements enabled by the Project infrastructure. While these works are not the subject of the current approval, they represent foreseeable upgrades to port operations that could be implemented in the future to increase handling capacity and operational efficiency. The inclusion of this description ensures that any future planning, coordination, and design considerations can take account of the potential for these works, including integration with existing infrastructure and alignment with broader port development objectives.





**Figure 6-3 Cumulative development Projects within the locality**

## **6.5 Impacts considered uncertain**

There are no impacts considered uncertain for the current assessment.

## **6.6 Impacts to Groundwater Dependent Ecosystems (GDE)**

Assessment of the potential for the subject land to support groundwater dependant ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems Atlas (BOM 2019). The subject land is not mapped as supporting GDEs associated with an aquifer in Appendix 8 of the Risk Assessment Guidelines for Groundwater Dependent Ecosystems (DPI 2012). The subject land is not mapped as having Groundwater Vulnerability.



## 7 Mitigation and management of impacts

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While the subject land is heavily modified and contains no native vegetation or suitable habitat for threatened species, a precautionary approach has been adopted to further ensure that any unforeseen risks are managed.

In recognition of best practice environmental management, mitigation measures from Appendix C of the EIS (AECOM 2025a) that are relevant to ecological protection and the management of potential environmental effects have been reproduced below in Table 18, including their corresponding 'Mitigation ID'. These measures address a range of environmental considerations, including sediment and erosion control, noise and vibration management, dust suppression, lighting and other operational management practices that may indirectly support ecological management.

The inclusion of these measures is not indicative of anticipated ecological impacts. Rather, the measures provide a structured framework to ensure that Project activities are conducted in accordance with established environmental management practices, safeguard ecological values, and maintain a precautionary approach throughout construction.

By adopting these EIS-derived measures, the Project ensures that any unforeseen risks is managed effectively. This approach aligns with contemporary environmental management principles and provides assurance that the environment is effectively managed throughout the course of construction activities.

**Table 18 EIS-Derived Environmental and Ecological Management Measures Relevant to the Project**

| NID                                                  | Issue                                                                                                                                                                                      | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Timing                |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Construction Environmental Management Plan(s)</b> |                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |
| <b>G1</b>                                            | Construction environmental management                                                                                                                                                      | NSW Ports will ensure that the contractor for the Project prepares and implements a CEMPs to manage potential construction phase-impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Prior to construction |
| <b>CP1</b>                                           | Minimisation of sediment dispersion and deposition                                                                                                                                         | <p>The CEMPs will include measures to minimise and manage the generation and extent of dispersion and deposition of suspended sediments during dredging and reclamation activities, including:</p> <ul style="list-style-type: none"> <li>• Consideration of potential sediment plume confinement measures where practical</li> <li>• Measures to monitor and manage discharges from the reclamation area within a Total Suspended Solids (TSS) concentration target of 50 milligrams per litre.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Construction          |
| <b>WQ1</b>                                           | Minimisation of erosion and sedimentation during excavation of trenches or pits, demolition of existing structures including wharves and construction of hardstands, wharves and buildings | <p>The CEMPs will include measures to minimise and manage the generation of sediment-laden surface water run-off, including:</p> <ul style="list-style-type: none"> <li>• Erosion and sediment control plan(s) will be developed, implemented, monitored and reviewed at regular intervals throughout the construction phase in accordance with Managing Urban Stormwater - Soils and Construction (Volume 1 &amp; 2A) (Landcom 2004, 2009).</li> <li>• Areas of disturbance will be minimised to limit potential volume of open trenches and pits and construction rubble.</li> <li>• Revegetation/ stabilisation of soils will be completed as soon as practical following ground disturbing works.</li> <li>• Spill booms will be deployed around the immediate marine-based work areas where possible.</li> <li>• Impermeable ground sheets and/ or shrouding (comprising shade cloth or similar) will be used immediately below and adjacent to demolition works where practicable to prevent debris entering the water</li> </ul> | Construction          |



| NID        | Issue                                                                                          | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Timing                                 |
|------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
|            |                                                                                                | <ul style="list-style-type: none"> <li>Dust mitigation measures will be employed including covering stockpiles of excavated materials, dust extraction on cutting and or grinding tools where possible and work areas / excavated material is kept damp where possible.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                        |
| <b>TE1</b> | Management of unexpected terrestrial native fauna during construction                          | The CEMPs for the Project will include protocols for managing unexpected native fauna that may be encountered during construction. This will include procedures for management and relocation of the fauna, where necessary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Construction                           |
| <b>TE2</b> | Management of weeds                                                                            | The CEMPs for the Project will include provisions to minimise the spread of weeds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Construction                           |
| <b>SC1</b> | Unknown existing contamination in soil, groundwater, seepage water, sediment and surface water | <p>An unexpected finds procedure will be developed and implemented as part of the CEMPs for the Project. The procedure will include a process for addressing unexpected contamination and provisions for:</p> <ul style="list-style-type: none"> <li>Cessation of works within the affected area until inspection of the suspected contamination by a qualified contamination specialist (verification by a certified contaminated land practitioner)</li> <li>Collection of soil, sediment, water samples for analysis based on observations</li> <li>Assessment of results against applicable land use or waste classification criteria in accordance with statutory guidelines</li> <li>Management of the contamination in accordance with applicable statutory guidelines.</li> </ul>                                 | Construction                           |
| <b>NV1</b> | Management of construction noise and vibration                                                 | <p>As a sub plan to the CEMP(s), a Construction Noise and Vibration Management Plan (CNVMP) will be prepared and will include:</p> <ul style="list-style-type: none"> <li>Identification of potentially significant noise and vibration generating construction activities and locations based on detailed design and construction planning, and associated potentially affected noise and vibration sensitive receivers</li> <li>Details of construction noise management levels and vibration goals applicable to each sensitive receiver or group of receivers</li> <li>Identification of feasible and reasonable measures to be implemented during construction to minimise noise and vibration impacts, such as working hours, staging, placement and operation of work sites, parking and storage areas,</li> </ul> | Prior to construction and construction |

| NID        | Issue                                          | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Timing       |
|------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|            |                                                | <p>plant and equipment selection, and controlling the location and use of vibration generating equipment</p> <ul style="list-style-type: none"> <li>• Details of specific measures to be applied in circumstances where construction noise management levels and/ or vibration goals will not be met at noise sensitive receivers</li> <li>• A monitoring program to monitor and assess the performance of construction activities against the applicable construction noise management levels and vibration goals</li> <li>• Arrangements for consultation with potentially affected noise and vibration sensitive receivers, including notifications of planned construction works and complaint handling procedures</li> <li>• A procedure for considering and managing construction activities outside standard construction hours, including approval processes, activity planning and scheduling, receiver notification and engagement procedures, and mitigation and management measures.</li> </ul>                                                                                                                                        |              |
| <b>NV3</b> | Mitigation of construction noise and vibration | <p>Construction activities will be planned and carried out to minimise noise and vibration impacts on sensitive receivers. Where relevant, this may include application of the following types of measures to individual construction sites and activities:</p> <ul style="list-style-type: none"> <li>• Construction sites will be configured to maximise the distance and/ or provide shielding between noisy plant and equipment and sensitive receivers, where feasible and reasonable</li> <li>• Site sheds and hoarding will be positioned to provide shielding between noisy plant and equipment and sensitive receivers, where feasible and reasonable</li> <li>• Materials/ deliveries will be loaded and unloaded as far as practicable from sensitive receivers, and/ or loading/ unloading areas will be shielded</li> <li>• Construction sites will be configured to minimise the need for reversing vehicles, particularly for regular/ repeatable movements</li> <li>• Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on construction vehicles and mobile plant regularly used on site</li> </ul> | Construction |



| NID  | Issue                                     | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Timing       |
|------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|      |                                           | <ul style="list-style-type: none"> <li>Vibration intensive equipment will be selected based on the structural damage minimum working distances. The use of less vibration intensive methods of construction or equipment will be considered where feasible and reasonable.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |
| NVU1 | Underwater noise and vibration management | <p>As a sub plan to the CEMP(s), an Underwater Noise and Vibration Management Plan (UNVMP) will be prepared and will align with the three management zones:</p> <ul style="list-style-type: none"> <li>Zone 1: Stop work</li> <li>Zone 2: Introduce work restrictions</li> <li>Zone 3: Observation</li> </ul> <p>The UNVMP will consider recommendations in the DIT Guideline (2023) where appropriate and will include:</p> <ul style="list-style-type: none"> <li>A procedure for planning and monitoring piling activities to limit impact piling to a maximum of 1,000 strikes per day</li> <li>Visual monitoring zones aligned with the recommended shut-down, restrict work and observation zones for marine mammals.</li> <li>A trained marine mammal observer will be present during all underwater noise generating activities (piling and dredging) to record observations of when a marine mammal (cetacean or pinniped) enters the visual monitoring zones.</li> <li>Pre-start procedure: prior to commencing noise disturbance activities, the Zone 1 (stop works) management zone will be clear of observable marine mammals for a period of at least 30 minutes.</li> <li>A soft start process will be developed and applied for piling works that would last for 10 minutes, within which piling energy and frequency would gradually ramp up. The soft start process will also be used after long breaks during works of 30 minutes or greater.</li> <li>Implementation of pre-start, soft start, normal operation, stand-by operation, and shut-down procedures for piling.</li> <li>Preparation and maintenance of compliance and siting reports while piling and dredging takes place.</li> <li>Briefing on environmental matters, including marine mammal identification, marine mammal concentration areas, peak migration paths and times, key</li> </ul> | Construction |

| NID                                                      | Issue                                                    | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Timing                        |
|----------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                                                          |                                                          | feeding sites, and other aggregation areas to be provided to all relevant construction involved in planning for and delivering piling activities, as part of site inductions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                               |
| <b>AQ2</b>                                               | Minimisation of dust emissions from construction traffic | <p>Dust emissions from construction vehicles travelling to or from the construction footprint will be minimised by:</p> <ul style="list-style-type: none"> <li>• Covering dust generating loads where practicable</li> <li>• Implementing a wheel washing system at relevant construction site access points (with rumble grids to dislodge accumulated dust and mud prior to leaving the Project Area) where practicable</li> <li>• Using water-assisted sweepers or similar on access roads around the construction footprint to remove any material tracked onto those roads by construction traffic.</li> </ul>                                                                                                                                                    | Construction                  |
| <b>Construction Safety Plan/ Emergency Response Plan</b> |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                               |
| <b>SC6</b>                                               | Demolition of potentially contaminated structures        | A hazardous material building survey of BLB1 will be conducted prior to the demolition works to identify the presence of asbestos, lead based paints, PCBs etc. If detected, then an appropriately licensed contractor will be engaged to conduct the demolition works with appropriate controls in place to manage risks associated with handling these materials.                                                                                                                                                                                                                                                                                                                                                                                                    | Construction                  |
| <b>Detailed design</b>                                   |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                               |
| <b>WQ4</b>                                               | Management of site generated stormwater                  | <p>The following measures will be implemented to manage site generated stormwater:</p> <ul style="list-style-type: none"> <li>• A similar stormwater design and treatment regime as the existing Port will be installed</li> <li>• The detailed design will identify stormwater management requirements to be incorporated into existing operational management plans for the extended quayline and wharf area, and the BLB3 landside infrastructure</li> <li>• Stormwater management infrastructure will be design and installed having regard to water sensitive urban design (WSUD) principles and with the aim of achieving the objectives of the Botany Bay Water Quality Improvement Plan (Sydney Metropolitan Catchment Management Authority, 2011).</li> </ul> | Detailed design and operation |



| NID | Issue                                                                       | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Timing                                      |
|-----|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| HR5 | Minimisation of leaks and spills of dangerous goods and hazardous materials | <p>Detailed design will include measures to minimise and manage potential leaks and spills of dangerous goods and hazardous materials, including</p> <p>Fully welded product transfer pipelines, minimising flanges and potential leak points.</p> <p>Marine loading arms will be hard piped (no flexible connections)</p> <p>The movement of marine loading arms outside a safe operating envelope will cause alarms, emergency shut downs and disconnects, and the connection of the marine loading arm to the ship is to be bolted securely in place</p> <p>The BLB3 wharf will be fully bunded with a bund height of 200mm</p> <p>A containment pit will be constructed around the pipe isolation valves (onshore)</p> <p>Hydrostatic testing of pipes will be conducted at commissioning and regular integrity testing will occur during their operating life in accordance with applicable standards</p> <p>Operators will monitor transfers (leak monitoring of pipelines), and joints and connections will to be continuously monitored for leaks by the ship and shore crews during product transfers</p> <p>The marine loading arm start up procedure will include a staged pressurisation and monitoring to detect leaks</p> <p>The marine loading arms will be monitored and controlled from a central control room on shore, with Supervisory Control and Data Acquisition systems (SCADA)</p> <p>An emergency shut down will be installed at the base of the marine loading arms on the wharf</p> <p>A dry break and weak coupling (emergency release coupling) will form part of the marine loading arm connection to the ship</p> <p>All relevant equipment will be classified to AS60079 to eliminate ignition sources in the wharf area (i.e. hazardous area classification).</p> | Detailed design                             |
| AV1 | Minimisation of lighting impacts                                            | All lighting installed within Zone D as defined under Guideline E – Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports will have a maximum light intensity of no more than 450 cd.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Detailed design, construction and operation |
| LV1 | Minimisation of impact of lighting                                          | Any temporary lighting will adhere to the standard set out in AS/NZS 4282:2019:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Detailed design and                         |

| NID                        | Issue                                                                                           | Mitigation measure                                                                                                                                                                                                                                                                                                                                                                                                                        | Timing                           |
|----------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|                            |                                                                                                 | Control of the obtrusive effects of outdoor lighting, and will be mounted, screened, or directed in such manner that it does not create a nuisance or light spill onto land outside the Port Botany Lease Area.                                                                                                                                                                                                                           | construction                     |
| <b>CC1</b>                 | Adaptation to climate change risks                                                              | The climate change risk assessment carried out for the Project will be reviewed during ongoing design development, and if necessary, adaptation measures updated to reflect the current Project design. Adaptation measures will be identified and considered for implementation for all climate change risks identified as significant or high.                                                                                          | Detailed design and construction |
| <b>WQ5</b>                 | Management of site generated stormwater                                                         | On site stormwater management will be designed and implemented to minimise pollutant loads entering Brotherson Dock.                                                                                                                                                                                                                                                                                                                      | Detailed design                  |
| <b>SU2</b>                 | Embedding sustainability in design and delivery                                                 | A sustainability initiatives register will be developed and used to track the implementation status of sustainability initiatives as the Project design progresses.                                                                                                                                                                                                                                                                       | Detailed design                  |
| <b>Site investigations</b> |                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                  |
| <b>SC3</b>                 | Known existing contamination in sediments in Brotherson Dock material within dredging footprint | Sampling and elutriate analysis of sediments will be carried out prior to construction to confirm existing findings and further inform handling of dredge spoil and management procedures to be implemented during construction. The sampling and analysis will consider whether contaminants are bound to particles and their bioavailability. A Sampling Analytical Quality Plan (SAQP) will be prepared for the sampling and analysis. | Prior to construction            |



## 8 Serious and irreversible impacts

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This section addresses the TECs and/or threatened species that are at risk of a SAI including:

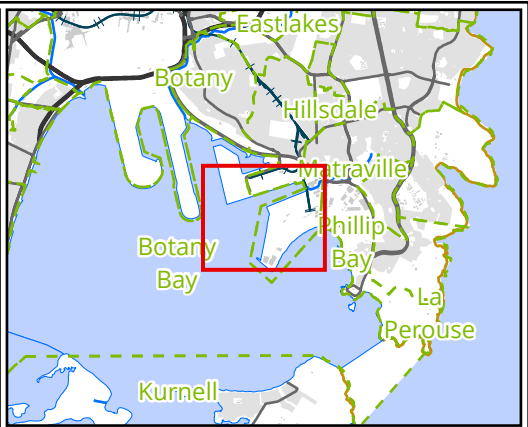
- Addressing all criteria for each TEC listed as at risk of an SAI present on the subject land.
- Addressing all criteria for each threatened species at risk of an SAI present on the subject land.
- Documenting assumptions made and/or limitations to information.
- Documenting all sources of data, information, references used or consulted.
- Clearly justifying why any criteria could not be addressed.

In accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

1. Principle 1: It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
2. Principle 2: It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
3. Principle 3: It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.
4. Principle 4: The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

The Eastern Curlew is identified as a species credit species at risk of a SAI, and important habitat is mapped within the marine areas of the subject land (as described in Section 2.1.9 and shown on Figure 4-2). However, these mapped important areas occur entirely as open water zones. The proposed dredging of Brotherson Dock and construction of associated infrastructure is proposed to occur within these marine areas, but will not affect terrestrial vegetation or terrestrial habitat. The Eastern Curlew is dependent on undisturbed intertidal mudflats, sandflats, and shallow waters for feeding, as well as coastal roosting sites, none of which will be impacted by the Project. Therefore, while the presence of important habitat for Eastern Curlew is acknowledged, no direct terrestrial biodiversity impacts are expected, and a SAI assessment has not been undertaken.





- Legend**
- Subject land
  - Project area
- SAIL Entities**
- Eastern Curlew - Species polygon

**Figure 8-1 Serious and irreversible impacts (SAIL)**

0 100 200 300  
Metres

Scale: 1:8,000 @ A3  
Coordinate System: GDA2020 MGA Zone 56

**biosis**  
APEM Group

Matter: 43201, Date: 19 August 2025,  
Prepared for: JRS, Prepared by: HL, Last edited by: hliswoyo  
Location: P:\43200s\43201\Mapping\43201\_PortBotany\_BDAR.aprx  
Layout: 43201\_F8-1\_SAIL



## 9 Impact summary and offset obligations

This section identifies residual impacts of the Project following implementation of avoidance and minimisation measures (as outlined in Section 5) and details any offset obligations. Residual impacts have been assessed using the BAM-C, which applies the rules and calculations specified in the BAM. The BAM-C provides a standardised approach to assessing biodiversity impacts, enabling assessors to enter site-specific field data and determine the number and class of biodiversity credits potentially required.

Within the BAM-C, multiple revisions of a case can be created to explore the effects of changes to an assessment while retaining an unchanged copy of the original. For the current assessment, two revisions were prepared:

- **Revision 0** – Incorporated benchmark vegetation data of native vegetation communities from the broader landscape surrounding the subject land, specifically the adjacent Penrhyn Estuary, to inform the threatened species assessment (see Section 4).
- **Revision 1** – Incorporated plot data collected from urban and exotic vegetation within the subject land. This revision was applied when determining residual terrestrial impacts and any offset obligations for the Project.
  - As areas of urban native/exotic vegetation within the subject land could not be assigned to a PCT, a reference PCT was required for use in the BAM-C. The closest ecologically comparable reference, PCT 3806 – Sydney Coastal Sand Mantle Heath, was used to provide a framework for evaluating vegetation integrity. This approach allowed for a meaningful assessment of vegetation condition despite the subject land not supporting native ecological communities. Vegetation integrity scores derived from Revision 1 provided supported the determination of offset obligations (refer to Section 3.3.3).

Details of offset obligations generated from the BAM-C are displayed below.

### 9.1 Identification of impacts requiring offset

#### 9.1.1 Impacts to native vegetation (ecosystem credits)

As outlined in Section 9.2.1 of the BAM, the assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

1.  $\geq 15$ , where the PCT is representative of an EEC or a CEEC.
2.  $\geq 17$ , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.
3.  $\geq 20$ , where the PCT does not represent a TEC and is not associated with threatened species habitat.

The subject land is highly modified and contains no native vegetation or remnant PCTs. Vegetation present is either exotic species or urban planting of negligible biodiversity value. As such, there are no impacts to native terrestrial vegetation that would trigger the requirement for ecosystem credit offsets under the BAM.

### 9.1.2 Impacts to threatened species and their habitat

As outlined in Section 9.2.2 of the BAM an offset is also required for the impacts of the proposals on the habitat of threatened species assessed for ecosystem credits and associated with a PCT in a vegetation zone with a vegetation integrity score of  $\geq 17$ .

However, no threatened flora or fauna species were recorded within the subject land, and habitat suitable for threatened species is absent, with no important microhabitats such as hollow-bearing trees, rock outcrops, or aquatic environments present.

While important habitat for Eastern Curlew and Bar-tailed Godwit is mapped in marine areas overlapping the Project footprint, these areas are entirely open water zones. Dredging of Brotherson Dock and construction of associated infrastructure occurs within these marine areas and does not affect terrestrial vegetation or terrestrial habitat used by threatened species. Therefore, no offsets are required for threatened species or their habitat under the BAM.

## 9.2 Identification of impacts not requiring offset

Following efforts to avoid and minimise impacts, the residual terrestrial impact of the Project is limited to the removal of highly modified urban/exotic vegetation within the subject land. Given these circumstances, the residual impacts do not meet the threshold for ecosystem credit requirements under the BAM. Specifically:

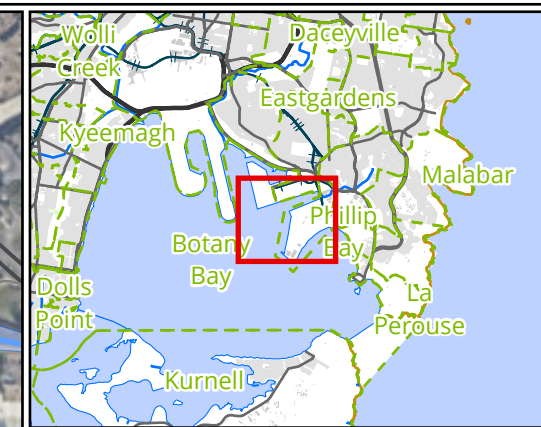
- No native PCTs will be impacted.
- No habitat for threatened species will be impacted.
- All potential indirect and prescribed impacts to surrounding native vegetation or ecological receptors are negligible and effectively managed through standard construction controls.

In summary, the Project results in no residual terrestrial impacts of ecological significance. Accordingly, no biodiversity offsets are required in accordance with the BAM no net loss standard. The Project's avoidance and minimisation measures, combined with the highly modified nature of the subject land, ensure that biodiversity values are maintained and protected.

## 9.3 Identification of areas not requiring assessment

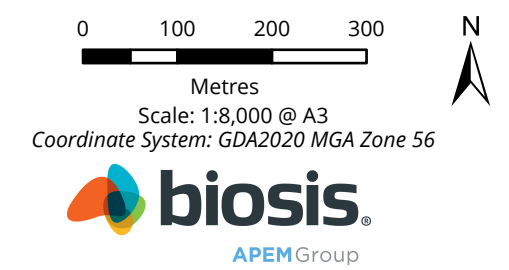
Following the assessment, it was determined that previously cleared areas of the subject land did not require assessment. However, existing structures and non-native vegetation to be removed were assessed for potential prescribed impacts. No such impacts were found.





- Legend**
- Subject land
  - Project area
  - Vegetation zones - Biosis**
  - Urban Native/Exotic
  - Offsets**
  - Impacts not requiring offset

Figure 9-1 Offsets





## 10 Biodiversity credit report

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Offsetting through the transfer and retirement of biodiversity credits or paying into the Biodiversity Conservation Trust (BCT) Offset Fund, is not required for the current assessment, as no residual terrestrial impacts have been identified. A biodiversity credit report is provided on the following pages to formally demonstrate that no offset obligation is generated for this Project.



## Proposal Details

|                                |                                                                  |                                              |
|--------------------------------|------------------------------------------------------------------|----------------------------------------------|
| Assessment Id                  | Proposal Name                                                    | BAM data last updated *                      |
| 00059755/BAAS25013/25/00059756 | Port Botany Quayline<br>Equalisation - Exotic vegetation<br>Only | 05/08/2025                                   |
| Assessor Name                  | Report Created                                                   | BAM Data version *                           |
| Jake Schwebel                  | 15/09/2025                                                       | Current classification (live - default) (82) |
| Assessor Number                | BAM Case Status                                                  | Date Finalised                               |
| BAAS25013                      | Finalised                                                        | 15/09/2025                                   |
| Assessment Revision            | BOS entry trigger                                                | Assessment Type                              |
| 2                              | BOS Threshold: Biodiversity Values Map                           | Part 4 Developments (Small Area)             |

\* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

## Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

| Zone | Vegetation zone name | TEC name | Current Vegetation integrity score | Change in Vegetation integrity (loss / gain) | Area (ha) | Sensitivity to loss (Justification) | Species sensitivity to gain class | BC Act Listing status | EPBC Act listing status | Biodiversity risk weighting | Potential SAI | Ecosystem credits |
|------|----------------------|----------|------------------------------------|----------------------------------------------|-----------|-------------------------------------|-----------------------------------|-----------------------|-------------------------|-----------------------------|---------------|-------------------|
|------|----------------------|----------|------------------------------------|----------------------------------------------|-----------|-------------------------------------|-----------------------------------|-----------------------|-------------------------|-----------------------------|---------------|-------------------|

## BAM Credit Summary Report

### Sydney Coastal Sand Mantle Heath

|   |             |           |      |      |     |                    |                          |  |  |      |                 |          |
|---|-------------|-----------|------|------|-----|--------------------|--------------------------|--|--|------|-----------------|----------|
| 1 | 3806_Exotic | Not a TEC | 13.9 | 13.9 | 4.4 | PCT Cleared - 100% | High Sensitivity to Gain |  |  | 2.50 |                 | 0        |
|   |             |           |      |      |     |                    |                          |  |  |      | <b>Subtotal</b> | <b>0</b> |
|   |             |           |      |      |     |                    |                          |  |  |      | <b>Total</b>    | <b>0</b> |

### Species credits for threatened species

| Vegetation zone name | Habitat condition (Vegetation Integrity) | Change in habitat condition | Area (ha)/Count (no. individuals) | Sensitivity to loss (Justification) | Sensitivity to gain (Justification) | BC Act Listing status | EPBC Act listing status | Potential SAIL | Species credits |
|----------------------|------------------------------------------|-----------------------------|-----------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------|----------------|-----------------|
|----------------------|------------------------------------------|-----------------------------|-----------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------|----------------|-----------------|



## 11 Assessment against biodiversity legislation

### 11.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. The EPBC Act applies to developments and associated activities that have the potential to significantly impact on MNES protected under the Act. Under the EPBC Act, activities that have potential to result in significant impacts on MNES must be referred to the Commonwealth Minister for the Environment and Energy for assessment.

An assessment of the impacts of the proposed development on MNES, against heads of consideration outlined in Commonwealth of Australia (2013) was prepared to determine whether referral of the proposed development to the Commonwealth Minister for the Environment is required. MNES relevant to the proposed development are summarised in Table 19.

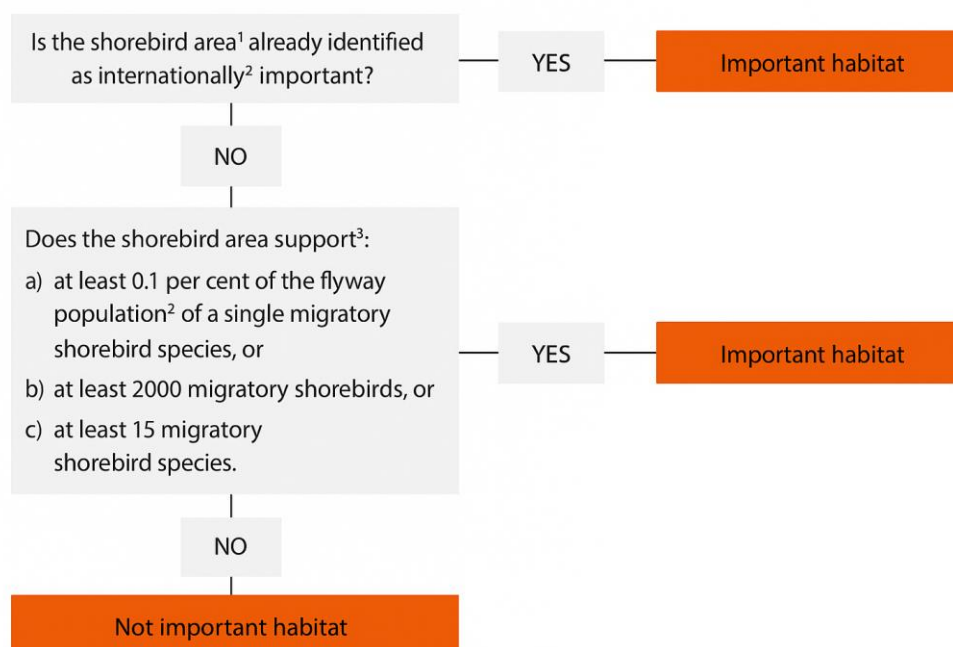
**Table 19 Assessment of the proposed development against the EPBC Act**

| Matter of NES                            | Project specifics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Potential for significant impact                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>Threatened species</b>                | Important habitat for two shorebird species (Eastern Curlew and Bar-tailed Godwit) listed under the EPBC Act occurs within the subject land. While no direct impacts are expected, a Significant Impact Criteria (SIC) assessment is included in Appendix 5 as there is nearby important habitat mapping for these species. Furthermore, these shorebird species have been assessed with reference to the 'Industry Guidelines for Avoiding, Assessing and Mitigating Impacts on EPBC Act Listed Migratory Shorebird Species'. Further details are provided below in Section 11.1.1. | No potential for impact.                                      |
| <b>Threatened ecological communities</b> | There are no TECs within the subject land that are listed under the EPBC Act.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No potential for impact.                                      |
| <b>Migratory species</b>                 | The subject land has the potential to support migratory species, however there are no areas that are considered significant habitat for migratory species. Migratory species may occasionally stopover on the subject land, however, this would be enroute to the Penryn Estuary.                                                                                                                                                                                                                                                                                                    | No direct impact is expected to any migratory listed species. |
| <b>National Heritage Places</b>          | There are no National Heritage Places within the subject land. However, the 'Kamay Botany Bay: Botanical Collection Sites' (which includes Kamay Botany Bay National Park and Towra Point Reserve) are located                                                                                                                                                                                                                                                                                                                                                                       | No potential for impact.                                      |

| Matter of NES                                              | Project specifics                                                                                                                                                  | Potential for significant impact |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
|                                                            | within close proximity (within 500 m). No impacts to this site will occur for the Project.                                                                         |                                  |
| <b>Wetlands of international importance (Ramsar sites)</b> | The Towra Point wetland is located over 4 kilometres from the subject land and is considered a Ramsar wetland. No impacts to this site will occur for the Project. | No potential for impact.         |

### 11.1.1 EPBC Act Policy Statement 3.21 – Industry Guidelines for Migratory Shorebirds

The commonwealth EPBC Act Policy Statement 3.21 provides guidance for identifying areas of ecologically significant 'Important Habitat' for EPBC Act listed migratory shorebirds (DoEE 2017). The policy applies to 37 species that migrate annually to and from Australia. The process for identifying important habitat for migratory shorebirds as per these guidelines is displayed below in Figure 11-1.



**Figure 11-1 Process for identifying important habitat for migratory shorebirds**

Based on the above, The Project area has been assessed against the process for identifying important habitat for migratory shorebirds under Policy Statement 3.21. This is summarised below in Table 20.

**Table 20 Assessment of Project Area Against Important Habitat Criteria for Migratory Shorebirds**

| Criterion (Policy Statement 3.21)                                                    | Assessment against Project Area                                                                                                                                                                                                                                                                                                                                                           | Meets Criterion? |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Regularly supports at least 0.1% of the flyway population of a single species</b> | The Project area comprises highly disturbed exotic vegetation and does not contain intertidal or roosting habitat suitable for migratory shorebirds. A habitat assessment as per Section 5.2 of the BAM (DPIE 2020; Appendix 2) was completed, with shorebird species considered unlikely to occur within the Project Area. Furthermore, as a regional reference, long-term monitoring at | No               |



| Criterion (Policy Statement 3.21)                                 | Assessment against Project Area                                                                                                                                                                                                                                                                                             | Meets Criterion? |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|                                                                   | Penrhyn Estuary (Cardno 2019) shows that even in areas with substantially enhanced intertidal and roosting habitat, shorebird use is sporadic and not regular, demonstrating that the Project area is unlikely to support populations at the 0.1% flyway threshold.                                                         |                  |
| <b>Regularly supports at least 2,000 migratory shorebirds</b>     | The Project area lacks intertidal flats, sandflats, shallow waters, and coastal roosting sites, so regular species presence is negligible. Highly transient or vagrant individuals may occasionally occur in the locality, but congregations of this size are highly unlikely to occur.                                     | No               |
| <b>Regularly supports at least 15 migratory shorebird species</b> | The Project area contains does not contain habitat suitable for use by shorebirds. Potential occurrence is predicted to be zero for regular use (Appendix 2), Whilst highly transient individuals may occasionally be present. Species richness is considered to be below the threshold to be considered important habitat. | No               |

Based on the criteria in EPBC Act Policy Statement 3.21 (Figure 11-1), the Project area is not identified as internationally important and does not support sufficient numbers of migratory shorebirds to meet the threshold for important habitat. Therefore, the Project is not expected to result in any measurable reduction in the availability, quality, or accessibility of important shorebird habitat, and no EPBC Act important habitat mapping occurs within the Project area. However, as a precautionary approach, and given that BAM mapping identifies important habitat for Eastern Curlew and Bar-tailed within the Project area (refer to Section 2.1.9 and shown on Figure 4-2), a SIC assessment was completed for each of these species.

## 11.2 *Environmental Planning and Assessment Act 1979* / Environmental Planning and Assessment Regulation 2021

The EP&A Act was enacted to encourage the proper consideration and management of impacts of proposed development or land-use changes on the environment (both natural and built) and the community. The EP&A Act is administered by the NSW DPHI.

The EP&A Act provides the overarching structure for planning in NSW and is supported by other statutory environmental planning instruments. Sections of the EP&A Act of primary relevance to the natural environment are outlined further below.

### 11.2.1 State Environmental Planning Policies

#### State Environmental Planning Policy (Transport and Infrastructure) 2021

The aim of Chapter 2 of the Transport and Infrastructure SEPP is to facilitate the effective delivery of infrastructure across the State. The application of this Chapter is discussed in further detail below.

Due to the enactment of the Transport and Infrastructure SEPP, Port Botany, including the subject land, is zoned as SP1 (Special Activities). This zone is described in Chapter 5 of the Transport and Infrastructure SEPP, which pertains to the three ports, including Port Botany. Relevant objectives of this zone include:

- To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.

- To maximise the use of waterfront areas to accommodate port facilities and industrial, maritime industrial, freight and bulk storage premises that benefit from being located close to port facilities.
- To enable the efficient movement and operation of commercial shipping and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure.
- To provide for port related facilities and development that support the operations of Port Botany, Port Kembla and the Port of Newcastle.

The Project is considered permissible with consent as outlined in the land use table for SP1 (Special Activities), as *"capital dredging, maintenance dredging, port facilities, wharf facilities and any other development not specified in item 2 or 4"* is permissible with consent.

### State Environmental Planning Policy (Resilience and Hazards) 2021

The objective of the State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) is to provide a state-wide planning approach to resilience and hazards. Portions of the Project Area are mapped within the Coastal Use Areas, and therefore, Chapter 2 (Coastal Management) of the SEPP is relevant to the Project. This has been assessed below.

#### Chapter 2 Coastal Management

The aim of this chapter is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the NSW *Coastal Management Act 2016*,

Portions of the Project Area along the DP World terminal and quayline, as well as land-based facilities at the BLB1, BLB2, and BLB3 structures, are mapped within the Coastal Use Areas. Coastal Use Areas are defined as land next to coastal waters, estuaries, and coastal lakes and lagoons, where urban coastal development may be found. Section 2.11(1) of the Resilience and Hazards SEPP states that development consent must not be granted to development on land within the coastal use area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

- Existing, safe access to and along the foreshore, beach, headland, or rock platform for members of the public, including persons with a disability.
- Overshadowing, wind funnelling, and the loss of views from public places to foreshores.
- The visual amenity and scenic qualities of the coast, including coastal headlands.
- Aboriginal cultural heritage, practices, and places.
- Cultural and built environment heritage.

Portions of the Project Area within Botany Bay, including the BLB1, BLB2, and BLB3 water-based infrastructure, extended DP World terminal and quayline, and dredging areas, are mapped within the Coastal Environment Areas. Coastal Environment Areas are defined as areas with natural coastal features such as beaches, rock platforms, coastal lakes and lagoons, and undeveloped headlands. Marine and estuarine waters are also included. Section 2.10(1) of the Resilience and Hazards SEPP states that Development consent must not be granted to development on land within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

- The integrity and resilience of the biophysical, hydrological (surface and groundwater), and ecological environment.



- Coastal environmental values and natural coastal processes.
- The water quality of the marine estate, in particular cumulative impacts on sensitive coastal lakes identified in Schedule 1.
- Marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands, and rock platforms.
- Existing public open space and safe access to and along the foreshore, beach, headland, or rock platform for members of the public, including persons with a disability.
- Aboriginal cultural heritage, practices, and places.
- The use of the surf zone.

A coastal processes impact assessment has been completed to support the EIS, which includes:

- Assessment of how the coastal processes and storm events could affect construction works
- Prediction of the coastal and hydrodynamic processes in Botany Bay through modelling with and without the Project
- Assessment of changes to coastal processes, including tidal flow/velocity wave dynamics and effects on sediment transport patterns from the Project
- Assessment of how climate change could affect the Project through changes in coastal processes.
- Appropriate mitigation measures.

The coastal processes impact assessment (DHI Seaport 2025) concluded that the Project is unlikely to result in significant adverse impacts on coastal processes, including tidal flows, wave dynamics, sediment transport, or the integrity of coastal landforms. Predicted changes to hydrodynamics and sediment patterns are localised and within acceptable thresholds, and mitigation measures incorporated into the Project design will further minimise potential effects. Overall, the assessment demonstrates that the Project can be implemented in a manner consistent with the objectives of Chapter 2 of the Resilience and Hazards SEPP, ensuring the protection of natural coastal features and ecological values.

## State Environmental Planning Policy (Biodiversity and Conservation) 2021

### Chapter 2: Vegetation in non-rural areas

This chapter aims to protect the biodiversity values of trees and other vegetation in non-rural areas of NSW and to preserve the amenity of non-rural areas through the preservation of trees and other vegetation by ensuring that the BOS will apply to all clearing of native vegetation that exceeds the offset thresholds in urban areas and environmental conservation zones that do not require development consent. As the Project requires development consent, the provisions of this chapter under the SEPP do not apply.

### Chapter 3: Koala Habitat Protection 2020

This chapter applies to land zoned RU1, RU2, or RU3. As the Project occurs on land zoned SP1, this chapter does not apply.

### Chapter 4: Koala Habitat Protection 2021

Chapter 4 Koala Habitat Protection aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. The subject land is located within the

Randwick and Bayside LGAs, which are not listed under Schedule 2, Chapter 4 of SEPP, and is therefore not subject to the requirements laid out by the policy.

No further consideration is required.

### **11.3 Biodiversity Conservation Act 2016**

The BC Act is the key piece of legislation providing for the protection and conservation of biodiversity in NSW through the listing of threatened species and communities and key threatening processes (KTPs). Impacts to threatened species and communities are assessed under Section 7.3 of the BC Act.

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.4.

The BOS has been triggered under the EP&A Act and BC Act as the Project is an SSI. This BDAR has been prepared for the proposed development accordingly.

### **11.4 Fisheries Management Act 1994**

The FM Act provides for the protection and conservation of aquatic species and their habitat throughout NSW. If a planned development or activity is likely to have any impact on a threatened species listed under the FM Act, a preliminary assessment of the potential impacts must be made (the 'Assessment of Significance' or '7 Part Test'). If the impacts are likely to be significant, or if critical habitat is affected, a species impact statement (SIS) must be prepared.

A Marine Ecology Report (Stantec 2025a) has been prepared to assess the potential impacts of the Project in relation to fisheries management, threatened species, threatened ecological communities, and key fish habitats in accordance with the FM Act. This report provides a detailed evaluation of the ecological values present, identifies potential risks associated with the proposed activities, and outlines appropriate management measures to mitigate these impacts. It should be read in conjunction with this BDAR and other relevant environmental assessments to provide a comprehensive understanding of the potential ecological outcomes of the Project as they relate to the FM Act.

### **11.5 Water Management Act 2016**

The WM Act provides for the sustainable and integrated management of waterfront land. Waterfront land is defined within the WM Act as the bed of any river, lake or estuary and any land within 40 metres of the riverbanks, lake shore or estuary mean high water mark. The WM Act is supported by a series of interpretation guidelines which provide design considerations and overarching management measures for works on waterfront land. These considerations and management measures should be considered when planning and undertaking the proposed works. To which the following guidelines are relevant:

- *Guidelines for watercourse crossings on waterfront land* (DPE 2022a).
- *Guidelines for outlet structures on waterfront land* (DPE 2022b).
- *Guidelines for laying pipes and cables in watercourses on waterfront land* (DPE 2022c).
- *Guidelines for instream works on waterfront land* (DPE 2022d).



Under the WM Act an approval is required to undertake controlled activities on waterfront land. However, Section 5.23 of the EP&A Act provides that certain authorisations under other legislation, including an activity approval under Section 91 of the WM act, are not required for SSIs. Therefore, as the proposed development is proceeding under the SSI pathway, it is exempt from the requirement to obtain a Controlled Activity Approval under the WM Act.

## 11.6 Other Environmental Planning Instruments

### 11.6.1 Local Environmental Plans

The subject land is located within both the Bayside and Randwick LGAs. The Randwick and Bayside LEPs are documents for controlling land use and development and guiding planning decisions made by council in the Randwick and Bayside LGAs. Port Botany, including the subject land, is excluded from the Randwick and Bayside LEPs land zoning due to the enactment of the Transport and Infrastructure SEPP (see Section 11.2.1).

Furthermore, as the Project will be SSI and assessed under Part 5 of the EP&A Act, the provisions of the above LEPs do not apply, but will be considered as part of the EIS

### 11.6.2 Development Control Plans

Development Control Plans (DCPs) provide detailed planning and design guidelines to support planning controls. DCPs identify additional development controls and standards for addressing development issues at a local level. Both the Bayside and Randwick DCP is relevant to the study area and have been prepared in accordance with Division 6 of the EP&A Act and with Part 3 of the *Environmental Planning and Assessment Regulation 2000*. However, under the EP&A Act, Projects proceeding as an SSI is subject to a specific statutory approval pathway. Section 5.22 of the EP&A Act outlines the application of other provisions of the Act and environmental planning instruments to SSI. Section 5.22 of the act states:

*Part 3 and environmental planning instruments do not apply to or in respect of State significant infrastructure, except that—*

- a. they apply to the declaration of infrastructure as State significant infrastructure or as critical State significant infrastructure (and to the declaration of development that does not require consent), and*
- b. they apply in so far as they relate to section 3.16, and for that purpose a reference in that section to enabling development to be carried out in accordance with an environmental planning instrument or in accordance with a consent granted under this Act is to be construed as a reference to enabling State significant infrastructure to be carried out in accordance with an approval granted under this Division.*

Therefore, while the Bayside and Randwick DCPs contain detailed design and siting controls for developments within their respective local government areas, these instruments do not apply to the proposed Project as it has been declared SSI. Nonetheless, design considerations outlined in these DCPs may be considered as part of the EIS to demonstrate consistency with relevant planning and design guidelines where appropriate.

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## Glossary and abbreviations

| Term                               | Description                                                                                                                                                                                                                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AOBV                               | Area of Outstanding Biodiversity Value                                                                                                                                                                                                                                                    |
| Assessment Area                    | All land within 1500 m of the subject land                                                                                                                                                                                                                                                |
| BAM                                | NSW Biodiversity Assessment Method 2020                                                                                                                                                                                                                                                   |
| BAM-C                              | BAM Calculator                                                                                                                                                                                                                                                                            |
| BC Act                             | NSW <i>Biodiversity Conservation Act 2016</i>                                                                                                                                                                                                                                             |
| BDAR                               | Biodiversity Development Assessment Report                                                                                                                                                                                                                                                |
| Biodiversity and Conservation SEPP | State Environmental Planning Policy (Biodiversity and Conservation) 2021                                                                                                                                                                                                                  |
| Biosecurity Act                    | NSW <i>Biosecurity Act 2015</i>                                                                                                                                                                                                                                                           |
| BOS                                | Biodiversity Offsets Scheme                                                                                                                                                                                                                                                               |
| BWMP                               | Biodiversity and Weed Management Plan                                                                                                                                                                                                                                                     |
| CEEC                               | Critically Endangered Ecological Community                                                                                                                                                                                                                                                |
| Cth DCCEEW                         | Australian Commonwealth Department of Climate Change, Energy, the Environment and Water                                                                                                                                                                                                   |
| DCDB                               | Digital cadastral database                                                                                                                                                                                                                                                                |
| DCP                                | Development Control Plan                                                                                                                                                                                                                                                                  |
| Development footprint              | The area of land that is directly impacted by the proposed works.                                                                                                                                                                                                                         |
| Development site                   | The broader area in which the subject land is located.                                                                                                                                                                                                                                    |
| DoIW                               | Directory of Important Wetlands                                                                                                                                                                                                                                                           |
| DP                                 | Deposited Plan                                                                                                                                                                                                                                                                            |
| DPHI                               | NSW Department of Planning, Housing and Infrastructure                                                                                                                                                                                                                                    |
| DPI                                | NSW Department of Primary Industries                                                                                                                                                                                                                                                      |
| DTDB                               | Digital topographic databases                                                                                                                                                                                                                                                             |
| Ecosystem credits                  | A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development                                                                       |
| Ecosystem credit species           | Threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. A targeted survey is not required to identify or confirm the presence of ecosystem credit species. |
| EEC                                | Endangered Ecological Community                                                                                                                                                                                                                                                           |
| EP&A Act                           | NSW <i>Environmental Planning and Assessment Act 1979</i>                                                                                                                                                                                                                                 |
| EP&A Regulation                    | Environmental Planning and Assessment Regulation 2021                                                                                                                                                                                                                                     |
| EPBC Act                           | Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>                                                                                                                                                                                                         |
| EPL                                | Environment Protection License                                                                                                                                                                                                                                                            |



| Term                        | Description                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FM Act                      | NSW <i>Fisheries Management Act 1994</i>                                                                                                                                                                                                                                                                                                                                                                |
| FWS                         | Fire-water systems                                                                                                                                                                                                                                                                                                                                                                                      |
| GDE                         | Groundwater Dependent Ecosystem                                                                                                                                                                                                                                                                                                                                                                         |
| GIS                         | Geographic Information System                                                                                                                                                                                                                                                                                                                                                                           |
| IBRA                        | Interim Biogeographic Regionalisation of Australia                                                                                                                                                                                                                                                                                                                                                      |
| LEP                         | Local Environmental Plan                                                                                                                                                                                                                                                                                                                                                                                |
| LGA                         | Local Government Area                                                                                                                                                                                                                                                                                                                                                                                   |
| LLS                         | Local Land Services                                                                                                                                                                                                                                                                                                                                                                                     |
| Locality                    | Area located within 5 km radius from the subject land                                                                                                                                                                                                                                                                                                                                                   |
| LPI                         | NSW Land and Property Information                                                                                                                                                                                                                                                                                                                                                                       |
| MNES                        | Matters of National Environmental Significance protected by a provision of Part 3 of the EPBC Act                                                                                                                                                                                                                                                                                                       |
| NMP                         | Noise Management Plan                                                                                                                                                                                                                                                                                                                                                                                   |
| NSW DCCEEW                  | NSW Department of Climate Change, Energy, the Environment and Water                                                                                                                                                                                                                                                                                                                                     |
| OEMP                        | Operations Environmental Management Plan                                                                                                                                                                                                                                                                                                                                                                |
| PCT                         | Plant Community Type                                                                                                                                                                                                                                                                                                                                                                                    |
| Resilience and Hazards SEPP | State Environmental Planning Policy (Resilience and Hazards) 2021                                                                                                                                                                                                                                                                                                                                       |
| SAII                        | Serious and Irreversible Impact                                                                                                                                                                                                                                                                                                                                                                         |
| SEPP                        | NSW State Environmental Planning Policy                                                                                                                                                                                                                                                                                                                                                                 |
| Species credits             | A class of biodiversity credits required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates                                                                                                                                                                                                                                      |
| Species credit species      | Threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, the proponent may elect to assume the species is present for development/clearing Projects only. |
| SSI                         | State Significant Infrastructure                                                                                                                                                                                                                                                                                                                                                                        |
| Subject land                | The areas within the development site, and any indirect and prescribed impacts.                                                                                                                                                                                                                                                                                                                         |
| TEC                         | Threatened Ecological Community                                                                                                                                                                                                                                                                                                                                                                         |
| TBDC                        | Threatened Biodiversity Data Collection                                                                                                                                                                                                                                                                                                                                                                 |
| TMP                         | Traffic Management Plan                                                                                                                                                                                                                                                                                                                                                                                 |
| VMP                         | Vegetation Management Plan                                                                                                                                                                                                                                                                                                                                                                              |
| WM Act                      | NSW <i>Water Management Act 2000</i>                                                                                                                                                                                                                                                                                                                                                                    |
| WWTP                        | Wastewater Treatment Plan                                                                                                                                                                                                                                                                                                                                                                               |

# Appendices

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## Appendix 1 Survey methods

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### Appendix 1.1 Nomenclature

The flora taxonomy (classification) used in this report follows the most recent Flora of NSW (Harden 2002, Harden 1993, Harden 2000, Harden 2002). All doubtful species names were verified with the online Australian Plant Name Index (Australian National Botanic Gardens & Australian National Herbarium 2007). Flora species, including threatened species and introduced flora species, are referred to by both their common and then scientific names when first mentioned. Subsequent references to flora species cite the common names only, unless there is no common name, for which scientific name will be used. Common names, where available, have been included in threatened species tables and the complete flora list in Appendix 3.

Names of vertebrates follow the Census of Australian Vertebrates (CAVs) maintained by the Cth DCCEEW (DSEWPaC 2009). In the body of this report vertebrates are referred to by both their common and scientific names when first mentioned. Subsequent references to these species cite the common name only.

### Appendix 1.2 Permits and licences

The biodiversity assessment was conducted under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Wildlife surveys were conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028). This BDAR has been prepared and overseen by Accredited Assessors Mitchell Palmer (BAAS17051) and Jake Schwebel (BAAS25013).

### Appendix 1.3 Limitations

Field surveys were undertaken in accordance with the BAM (DPIE 2020). Ecological surveys provide a sampling of flora and fauna at a given time and season. Factors influencing detectability of species during survey include species dormancy, seasonal conditions, ephemeral status of waterbodies, and migration and breeding behaviours of some fauna. In many cases, these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The field survey was conducted in Winter during cool and dry weather, which is considered a suitable time to determine the presence of most threatened species. While winter is generally not the most suitable season for detecting flora due to dormancy, the highly disturbed nature of the subject land means it does not contain habitat suitable for threatened or native flora, and this limitation does not affect the overall assessment. Similarly, the timing of surveys was appropriate for assessing fauna, including migratory shorebirds, given that key habitat features for threatened fauna are absent from the subject land.

Surveys undertaken, combined with habitat assessments and desktop analysis are considered sufficient to reach the conclusions herein regarding this and all other species' likelihood of occurrence within the subject land.

Database searches, and associated conclusions on the likelihood of species to occur within the assessment area, are reliant upon external data sources and information managed by third parties.



## Appendix 2 BAM Candidate species assessment

**Table A 1 Threatened flora species assessment**

| Species                                                                                  | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                 | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------|--------|----|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|-------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                          | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                |
| <i>Acacia pubescens</i><br>Downy Wattle                                                  | VU     | VU | Species           | A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone, alluvium and gravelly soils, often including ironstone. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No shale or gravel substrates within suitable habitat is present within the subject land. No further consideration is required.                                                                               |
| <i>Acacia terminalis</i> subsp. <i>Eastern Sydney</i><br>Sunshine Wattle (Sydney Region) | EN     | EN | Species           | Erect or spreading shrub limited to coastal areas spanning from the northern shores of Sydney Harbour to Botany Bay. Grows on creek banks, hillslopes or in shallow soil in rock crevices and sandstone platforms in cliffs in Sydney Coastal Dry Sclerophyll Forests, Coastal Headland Heaths, Sydney Coastal Heaths and Wallum Sand Heaths. Grows in sandy soils.                                                 | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are 240 records within 5 km of the subject land, with the closest being less than 900 metres away. No suitable habitat comprising shallow soils within heathland vegetation is present within the subject land. No further consideration is required. |
| <i>Allocasuarina</i>                                                                     | EN     | EN | Species           | Small, depauperate shrub restricted to                                                                                                                                                                                                                                                                                                                                                                              | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b>                                                                                                                                                                                                                                                                |

| Species                                                  | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                          | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                          |
|----------------------------------------------------------|--------|----|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                              |                         |                          |                      |                         |                                                                                                                                                                                                                                      |
| <i>glareicola</i>                                        |        |    |                      | a few populations in the Richmond district with an outlier population at Voyager Point in Liverpool. Grows in Castlereagh Woodlands, Cumberland Dry Sclerophyll Forest, Sydney Hinterland Dry Sclerophyll Forest, Sydney Sand Flats Dry Sclerophyll Forests. Grows in lateritic soil.                                                                        |                         |                          |                      |                         | Not recorded within 5 km of the subject land. No suitable habitat comprising lateritic soils within sclerophyll forests or woodland is present within the subject land. No further consideration is required.                        |
| <i>Caladenia tessellata</i><br>Thick Lip Spider Orchid   | VU     | EN | Species              | Small orchid recorded from the Wyong, Ulladulla and Braidwood regions with the Kiama and Queanbeyan populations believed to be extinct. Found in a wide variety of communities including Central Gorge Dry Sclerophyll Forests, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Woodlands and Subalpine Woodlands. Grows on clay loam or sandy soils. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No suitable habitat comprising native vegetation on clay loams or sandy soils occurs within the subject land. No further consideration is required. |
| <i>Cryptostylis hunteriana</i><br>Leafless Tongue Orchid | VU     | VU | Species              | Orchid with a distribution spanning from Gibraltar Range National Park southwards to the coastal area near Orbost in Victoria. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Coastal Heath Swamps, New England Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows in sandy soils.                                | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No suitable habitat comprising swamps or coastal health on sandy soils occurs within the subject land. No further consideration is required.        |
| <i>Eucalyptus camfieldii</i>                             | VU     | VU | Species              | Mallee tree restricted to a narrow band stretching from Raymond Terrace to                                                                                                                                                                                                                                                                                   | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km                                                                                                                                                                          |

| Species                                                      | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|--------|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                              | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                     |
|                                                              |        |    |                      | the north and Waterfall in the south. Grows in scattered, localised distributions including sites at Norah Head, Terrey Hills, North Head, Menai, Mt Colah, Peats Ridge and Elvina Bay Trail. Grows in scattered stands near the boundaries of tall coastal heath and low open woodland in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Eastern Riverine Forests, Sydney Coastal Heaths and Wallum Sand Heaths. Grows in sandy soils on Hawkesbury sandstone. |                         |                          |                      |                         | of the subject land. No suitable sandy substrates within coastal heath or woodland vegetation present within the subject land. This species is very conspicuous and was not detected during the field investigation. No further consideration is required.                          |
| <i>Eucalyptus nicholii</i><br>Narrow-leaved Black Peppermint | VU     | VU | Species              | Medium sized tree, sparsely distributed from Nundle through to the north of Tenterfield, also in urban tree plantings. Grows on slopes and ridges in a variety of communities including New England Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, New England Grassy Woodlands and Tableland Clay Grassy Woodlands. Grows on shallow, infertile soils on shale substrates.                                                                                               | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b> There is 1 record within 5 km of the subject land. This species is endemic to the NSW Northern Tablelands and is often included in landscaping elsewhere, to which the nearby record is likely attributed to. No further consideration is required. |
| <i>Eucalyptus scoparia</i><br>Wallangarra White Gum          | VU     | EN | Species              | Small tree restricted to three populations near Tenterfield including within Bald Rock National Park. Grows on rocky outcrops, hilltops and slopes in a variety of communities including New England Dry Sclerophyll Forests,                                                                                                                                                                                                                                                               | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b> There are 2 records within 5 km of the subject land. This species is endemic to northern NSW where it grows on granitic and                                                                                                                         |



| Species                                             | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                  | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                  |
|-----------------------------------------------------|--------|----|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                      |                         |                          |                      |                         |                                                                                                                                                                                                                                                              |
|                                                     |        |    |                      | Tableland Clay Grassy Woodlands, Northern Tableland Wet Sclerophyll Forests and Northern Escarpment Dry Sclerophyll Forests. Grows on granite or rhyolite substrates in well drained soils.                                                                                                                                                                                          |                         |                          |                      |                         | rhyolitic substrates. These records are beyond the native range of the species and are likely attributed to landscape plantings. No further consideration is required.                                                                                       |
| <i>Genoplesium baueri</i><br>Bauer's Midge Orchid   | EN     | EN | Species              | Terrestrial orchid with 13 populations totalling 200 plants distributed between Ulladulla and Port Stephens. Grows on moss gardens in a variety of communities including Sydney Coastal Dry sclerophyll Forests, Sydney Coastal Heaths, Sydney Montane Heaths, Southern Lowland Wet Sclerophyll Forests and Sydney Hinterland Dry Sclerophyll Forests. Grows on sandstone substrates | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Recorded once within 5 km of the subject land. No suitable habitat comprising sandstone substrates within heath or coastal sclerophyll woodland is present within the subject land. No further consideration is required. |
| <i>Leucopogon exolasius</i><br>Woronora Beard-heath | VU     | VU | Species              | Erect shrub confined to the upper Georges River area and Heathcote National Park. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Sydney Montane Dry Sclerophyll Forests, Eastern Riverine Forests, and Sydney Coastal Heaths. Grows on sandstone substrates.                                         | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No suitable habitat comprising heath or coastal sclerophyll woodland on sandstone is present within the subject land. No further consideration is required.                 |
| <i>Melaleuca biconvexa</i>                          | VU     | VU | Species              | Large shrub or small tree confined to NSW with scattered, widely dispersed                                                                                                                                                                                                                                                                                                           | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km                                                                                                                                                                                                  |

| Species                                    | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                |
|--------------------------------------------|--------|----|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                          |                      |                         |                                                                                                                                                                                                            |
| Biconvex<br>Paperbark                      |        |    |                      | populations around the Jervis Bay area in the south and the Gosford-Wyong area to the north. Grows in damp places, often near streams or low-lying areas on low slopes or sheltered aspects in a variety of communities including Hunter-Macleay Dry Sclerophyll Forests, Coastal Swamp Forests, Coastal Floodplain Wetlands, Coastal Freshwater Lagoon and North Coast Wet Sclerophyll Forests. Grows in alluvial soils.                                                                                                                |                         |                          |                      |                         | of the subject land. No suitable habitat comprising alluvial soils within sheltered low-lying areas or swamps is present within the subject land. No further consideration is required.                    |
| <i>Melaleuca deanei</i>                    | VU     | VU | Species              | Medium sized shrub found growing in two distinct populations in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas along with a few outliers at Springwood and in the Wollemi National Park, Yalwal and the Central Coast regions. Grows in ridgetop woodland in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, South East Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths. Grows on sandstone substrates in alluvial soils. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No suitable ridgetop forest or woodland habitat is present within the subject land. No further consideration is required. |
| <i>Persicaria elatior</i><br>Tall Knotweed | VU     | VU | Species              | Erect herb found growing in south-eastern NSW at Mount Dromedary, Moruya State Forest near Turlinjah,                                                                                                                                                                                                                                                                                                                                                                                                                                    | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No                                                                                                                        |

| Species                                   | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                                                                       |
|-------------------------------------------|--------|----|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                   |
|                                           |        |    |                      | Upper Avon River catchment north of Robertson, Bermagui and Picton Lakes. Also grows in northern NSW around Raymond Terrace near Newcastle and Cherry Tree and Gibberagee State Forests in the Grafton area. Grows in damp places usually on the margins of waterbodies and in swamp forests in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Eastern Riverine Forests, Coastal Freshwater Lagoons and Coastal Heath Swamps.                                                                                |                         |                          |                      |                         | habitat constituting damp areas or fresh waterbodies are present within the subject land. No further consideration is required.                                                                                                                                                                                   |
| <i>Persoonia hirsuta</i><br>Hairy Geebung | EN     | EN | Species              | Spreading, hairy shrub with a scattered distribution throughout Sydney from Singleton to the north, the east coast of Bargo to the south and the Blue Mountains to the west. Grows at elevations between 350 - 600 metres in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Southern Escarpment Wet Sclerophyll Forests. Grows in sandy soils on sandstone substrates. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. This species grows on sandy substrates in sclerophyll forests and woodlands at elevations 300 m above elevations within the subject land. No suitable habitat for this species is present. No further consideration is required. |
| <i>Pimelea spicata</i><br>Spiked Rice-    | EN     | EN | Species              | Small erect or spreading shrub with populations occurring in two disjunct                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km                                                                                                                                                                                                                                                       |



| Species                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                             |
|--------------------------------------------------------|--------|----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                      |                         |                                                                                                                                                                                                                                                         |
| flower                                                 |        |    |                      | areas, one occurring on the Cumberland Plain from Marayong and Prospect Reservoir south to Narellan and Douglas Park, and the other occurring in the Illawarra from Lansdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well-structured clay soils.                                                                                                |                         |                          |                      |                         | of the subject land. This species grows on sandy substrates in sclerophyll forests and woodlands at elevations 300 m above elevations within the subject land. No suitable habitat for this species is present. No further consideration is required.   |
| <i>Pterostylis saxicola</i><br>Sydney Plains Greenhood | EN     | EN | Species              | Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces, moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands, Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. No suitable habitat comprising sheltered sandstone substrates adjacent to freshwater streams is present within the subject land. No further consideration is required. |

| Species                                                                       | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------|--------|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                          |
|                                                                               |        |    |                      | sandstone substrates.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                          |
| <i>Pterostylis</i> sp.<br>Botany Bay<br>Botany Bay<br>Bearded Orchid          | EN     | EN | Species              | Deciduous terrestrial orchid restricted to a few small populations located in Botany Bay National Park on the Kurnell Peninsula. Found growing on moist level sites amongst heathland in association with <i>melaleuca nodosa</i> and <i>Baeckea imbricata</i> . Grows in skeletal sandy soils derived from sandstone.                                                                                                                                                                                                                                                                                                                                  | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 13 records within 5 km of the subject land, however these records occur on the Kurnell Peninsula, 4.5 km to the south of the subject land. There is no suitable moist sandy heath habitat for this species present within the subject land. |
| <i>Rhizanthella slateri</i><br>Eastern<br>Australian<br>Underground<br>Orchid | EN     | VU | Species              | Terrestrial orchid with a distribution spanning from south-east NSW to south-east Queensland. Recorded in ten populations in NSW including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wisemans Ferry Area, Agnes Banks and near Nowra. A cryptic species which grows beneath the soil surface with flowers being the only part of the plant to occur aboveground in Sydney Sand Flats Dry Sclerophyll Forests, Eastern Riverine Forests, Northern Warm Temperate Rainforests, North Coast Wet Sclerophyll Forests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows in deep loam soils. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. This species grows in a range of vegetation types; however, it is reliant on deep loam soils which are not present within the subject land. No further consideration is required.                       |

| Species                                               | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|--------|----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                       | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                    |
| <i>Rhodamnia<br/>rubescens</i><br>Scrub<br>Turpentine | CE     | CE | Species              | Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. It is mainly coastal and occurs north from Batemans Bay to areas inland of Bundaberg in Queensland and occasionally extends inland onto escarpments up to 600 m asl. in areas with rainfall of 1,000-1,600 mm. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust and affects all plant parts. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. This species grows in warm temperate and wet sclerophyll vegetation communities which are not present within the subject land. No further consideration is required.                                                                                              |
| <i>Rhodomyrtus<br/>psidioides</i><br>Native Guava     | CE     | CE | Species              | Shrub or small tree which typically grows to 12 metres high. Populations are typically restricted to coastal regions of low elevation between Sydney and Maryborough, Queensland. Often found in littoral, warm temperate and subtropical rainforests and wet sclerophyll forests near creeks and drainage lines. This species is known to be particularly susceptible to myrtle rust.                                                                                      | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Not recorded within 5 km of the subject land. This species grows in warm temperate and wet sclerophyll vegetation and subtropical rainforest communities which are not present within the subject land. No freshwater drainage lines are present within the subject land. No further consideration is required. |
| <i>Syzygium<br/>paniculatum</i><br>Magenta Lilly      | VU     | EN | Species              | Small to medium sized rainforest tree restricted to a narrow, linear coastal strip from Upper Lansdowne to Conjola                                                                                                                                                                                                                                                                                                                                                          | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 42 records within 5 km of the subject                                                                                                                                                                                                                                                                 |



| Species                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and<br>rationale                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------|--------|----|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pilly                                                  |        |    |                      | State Forest. Found growing on stabilized dunes near the sea in South Coast Sands Dry Sclerophyll Forests, Coastal Swamp Forests, Coastal Headland Heaths, Littoral Rainforests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows on grey sandy, gravelly, silty or clay soils over sandstone substrates.                                                                                                                                                   |                         |                          |                      |                         | land. This species grows in wet heaths and forests on stabilised dunes. Suitable habitat for this species is not present within the subject land. No further consideration is required.                                                                                                                                                                                                                  |
| <i>Thelymitra kangaloonica</i><br>Kangaloon Sun Orchid | CE     | CE | Species              | Terrestrial orchid confined to the southern tablelands in the Moss Vale, Kangaloon, Fitzroy Falls area with the majority growing on land managed by the Sydney Catchment Authority. Found growing in swamps and sedgeland at elevations between 550 and 700 metres in Temperate Highland Peat Swamps on Sandstone, Coastal Heath Swamps and Montane Bogs and Fens. A cryptic species which is most visible when flowering between late October and early November. Grows in grey silty or grey loam soils. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land and is restricted to a small area on the Southern Tablelands. The species grows in heath and swamp communities at elevations at least 500 m greater than those of the subject land. No suitable habitat for this species is present within the subject land. No further consideration is required. |
| <i>Thesium australe</i><br>Austral Toadflax            | VU     | VU | Species              | Small, straggling herb with a distribution comprising of small populations scattered along the coast of eastern NSW including the Northern                                                                                                                                                                                                                                                                                                                                                                 | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land and is                                                                                                                                                                                                                                                                                             |

| Species | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                             | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                    |
|---------|--------|----|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|-------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                             |
|         |        |    |                   | and Southern Tablelands, Tasmania, Queensland and eastern Asia. A root parasite found growing on damp sites in grassland, grassy woodlands and coastal headlands often in association with Kangaroo Grass <i>Themeda triandra</i> in a variety of communities including New England Dry Sclerophyll Forests, Western Slopes Grasslands, Northern Tableland Wet Sclerophyll Forests, Brigalow Clay Plain Woodlands, Subalpine Woodlands and Maritime Grasslands. |                      |                       |                   |                      | restricted to a small area on the Southern Tablelands. The species grows in heath and swamp communities at elevations at least 500 m greater than those of the subject land. No suitable habitat for this species is present within the subject land. No further consideration is required. |

Table A 2 Threatened fauna species assessment

| Species                                         | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                             | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------|--------|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                 |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                     |
| Birds                                           |        |    |                      |                                                                                                                                                                                                                                                                                 |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                     |
| <i>Anthochaera phrygia</i><br>Regent Honeyeater | CE     | CE | Dual credit          | Regent Honeyeaters are semi-nomadic, occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Nectar and fruit from mistletoes are also eaten. This species usually nest in | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the subject land. There are no records within 5 km and no suitable habitat for the species present within the subject land. No further consideration is required. |

| Species                                                     | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                          | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                      |
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|                                                             | EPBC   | BC |                      |                                                                                                                                                                                                                                              |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                             |        |    |                      | tall mature eucalypts and sheoaks.                                                                                                                                                                                                           |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>Ardenna grisea</i><br>Sooty Shearwater                   | VU     | -  | N/A                  | The Sooty Shearwater is a seabird species with a widespread distribution across the Southern Hemisphere. It inhabits pelagic waters, nesting on remote islands and coastal cliffs amongst tussocks, and undertakes long-distance migrations. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 3 records within 5 km of the subject land. This species forages in pelagic waters and inshore waters and breeds on offshore islands. The subject land contains marginal foraging habitat for his species and does not contain any breeding habitat. No further consideration is required.                                                        |
| <i>Arenaria interpres</i><br>Ruddy Turnstone                | VU     | -  | N/A                  | Inhabits tidal reefs, sandy beaches mudflats and exposed or shallow seaweed beds.                                                                                                                                                            | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are records for this species within the subject land and a total of 22 records within 5 km. There is no suitable habitat comprising tidal reefs, sandy beaches, or mudflats within the subject land. Records within the subject land are likely attributed to individuals moving across the subject land only. No further consideration is required. |
| <i>Artamus cyanopterus cyanopterus</i><br>Dusky Woodswallow | -      | VU | Ecosystem            | Primarily inhabits dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other                                                                       | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are 2 records for this species within 5 km of the subject land. There is no suitable habitat comprising dry open eucalypt woodland present within the subject land. No further                                                                                                                                                                       |



| Species                                               | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                 |
|-------------------------------------------------------|--------|----|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                       | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                          |                      |                         |                                                                                                                                                                                                                                                          |
|                                                       |        |    |                      | shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.                                                                                                                                                                                                                                                             |                         |                          |                      |                         | consideration is required.                                                                                                                                                                                                                               |
| <i>Botaurus poiciloptilus</i><br>Australasian Bittern | EN     | EN | Ecosystem            | The Australasian Bittern is distributed across south-eastern Australia. Often found in terrestrial and estuarine wetlands, generally where there is permanent water with tall, dense vegetation including <i>Typha</i> spp. and <i>Eleocharis</i> sp.. Typically, this bird forages at night on frogs, fish and invertebrates, and remains inconspicuous during the day. The breeding season extends from October to January with nests being built amongst dense vegetation on a flattened platform of reeds. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 3 records for this species within 5 km of the subject land. There is no suitable estuarine habitat comprising stands of tall reed vegetation within the subject land. No further consideration is required. |

| Species                                             | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                             | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                     |
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|                                                     | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Calidris acuminata</i><br>Sharp-tailed Sandpiper | VU     | -  | N/A               | This species is a migratory visitor to Australia and spends its breeding season in Siberia. In the non-breeding season, the Sharp-tailed Sandpiper is known to occur mostly in the south-east of Australia but has been found on coastlines all throughout the country. This species usually occurs on the grassy edges of freshwater wetlands. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>This species has been recorded within the subject land with a total of 221 records within the broader 5 km. No suitable freshwater wetland or grassy habitat for this species is present within the subject land. Records for this species are likely attributed to birds recorded flying over the subject land.<br>No further consideration is required. |
| <i>Calidris alba</i><br>Sanderling                  | -      | VU | Dual credit       | Occurs on the coast mostly on open sand beaches exposed to open sea-swells.                                                                                                                                                                                                                                                                     | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not required.                                                                           |
| <i>Calidris canutus</i><br>Red Knot                 | VU     | -  | Dual credit       | Typically located within intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Occasionally found on sandy open beaches or                                                                                                                                                                                                      | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>This species has been recorded within the subject land with a total of 77 records within the broader 5 km. No suitable mudflat, sandy beach, or saline wetland habitat is                                                                                                                                                                                 |

| Species                                               | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                       | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                        |
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|                                                       | EPBC   | BC |                   |                                                                                                                                                                                                                                           |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                 |
|                                                       |        |    |                   | shallow pools, or in saline wetlands close to the coast.                                                                                                                                                                                  |                      |                       |                   |                      | located within the study area. Records for this species are likely attributed to birds recorded flying over the subject land. No further consideration is required.                                                                                                                                             |
| <i>Calidris ferruginea</i><br>Curlew Sandpiper        | CE     | EN | Dual credit       | Inhabits sheltered intertidal mudflats. Also, non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.                                                                                                           |                      |                       |                   |                      | <b>Excluded as a candidate.</b> Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not required. |
| <i>Calidris tenuirostris</i><br>Great Knot            | VU     | VU | Dual credit       | Mainly found on intertidal mudflats, sandflats and sandy beaches. Rarely found on inland lakes and swamps, instead preferring sheltered coastal habitats. In hot conditions, the Great Knot often roosts on damp substrates to keep cool. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b> There are 39 records within 5 km of the subject land. This species forages in pelagic waters and inshore waters and breeds on offshore islands. These habitats do not occur within the subject land. No further consideration is required.                                      |
| <i>Callocephalon fimbriatum</i><br>Gang-gang Cockatoo | EN     | EN | Dual credit       | In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in                                                                                                | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b> There is one record of this species within 5 km of the subject land. The species credit is for breeding habitat only which is represented by hollow-bearing trees containing                                                                                                    |



| Species                                                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                 | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                                                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                     |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                        |        |    |                      | subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed. |                         |                          |                      |                         | hollows at least 3 m above the ground and with hollow diameter of 7 cm or larger. As no such features were present within the subject land, the species has been excluded as a candidate based on habitat constraints detailed in the BAM-C. No further consideration is required.                                                                                                                                                                                                                                                                                                                                           |
| <i>Calyptorhynchus lathamii lathamii</i><br>South-Eastern<br>Glossy Black-<br>Cockatoo | VU     | VU | Dual credit          | Inhabits forest with low nutrients, characteristically with key <i>Allocasuarina</i> species. Tends to prefer drier forest types. Often confined to remnant patches in hills and gullies. Breed in hollow stumps or limbs, either living or dead.                                                   | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are 4 records for this species within 5 km of the subject land. The subject land does not contain any stands of <i>Allocasuarina</i> trees which are the primary foraging resource for this species. The species credit is for breeding habitat only which is represented by hollow-bearing trees containing hollows greater than 15 cm diameter and higher than 8 m above ground. As no such features were present within the subject land, the species has been excluded as a candidate based on habitat constraints detailed in the BAM-C. No further consideration is required. |

| Species                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                      | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                           |
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|                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                    |
| <i>Charadrius leschenaultii</i><br>Greater Sand-plover | VU     | VU | Dual credit          | Entirely coastal in NSW, foraging on intertidal sand and mudflats in estuaries and roosting during high tide on sandy beaches or rocky shores. Individuals have been recorded on inshore reefs, rock platforms, small rocky islands and sand cays on coral reefs, within Australia. Occasional sightings have also occurred on near-coast salt lakes, brackish swamps, shallow freshwater wetlands and grassed paddocks. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not required. |
| <i>Charadrius mongolus</i><br>Lesser Sand-plover       | EN     | VU | Dual credit          | In Australia, the species is known to favour coastal environs including beaches, mudflats and mangroves. Within NSW, individuals have been observed on intertidal sand and mudflats in estuaries or roosting on sandy beaches or rocky shores at high tide.                                                                                                                                                              | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not required. |
| <i>Circus assimilis</i>                                | -      | VU | Ecosystem            | The Spotted Harrier is                                                                                                                                                                                                                                                                                                                                                                                                   | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b>                                                                                                                                                                                                                                                                                    |

| Species                                                                 | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                           |
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|                                                                         | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |                          |                      |                         |                                                                                                                                                                                                                    |
| Spotted Harrier                                                         |        |    |                      | found throughout Australia but rarely in densely forested and wooded habitat of the escarpment and coast. Preferred habitat consists of open and wooded country with grassland nearby for hunting. Habitat types include open grasslands, acacia and mallee remnants, spinifex, open shrublands, saltbush, very open woodlands, crops and similar low vegetation. The Spotted Harrier is more common in drier inland areas, nomadic part migratory and dispersive, with movements linked to the abundance of prey species. Nesting occurs in open or remnant woodland and unlike other harriers, the Spotted Harrier nests in trees. |                         |                          |                      |                         | This species has not been recorded within 5 km of the subject land. There is no suitable open grassy woodland or grassland habitat for this species within the subject land. No further consideration is required. |
| <i>Climacteris picumnus victoriae</i><br>Brown Treecreeper<br>(eastern) | VU     | VU | Ecosystem            | Lives in eucalypt woodlands, especially areas of relatively flat open woodland typically lacking                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. There is no suitable eucalypt                                                                               |



| Species                                             | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                            |
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|                                                     | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                          |                      |                         |                                                                                                                                                                                                                                     |
| subspecies)                                         |        |    |                      | a dense shrub layer, with short grass or bare ground and with fallen logs or dead trees present.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                          |                      |                         | woodland habitat for this species within the subject land. No further consideration is required.                                                                                                                                    |
| <i>Daphoenositta chrysoptera</i><br>Varied Sittella | -      | VU | Ecosystem            | The Varied Sittella is a sedentary species which inhabits a wide variety of dry eucalypt forests and woodlands, usually with either shrubby understorey or grassy ground cover or both, in all climatic zones of Australia. Usually inhabit areas with rough-barked trees, such as stringybarks or ironbarks, but also in mallee and acacia woodlands, paperbarks or mature Eucalypts. The Varied Sittella feeds on arthropods gleaned from bark, small branches and twigs. It builds a cup-shaped nest of plant fibres and cobweb in an upright tree fork high in the living tree canopy and often re-uses the same fork or tree in successive years. | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. There is no suitable eucalypt forest habitat for this species within the subject land. No further consideration is required. |

| Species                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                              | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                        |
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|                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                  |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                 |
| <i>Dasyornis brachypterus</i><br>Eastern Bristlebird   | EN     | EN | Species              | Found in coastal woodlands, dense scrub and heathlands, particularly where it borders taller woodlands.                                                                                                                                                                          | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There is 1 record for this species within 5 km of the subject land, however this record is more than 50 years old. This species inhabits coastal woodland, scrub, and heathland which is not present within the subject land. No further consideration is required.                          |
| <i>Diomedea antipodensis</i><br>Antipodean Albatross   | VU     | VU | N/A                  | A marine pelagic species endemic to New Zealand, which is known to forage off the coast of New South Wales. This species is known to feed on cephalopods, fish and crustaceans.                                                                                                  | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species breeds on volcanic islands off shore of New Zealand and forages over pelagic waters. The subject land contains marginal pelagic foraging habitat for this species. No further consideration is required. |
| <i>Diomedea epomophora</i><br>Southern Royal Albatross | VU     | -  | N/A                  | During the non-breeding season, it has a wide and possibly circumpolar distribution, ranging north to about 35°S. The Royal Albatross is moderately common throughout the year in offshore waters of southern Australia, mostly off southeastern NSW, Victoria and Tasmania. Off | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species breeds on volcanic islands off shore of New Zealand and forages over pelagic waters. The subject land contains marginal pelagic foraging habitat for this species. No further consideration is required. |

| Species                                        | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                      | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                 |
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|                                                | EPBC   | BC |                   |                                                                                                                                                                                                                          |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                          |
|                                                |        |    |                   | South Australia, they are mostly seen May to September.                                                                                                                                                                  |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                          |
| <i>Diomedea exulans</i><br>Wandering Albatross | VU     | EN | Marine            | A marine, pelagic and aerial species. Versatile feeders in pelagic and shelf waters and often follow ships, feeding on the refuse they trail. Wandering Albatross breed biennially, exclusively on subantarctic islands. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are more than 1000 records of this species within 5 km of the subject land, however no records within the subject land. This species breeds islands in subantarctic waters and forages over pelagic waters. The subject land contains marginal pelagic foraging habitat for this species. No further consideration is required. |
| <i>Diomedea gibsoni</i><br>Gibson's Albatross  | VU     | VU | Marine            | A marine pelagic species which breeds on the Auckland islands, New Zealand. The species forages in open oceans on squid, fish, and crustaceans.                                                                          | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There is one record of this species within 5 km of the subject land. This species breeds on islands off shore of New Zealand. The subject land contains marginal pelagic foraging habitat for this species. No further consideration is required.                                                                                     |



| Species                                                 | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                   | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                 |
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|                                                         | EPBC   | BC |                      |                                                                                                                                                                                                                                                                       |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                          |
| <i>Diomedea sanfordi</i><br>Northern Royal<br>Albatross | EN     | -  | Marine               | The Northern Royal Albatross ranges widely over the Southern Ocean, with individuals seen in Australian waters off south-eastern Australia. The Northern Royal Albatross feeds regularly in Tasmanian and South Australian waters, and less frequently in NSW waters. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records within 5 km of the subject land. This species breeds on islands off shore of New Zealand and rarely occurs over NSW waters. The subject land contains marginal pelagic foraging habitat for this species. No further consideration is required.                  |
| <i>Erythrotriorchis radiatus</i><br>Red Goshawk         | EN     | EN | Species              | Occur in forest and woodland habitat near permanent water. In NSW prefer <i>Melaleuca</i> swamp forest and open eucalypt woodland. Require greater than 20 m tall trees for nesting.                                                                                  | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits forest and woodland areas, with a preference for <i>Melaleuca</i> swamps. No suitable habitat for this species is present within the subject land. No further consideration is required. |
| <i>Esacus magnirostris</i><br>Beach Stone-curlew        | -      | CE | Dual credit          | In Australia, the Beach Stone-curlew occupies coastlines from about Point Cloates in Western Australia, across northern and north-eastern Australia south to north-eastern NSW, with occasional vagrants to                                                           | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There is 1 record for this species within 5 km of the subject land. This species occupies intertidal zones and forage on sand spits, mudflats, and swash zones. The subject land lacks the intertidal beach, estuarine, or mangrove habitats essential for the Beach                  |

| Species | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                        |
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|         | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                          |                      |                         |                                                                                                                                 |
|         |        |    |                      | south-eastern NSW and Victoria. In NSW, the species occurs regularly to about the Manning River, and the small population of north-eastern NSW is at the limit of the normal range of the species in Australia. Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also, among open mangroves. |                         |                          |                      |                         | Stone-curlew. It is an active port area with no suitable coastal or nesting environments. No further consideration is required. |

| Species                                                    | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                             |
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|                                                            | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                      |
| <i>Fregetta grallaria</i><br>White-bellied<br>Storm-Petrel | VU     | VU | N/A                  | The White-bellied Storm-Petrel (Tasman Sea) breeds on small offshore islets and rocks in the Lord Howe Island group, including Roach Island and Balls Pyramid. Its pelagic distribution is poorly understood, but it has been recorded north and east of its breeding islands to the tropics, in the Tasman Sea, Coral Sea, and north of New Zealand, and it is thought that some birds also reach the central Pacific Ocean. It has also been recorded over near-shore waters off the coasts of Queensland, NSW and Tasmania, and a single dead bird has been collected from the southeastern coast of Tasmania. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species occupies intertidal zones and forage on sand spits, mudflats, and swash zones. The Subject land does not contain and suitable habitat for this species. No further consideration is required. |
| <i>Gallinago hardwickii</i><br>Latham's Snipe              | VU     | -  | N/A                  | Typically found on wet soft ground or shallow water with good cover of tussocks. Often found in wet paddocks, seepage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 26 records for this species within 5 km of the subject land. This species occupies open wet grassland habitat which is not                                                                                                                                              |



| Species                                        | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                        |
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|                                                | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                 |
|                                                |        |    |                   | areas below dams.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                       |                   |                      | present within the subject land. No further consideration is required.                                                                                                                                                                                                                                                                          |
| <i>Glossopsitta pusilla</i><br>Little Lorikeet | -      | VU | Ecosystem         | Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are 2 records for this species within 5 km of the subject land. This species inhabit dry open eucalypt woodland habitats. The species is also reliant on hollow-bearing trees for breeding. No suitable habitat for this species occurs within the subject land. No further consideration is required. |
| <i>Grantiella picta</i><br>Painted Honeyeater  | VU     | VU | Ecosystem         | Found mainly in dry open woodlands and forests, where it is strongly associated with mistletoe for foraging habitat. Often found on plains with scattered eucalypts and remnant trees on farmlands.                                                                                                                                                                                                                                                                         | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits dry open woodlands and grasslands sparsely timbered with eucalypts. There is no suitable open woodland or grassland habitat, or mistletoes within the subject land.                                             |

| Species                                                  | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                             |
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|                                                          | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                      |
|                                                          |        |    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                          |                      |                         | No further consideration is required.                                                                                                                                                                                                                                                                                                |
| <i>Haliaeetus leucogaster</i><br>White-bellied Sea-Eagle | -      | VU | Dual credit          | A migratory species that is generally sedentary in Australia, although immature individuals and some adults are dispersive. Found in terrestrial and coastal wetlands; favouring deep freshwater swamps, lakes and reservoirs; shallow coastal lagoons and saltmarshes. It hunts over open terrestrial habitats. Feeds on birds, reptiles, fish, mammals, crustaceans and carrion. Roosts and makes nest in trees. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 33 records for this species within 5 km of the subject land. This species occupies terrestrial and coastal wetlands and is reliant on large trees for breeding. The Subject land does not contain any suitable breeding habitat for this species. No further consideration is required. |
| <i>Hieraaetus morphnoides</i><br>Little Eagle            | -      | VU | Dual credit          | The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little Eagle nests in tall living trees within                                                                                                                           | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits timbered areas with adjacent open spaces and is reliant on tall trees for nesting. None of these habitat features are present within the subject land. No further consideration is required.         |

| Species                                                   | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                             | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                    |
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|                                                           | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                             |
|                                                           |        |    |                      | farmland, woodland and forests.                                                                                                                                                                                                                                                                                                                                                                                 |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                             |
| <i>Hirundapus caudacutus</i><br>White-throated Needletail | VU     | VU | Ecosystem            | An aerial species found in feeding concentrations over cities, hilltops and timbered ranges. This species roosts in trees in forests and woodlands and feeds on insects. The White-throated Needletail breeds in forests and sparse hills in Asia.                                                                                                                                                              | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 7 records for this species within 5 km of the subject land. This species inhabits forests and woodlands. These habitats are not present within the subject land, and the nearby records are likely of individuals moving through the landscape or migrating to breeding habitat in Asia. No further consideration is required. |
| <i>Ixobrychus flavicollis</i><br>Black Bittern            | -      | VU | Ecosystem            | The Black Bittern is found along the coastal plains within NSW, although individuals have rarely been recorded south of Sydney or inland. It inhabits terrestrial and estuarine wetlands such as flooded grasslands, forests, woodlands, rainforests and mangroves with permanent water and dense waterside vegetation. The Black Bittern typically roosts on the ground or in trees during the day and forages | Low                     | No                       | No                   | Low                     | Excluded as a candidate.<br>There are 2 records for this species within 5 km of the subject land. This species occupies terrestrial and coastal wetlands and is reliant on large trees for breeding. The Subject land does not contain any suitable breeding habitat for this species. No further consideration is required.                                                |



| Species                                  | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                           |
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|                                          | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                    |
|                                          |        |    |                      | at night on frogs, reptiles, fish and invertebrates. The breeding season extends from December to March. Nests are constructed of reeds and sticks in branches overhanging the water.                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                    |
| <i>Lathamus discolor</i><br>Swift Parrot | CE     | EN | Dual credit          | The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Grey Box <i>E. microcarpa</i> , Grey | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not required. |

| Species                                             | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                               | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                 |
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|                                                     | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                          |
|                                                     |        |    |                      | Box E. <i>moluccana</i> and Blackbutt E. <i>pilularis</i> . This species is migratory, breeding in Tasmania and nomadic, moving about in response to changing food availability.                                                                                                                                                                                  |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                          |
| <i>Limosa lapponica baueri</i><br>Bar-tailed Godwit | EN     | -  | Dual credit          | The Bar-tailed Godwit (northern Siberian) occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. | Assumed present         | No                       | No                   | Low                     | <b>Assumed present</b> – refer to Section 4.<br>Important Habitat Mapping (DPIE 2024) is available for this species. Mapped areas of important habitat for this species intersect with the development footprint. A SIC assessment has been prepared to assess impacts to this species.                  |
| <i>Limosa limosa</i><br>Black-tailed Godwit         | EN     | VU | Dual credit          | The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang                                                                                                                       | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>Important Habitat Mapping (DPIE 2024) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C further consideration is not |

| Species                                         | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                      |
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|                                                 | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                 |        |    |                      | Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. |                         |                          |                      |                         | required.                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Lophoictinia isura</i><br>Square-tailed Kite | -      | VU | Dual credit          | Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by <i>Eucalyptus longifolia</i> , <i>Corymbia maculata</i> , <i>E. elata</i> , or <i>E. smithii</i> . Individuals appear to occupy large hunting ranges of more than                                                                                                                                        | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species is reliant on woodland habitats adjacent to or within riparian habitats where it forages and breeds. The species is reliant on large trees for nesting. No suitable habitat for this species is present within the subject land. No further consideration is required. |



| Species                                               | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                    | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                                       | EPBC   | BC |                      |                                                                                                                                                                                                                                                                        |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                       |        |    |                      | 100 km <sup>2</sup> . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs. |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <i>Macronectes giganteus</i><br>Southern Giant Petrel | EN     | EN | Marine               | The Southern Giant-Petrel is a marine species found throughout the Antarctic to subtropical waters occasionally venturing to inshore waters. Southern Giant Petrel breed in colonies amongst open vegetation on Antarctic and subantarctic islands.                    | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are more than 100 records for this species within 5 km of the subject land, however this species has not been recorded within the subject land. This species breeds on offshore islands and forages over inshore waters or opportunistically scavenges terrestrial carcasses. There is only marginal foraging habitat for this species within the subject land. No further consideration is required. |
| <i>Macronectes halli</i><br>Northern Giant-Petrel     | VU     | VU | Marine               | Marine, pelagic species found mainly in subantarctic waters. The species breeds on offshore islands with nests dispersed amongst                                                                                                                                       | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are 4 records for this species within 5 km of the subject land. This species breeds on offshore islands and forages over pelagic waters. There is only marginal                                                                                                                                                                                                                                       |

| Species                                                                                               | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                        | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                           |
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|                                                                                                       | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                       |        |    |                   | tussocks in dense vegetation.                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                       |                   |                      | foraging habitat for this species within the subject land. No further consideration is required.                                                                                                                                                                                                                                                                                                                   |
| <i>Melanodryas cucullata cucullata</i><br>South-eastern Hooded Robin,<br>Hooded Robin (south-eastern) | EN     | EN | Ecosystem         | This species lives in a wide range of temperate woodland habitats, and a range of woodlands and shrublands in semi-arid areas.                                                                                                                                                                                                                                                                                                                             | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>There no records for this species within 5 km of the subject land. This species is reliant on woodland and shrubland habitats. No suitable habitat for this species is present within the subject land. No further consideration is required.                                                                                                                                   |
| <i>Neophema chrysogaster</i><br>Orange-bellied Parrot                                                 | CE     | CE | Species           | A single breeding population of fewer than 200 individuals occurs in a narrow coastal strip of south-west Tasmania. Adult birds depart Tasmania for the mainland in February. The first adults begin leaving the mainland for Tasmania in September with the last birds having departed by November. It is a coastal species inhabiting saltmarshes, sedge plains, coastal dunes, pastures, shrublands and moorlands, generally within 10 km of the coast. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There is 1 record for this species within 5 km of the subject land. This species occupies marshes and coastal plain habitats which are absent from the subject land. The nearby record of Orange-bellied Parrot is likely attributed to an individual moving across the landscape or utilising suitable habitat outside the subject land. No further consideration is required. |

| Species                                           | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                       |
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|                                                   | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                |
|                                                   |        |    |                      | Critical winter habitat for the species includes natural saltmarshes dominated by <i>Sarcocornia quinqueflora</i> (Beaded Glasswort) and <i>Sclerostegia arbuscula</i> (Shrubby Glasswort), as well as the associated grassy or weedy pastures. Historical records indicate that the Orange-bellied Parrot was formerly more abundant and widespread in NSW than it is now, however the species' distribution continues to extend into south-eastern NSW where suitable habitat is still available. |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                |
| <i>Neophema chrysostoma</i><br>Blue-winged Parrot | VU     | -  | N/A                  | The Blue-winged Parrot is a small parrot found in Tasmania and southeast mainland Australia. Some populations are known to migrate to Tasmania from the mainland during summer months. The species feeds predominantly on the ground and occurs in                                                                                                                                                                                                                                                  | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land, and this species does not occur in the Sydney Basin IBRA region. This species is reliant on grassland and grassy woodland habitats, preferring those adjacent to wetlands, and have been known to occur in modified habitats such as golf courses and airfields. The |



| Species                                            | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                    | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                    |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                    |        |    |                   | savannah woodlands and grasslands.                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                   |                      | subject land is within the Sydney Basin IBRA region and does not support habitat for this species. No further consideration is required.                                                                                                                                                                                                                                                                                   |
| <i>Neophema pulchella</i><br>Turquoise Parrot      | -      | VU | Ecosystem         | Occurs in open woodlands and eucalypt forests with a ground cover of grasses and understorey of low shrubs. Generally found in the foothills of the Great Divide, including steep rocky ridges and gullies. Nest in hollow-bearing trees, either dead or alive; also, in hollows in tree stumps. Prefer to breed in open grassy forests and woodlands, and gullies that are moist. | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species is reliant on grassland and sheltered grassy woodland habitats, often associated with moist gullies. Turquoise Parrot is also reliant on hollow-bearing trees for roosting and breeding. The subject land does not contain suitable habitat for this species. No further consideration is required. |
| <i>Numenius madagascariensis</i><br>Eastern Curlew | CE     | -  | Dual credit       | Occurs in sheltered coasts, especially estuaries, embayments, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats often with beds of seagrass.                                                                                                                                                                                                        | Assumed present      | No                    | No                | Low                  | <b>Assumed present</b> – refer to Section 4.<br>Important Habitat Mapping (DPIE 2024) is available for this species. Mapped areas of important habitat for this species intersect with the development footprint. A SIC assessment has been prepared to assess impacts to this species.                                                                                                                                    |
| <i>Pachyptila turtur subantarctica</i>             | VU     | -  | N/A               | Fairy Prions (including other subspecies) are often                                                                                                                                                                                                                                                                                                                                | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this                                                                                                                                                                                                                                                                                                                                                           |

| Species                                                          | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                         |
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|                                                                  | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                          |                      |                         |                                                                                                                                                                                                                                                  |
| Fairy Prion<br>(southern)                                        |        |    |                      | beach cast on the south-eastern coast of Australia and are commonly seen offshore over the continental shelf and over pelagic waters. Observations are less common off Western Australia and Queensland than in south-eastern Australia. Beach cast birds are found along the whole coast of NSW, and the species is common offshore along the entire Victorian coast, where thousands are sometimes seen. In Tasmania, the Fairy Prion is an abundant visitor to all offshore waters. In South Australia, this species is regularly seen and often beach cast. |                         |                          |                      |                         | species within 5 km of the subject land. This species breeds on offshore subantarctic islands and forages over pelagic waters in NSW. The subject land does not contain suitable habitat for this species. No further consideration is required. |
| <i>Pandion cristatus</i><br>Eastern Osprey,<br>Australian Osprey | -      | VU | Dual credit          | Found in coastal waters, inlets, estuaries and offshore islands. Occasionally found 100 km inland along larger rivers. It is water-dependent, hunting for fish in clear,                                                                                                                                                                                                                                                                                                                                                                                        | High                    | Yes                      | Yes                  | Low                     | <b>Recorded.</b><br>This species was recorded during the field investigation on 6 August 2025. A nest was observed adjacent to the subject land. The nesting habitat for this species will not be impacted, neither                              |

| Species                                    | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                          | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                 |
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|                                            | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                              |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                          |
|                                            |        |    |                   | open water. The Osprey occurs in terrestrial wetlands, coastal lands and offshore islands. It is a predominantly coastal species, generally using marine cliffs as nesting and roosting sites. Nests can also be made high up in dead trees or in dead crowns of live trees, usually within 1 km of the sea. |                      |                       |                   |                      | directly nor indirectly by the proposed works as described in Section 6.2.1. No further consideration is required.                                                                                                                                                                                                                                       |
| <i>Phoebetria fusca</i><br>Sooty Albatross | VU     | VU | Marine            | A pelagic species that inhabits subantarctic and subtropical marine waters. Sooty Albatross breed on subantarctic islands and rarely occur over waters along continental shelves.                                                                                                                            | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species breeds on offshore subantarctic islands, is a pelagic forager, and rarely occurs over waters near continental shelves. The subject land does not contain suitable habitat for this species. No further consideration is required. |
| <i>Pluvialis squatarola</i><br>Grey Plover | VU     | -  | N/A               | Almost entirely coastal but occasionally recorded on inland wetlands. Mainly on marine shores, inlets, estuaries and lagoons where there are nearby large tidal mudflats or                                                                                                                                  | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are 19 records for this species within 5 km of the subject land. This species breeds in northern Siberia. Grey Plover forages within intertidal zones including mudflats and                                                                                                                                    |



| Species                                                   | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                               | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                  |
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|                                                           | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                   |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                           |
|                                                           |        |    |                   | sandflats for feeding and sandy beaches for roosting. Grey Plover breeds in Siberia and seasonally visits Australia.                                                                                                                                                                                                              |                      |                       |                   |                      | saltmarshes. The subject land does not contain suitable habitat for this species. No further consideration is required.                                                                                                                                                                                   |
| <i>Polytelis swainsonii</i><br>Superb Parrot              | VU     | VU | Dual credit       | Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Forages primarily in grassy box woodland, feeding in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>There is 1 record for this species within 5 km of the subject land. This species is reliant on eucalypt woodland for foraging and breeding. The subject land does not contain suitable habitat for this species. No further consideration is required.                 |
| <i>Pterodroma leucoptera leucoptera</i><br>Gould's Petrel | EN     | VU | Marine            | The Gould's Petrel is a marine species which only comes to shore to breed. It breeds exclusively on Cabbage Tree Island, 1.4 km offshore from Port Stephens and on nearby Boondelbah Island. The first arrival of Gould's petrel on cabbage tree Island occurs from mid to                                                        | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species breeds on islands in the Port Stephens region and is a pelagic forager. The subject land does not contain suitable habitat for this species. No further consideration is required. |

| Species                                                                             | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                           | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                             |
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|                                                                                     | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                               |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                      |
|                                                                                     |        |    |                   | late September. Fledglings depart the island from late March to early May.                                                                                                                                                                                                                                                    |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                      |
| <i>Pterodroma neglecta neglecta</i><br>Kermadec Petrel<br>(west Pacific subspecies) | VU     | VU | Marine            | Marine pelagic, in subtropical and tropical waters. They breed on islands, atolls and rock cliff where they nest on the ground or in rock crevices under ferns, shrubs or trees. This species is a vagrant along NSW coasts, particularly after storms.                                                                       | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species breeds on islands in the South Pacific and rarely occurs over coastal NSW waters. The subject land does not contain suitable pelagic foraging habitat for this species. No further consideration is required. |
| <i>Pycnoptilus floccosus</i><br>Pilotbird                                           | VU     | -  | N/A               | The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris. | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species occupies wet sclerophyll forest and temperate rainforest. The subject land does not contain suitable habitat for this species. No further consideration is required.                                          |
| <i>Sternula nereis nereis</i><br>Fairy Tern                                         | VU     | -  | Species           | The Fairy Tern nests on sheltered sandy beaches, spits and banks above the                                                                                                                                                                                                                                                    | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject                                                                                                                                                                                                                                  |

| Species                                                   | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                   | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                |
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|                                                           | EPBC   | BC |                   |                                                                                                                                                                                                                       |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                         |
|                                                           |        |    |                   | high tide line and below vegetation. This species will also frequent embayments, estuarine habitats, wetlands and mainland coastlines where it forages in shallow waters.                                             |                      |                       |                   |                      | land. The subject land does not contain sheltered sandy beaches or shallow estuarine habitats suitable for breeding or foraging for this species. No further consideration is required.                                                                                                                 |
| <i>Thalassarche impavida</i><br>Campbell Albatross        | VU     | -  | Marine            | Inhabits Antarctic, subantarctic and subtropical waters. Although the Campbell Albatross does not breed in Australia, it can be found in Australian waters, typically in the winter months where it forages offshore. | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. The species breeds on offshore islands and is a pelagic forager. The subject land does not comprise pelagic foraging habitat suitable for this species. No further consideration is required. |
| <i>Thalassarche melanophris</i><br>Black-browed Albatross | VU     | VU | Marine            | Inhabits Antarctic, subantarctic and subtropical waters. Although generally pelagic the species also occurs on the continental shelf and can be seen from land.                                                       | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are 15 records for this species within 5 km of the subject land. The species breeds on offshore islands and is a pelagic forager. The subject land does not comprise pelagic foraging habitat suitable for this species. No further consideration is required. |
| <i>Thalassarche salvini</i><br>Salvin's Albatross         | VU     | -  | Marine            | Salvin's Albatross is a non-breeding visitor to Australian waters. This                                                                                                                                               | Low                  | No                    | No                | Low                  | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject                                                                                                                                                                                                     |



| Species                                              | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                |
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|                                                      | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                    |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                         |
|                                                      |        |    |                      | species predominantly feeds on cephalopods and fish found along continental shelves.                                                                                                                                                                                                               |                         |                          |                      |                         | land. The species breeds on offshore islands and is a pelagic forager. The subject land does not comprise pelagic foraging habitat suitable for this species. No further consideration is required.                                                                                                     |
| <i>Thalassarche steadi</i><br>White-capped Albatross | VU     | -  | N/A                  | The White-capped Albatross is probably common off the coast of south-east Australia throughout the year. It has been observed that juveniles are rare in New Zealand waters, being more common off south-east Australia and South Africa. Breeding colonies occur on islands south of New Zealand. | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. The species breeds on offshore islands and is a pelagic forager. The subject land does not comprise pelagic foraging habitat suitable for this species. No further consideration is required. |
| <i>Tringa nebularia</i><br>Common Greenshank         | EN     | -  | N/A                  | Widely distributed throughout a range of inland wetlands and sheltered coastal habitats. Occurs in habitats with varying salinity including saltmarshes, mudflats, and river estuaries.                                                                                                            | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species occupies mudflat and saltmarsh habitat which is absent from the subject land. No further consideration is required.                                                              |
| <i>Tyto longimembris</i><br>Eastern Grass Owl        | -      | VU | Ecosystem            | Occurs mainly in open tussock grassland, usually in treeless areas. Can also                                                                                                                                                                                                                       | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject                                                                                                                                                                                                     |

| Species                                            | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                      | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                             |
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|                                                    | EPBC   | BC |                      |                                                                                                                                                                                                                                          |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                    |        |    |                      | occur in marshy areas with tall dense tussocks of grass. Occasionally occurs in densely vegetated agricultural lands such as sugarcane fields. This species is exclusively ground dwelling and create nests amongst tussocks and sedges. |                         |                          |                      |                         | land. This species occupies grasslands and marshlands with dense tussocks of grasses and sedges upon which it is reliant for roosting and breeding. The subject land does not support suitable habitat for this species. No further consideration is required.                                                                                                                                       |
| <i>Xenus cinereus</i><br>Terek Sandpiper           | VU     | VU | Dual credit          | Mainly found on saline intertidal mudflats in sheltered estuaries, embayments, harbours and lagoons.                                                                                                                                     | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>This species has previously been recorded within the subject land, with a total of 19 records within 5 km. This species occupies intertidal habitats which are not present within the subject land. Records for this species within the subject land are most likely attributed to individuals moving across the landscape. No further consideration is required. |
| <b>Mammals</b>                                     |        |    |                      |                                                                                                                                                                                                                                          |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>Chalinolobus dwyeri</i><br>Large-eared Pied Bat | EN     | VU | Species              | Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley.                                                                                        | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species is reliant on caves and rock overhang habitat for breeding. The subject land does not support these habitat features,                                                                                                                                                         |

| Species | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                        |
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|         | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                          |                      |                         |                                                                                                                 |
|         |        |    |                      | Primarily found in dry sclerophyll forests and woodlands but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10 individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran. |                         |                          |                      |                         | nor does it support suitable roosting habitat within man-made structures. No further consideration is required. |



| Species                                           | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                          |
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|                                                   | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Dasyurus maculatus</i><br>Spotted-tailed Quoll | EN     | VU | Ecosystem            | Occurs along the east coast of Australia and the Great Dividing Range. Uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000 ha, while males have larger home ranges of between | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species is heavily reliant on forests, woodlands, and heathlands with good vegetation cover for foraging and caves or fallen logs for breeding. These habitats and habitat features are not present within the subject land. No further consideration is required. |

| Species                                                                             | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                   | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                |
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|                                                                                     | EPBC   | BC |                      |                                                                                                                                                                                                       |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                         |
|                                                                                     |        |    |                      | 2000 and 5000 ha.<br>Breeding occurs from May to August.                                                                                                                                              |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                         |
| <i>Isoodon obesulus</i><br><i>obesulus</i><br>Southern Brown<br>Bandicoot (eastern) | EN     | EN | Species              | This species prefers sandy soils with scrubby vegetation and/or areas with low ground cover that are burn from time to time. A mosaic of post fire vegetation is important for this species.          | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits scrubby vegetation and is reliant on dense ground cover for nesting. These habitats and habitat features are not present within the subject land. No further consideration is required. |
| <i>Micronomus norfolkensis</i><br>Eastern Coastal<br>Free-tailed Bat                | -      | VU | Ecosystem            | Distribution extends east of the Great Dividing Range from southern Queensland to south of Sydney. Most records are from dry eucalypt forests and woodland. Individuals tend to forage in natural and | Low                     | No                       | No                   | Low                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits forests and woodlands and where it is reliant on tree hollows for roosting and breeding. These habitats and habitat features are not present                                            |

| Species                                                | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                               | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                    |
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|                                                        | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                             |
|                                                        |        |    |                      | artificial openings in forests, although it has also been caught foraging low over a rocky river within rainforest and wet sclerophyll forest habitats. The species generally roosts in hollow spouts of large mature eucalypts (including paddock trees), although individuals have been recorded roosting in the roof of a hut, in wall cavities, and under metal caps of telegraph poles. Foraging generally occurs within a few kilometres of roosting sites. |                         |                          |                      |                         | within the subject land. No further consideration is required.                                                                                                                                                                                                                                                                              |
| <i>Miniopterus australis</i><br>Little Bent-winged Bat | -      | VU | Dual credit          | Occurs from Northern Queensland to the Hawkesbury River near Sydney. Roost sites encompass a range of structures including caves, tunnels and stormwater drains. Young are raised by the females in large maternity colonies in caves in summer. Shows a preference for well-timbered areas including                                                                                                                                                             | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits forests and woodlands and where it is reliant on tree hollows for roosting and breeding. These habitats and habitat features are not present within the subject land. No further consideration is required. |



| Species                                                        | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|                                                                | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                |        |    |                      | rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests. The Little Bentwing bat forages for small insects (such as moths, wasps and ants) beneath the canopy of densely vegetated habitats.                                                                                                                                                                                                                                                                                                                                  |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <i>Miniopterus orianae oceanensis</i><br>Large Bent-winged Bat | -      | VU | Dual credit          | Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has been recorded 3 times within 5 km of the subject land. This species inhabits woodland and forested habitat and is reliant on caves and rock overhang habitat for breeding. The subject land does not comprise any woodland or forested areas or support these habitat features, nor does it support suitable roosting habitat within man-made structures. No further consideration is required. |

| Species                                               | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                         | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                             |
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|                                                       | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                             |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                       |        |    |                   | canopy and along waterways.                                                                                                                                                                                                                                                                                                                                                                 |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>Notamacropus parma</i><br>Parma Wallaby            | VU     | -  | Species           | Occurs in wet and dry sclerophyll forest with a thick, shrubby understorey associated with grassy patches. They may also occur in rainforest but prefer the wet sclerophyll forest (Strahan, 1995). This species feed on grasses and herbs (Strahan, 1995).                                                                                                                                 | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. This species inhabits sclerophyll forests with dense vegetation cover upon which it is reliant for shelter. Suitable habitat does not occur within the subject land. No further consideration is required.                                                                                                    |
| <i>Petauroides volans</i><br>Greater Glider           | EN     | -  | Species           | The distribution of the Greater Glider includes the ranges and coastal plain of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Presence and density of Greater Gliders is related to soil fertility, eucalypt tree species, disturbance history and density of suitable tree hollows. Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. This species inhabits forests and woodlands dominated by eucalypt species upon which it is dependent for foraging habitat. This species occupies hollow-bearing trees in suitable vegetation. Suitable habitat for this species does not occur within the subject land. No further consideration is required. |
| <i>Petaurus australis australis</i><br>Yellow-bellied | VU     | -  | N/A               | Restricted to tall native forests in regions of high rainfall along the coast of                                                                                                                                                                                                                                                                                                            | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land.                                                                                                                                                                                                                                                                                                               |

| Species                                              | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                   | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                             |
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|                                                      | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                          |                      |                         |                                                                                                                                                                                                                                                                      |
| Glider (south-eastern)                               |        |    |                      | NSW. Preferred habitats are productive, tall open sclerophyll forests where mature trees provide shelter and nesting hollows. Critical elements of habitat include sap-site trees, winter flowering eucalypts, mature trees suitable for den sites and a mosaic of different forest types.                                                                                                            |                         |                          |                      |                         | This species inhabits forests and woodlands dominated by eucalypt species and comprising hollow-bearing trees in suitable vegetation. Suitable habitat for this species does not occur within the subject land. No further consideration is required.                |
| <i>Phascolarctos cinereus</i><br>Koala               | EN     | EN | Species              | In NSW, the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include <i>Eucalyptus robusta</i> , <i>E. tereticornis</i> , <i>E. punctata</i> , <i>E. haemastoma</i> and <i>E. signata</i> . They are solitary with varying home ranges. | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>Koala has been recorded once within 5 km of the subject land. Koala is heavily dependent on Koala use trees within woodland habitats. There are no Koala use trees within the subject land. No further consideration is required. |
| <i>Pseudomys gracilicaudatus</i><br>Eastern Chestnut | -      | VU | Ecosystem            | The Eastern Chestnut Mouse is most common in dense, wet heath and                                                                                                                                                                                                                                                                                                                                     | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land.                                                                                                                                                               |

| Species                                               | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                              |
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|                                                       | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                       |
| Mouse                                                 |        |    |                   | swamps, but also occurs in open woodlands and dry sclerophyll forests with a grassy understorey. Density of the ground layer is a determining factor. It relies on a variety of food sources, including fungi, seeds, insects and stems.                                                                                                                                                                                                                                                                                                              |                      |                       |                   |                      | This species inhabits a range of native vegetation types with a dense ground cover. Suitable habitat for this species is not present within the subject land. No further consideration is required.                                                                                                                                   |
| <i>Pseudomys novaehollandiae</i><br>New Holland Mouse | VU     | VU | Ecosystem         | The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. The home range of the New Holland Mouse can range from 0.44 ha to 1.4 ha. The New Holland Mouse is a social animal, living predominantly in burrows shared with other individuals. The species is nocturnal and omnivorous, feeding on seeds, insects, | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. This species occupies open heathland, woodland and forested areas and is reliant on dense ground for foraging. Suitable habitat for this species is not present within the subject land. No further consideration is required. |



| Species                                                 | Status |    | BAM predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                         | Potential occurrence | BAM Candidate species | Survey undertaken | Potential for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|                                                         | EPBC   | BC |                   |                                                                                                                                                                                                                                                                                                                                                                             |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                         |        |    |                   | leaves, flowers and fungi, and is therefore likely to play an important role in seed dispersal and fungal spore dispersal. It is likely that the species spends considerable time foraging above-ground for food, predisposing it to predation by native predators and introduced species. Breeding typically occurs between August and January but can extend into autumn. |                      |                       |                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <i>Pteropus poliocephalus</i><br>Grey-headed Flying-fox | VU     | VU | Dual credit       | Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Roosts in large colonies, commonly in dense riparian vegetation.                                                                                             | Low                  | No                    | No                | Nil                  | <b>Excluded as a candidate.</b><br>This species has a large number of records within 5 km of the subject land, however no records within the subject land. The species credit is for breeding habitat only which is associated with the presence of breeding camps. The closest known breeding camp occurs at Kurnell, approximately 4.8 km to the south of the subject land. Nearby records for this species are likely attributed to Grey-headed Flying Fox within this camp as well as individuals moving across the landscape to forage. The subject |

| Species                                                 | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|--------|----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                         | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                         |        |    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                          |                      |                         | land does not support foraging habitat of contain camps of Grey-headed Flying-fox. Further consideration is not required.                                                                                                                                                                                                                                                                                                          |
| <b>Amphibians</b>                                       |        |    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <i>Heleioporus australiacus</i><br>Giant Burrowing Frog | EN     | VU | Species              | Prefers hanging swamps on sandstone shelves adjacent to perennial non-flooding creeks. Can also occur within shale outcrops within sandstone formations. Known from wet and dry forests and montane woodland in the southern part of its range. Individuals can be found around sandy creek banks or foraging along ridge-tops during or directly after heavy rain. Males often call from burrows located in sandy banks next to water. Spends most of its time in non-breeding habitat 20-250 m from breeding sites. | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has not been recorded within 5 km of the subject land. The species is associated with soaks or pools within first or second order streams, as well as from 'hanging swamp' seepage lines. These habitats are absent from the subject land and as such, it is highly unlikely that Giant Burrowing Frog would occur within the subject land. Further consideration is not required. |
| <i>Litoria aurea</i><br>Green and Golden Bell Frog      | VU     | EN | Species              | Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south                                                                                                                                                                                                                                                                                                                                                                                    | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>This species has more than 100 records within 5 km of the subject land. This species inhabits fresh bodies of water comprising                                                                                                                                                                                                                                                                  |

| Species              | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                              |
|----------------------|--------|----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                          |                      |                         |                                                                                                                                                                                                                                                                       |
|                      |        |    |                      | of Grafton and northern VIC. The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop, feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species. |                         |                          |                      |                         | partially submerged vegetation which are absent from the subject land. There are also no artificial boggy areas or pools of water within the subject land that may constitute potential habitat for Green and Golden Bell Frog. No further consideration is required. |
| <b>Reptiles</b>      |        |    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                          |                      |                         |                                                                                                                                                                                                                                                                       |
| <i>Hoplocephalus</i> | EN     | EN | Dual credit          | Mainly occurs in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b>                                                                                                                                                                                                                                       |

| Species                                            | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                               | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------|--------|----|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                   |
| <i>bungaroides</i><br>Broad-headed<br>Snake        |        |    |                      | association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they generally use rock crevices and exfoliating rock during the cooler months and tree hollows during summer. |                         |                          |                      |                         | There are no records of this species within 5 km of the subject land. This species occupies woodland and heath vegetation with exposed sandstone outcrops. These habitats are not present within the subject land. No further consideration is required.                                                                                                          |
| <i>Varanus rosenbergi</i><br>Rosenberg's<br>Goanna | -      | VU | Ecosystem            | This species is a Hawkesbury/Narrabeen sandstone outcrop specialist. Occurs in coastal heaths, humid woodlands and both wet and dry sclerophyll forests. Termite mounds are a critical habitat component.                                                                                                                         | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There is 1 record for this species within 5 km of the subject land. This species occupies woodland, forests, and heath vegetation with associated with sandstone outcrops and is reliant on termite mounds. These habitats and habitat features are not present within the subject land. No further consideration is required. |
| <b>Fish</b>                                        |        |    |                      |                                                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Macquaria australasica</i><br>Macquarie perch   | EN     | -  | N/A                  | Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee                                                                                                                                                                                                                | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits fresh water streams which are not                                                                                                                                                                                                 |



| Species                                            | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                 |
|----------------------------------------------------|--------|----|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                          |                      |                         |                                                                                                                                                                                                                                          |
|                                                    |        |    |                      | and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries                                                                                                                                                                                                                                                                                  |                         |                          |                      |                         | present within the subject land. No further consideration is required.                                                                                                                                                                   |
| <i>Prototroctes maraena</i><br>Australian Grayling | VU     | -  | N/A                  | The Australian Grayling occurs in streams and rivers on the eastern and southern flanks of the Great Dividing Range from Sydney southwards to the Otway Ranges in Victoria, and Tasmania. Australian grayling do not occur in the inland Murray–Darling Basin system. Grayling is a diadromous species, migrating between freshwater streams and the ocean. This species has been found in clear, gravel-bottomed streams with alternating pools and riffles, and granite outcrops, and also in muddy-bottomed, heavily | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are no records for this species within 5 km of the subject land. This species inhabits fresh water streams which are not present within the subject land. No further consideration is required. |

| Species                                               | Status |    | BAM<br>predicted SCS | Habitat Description                                                                                                                                                                                                                                                                               | Potential<br>occurrence | BAM Candidate<br>species | Survey<br>undertaken | Potential<br>for impact | Conclusion and rationale                                                                                                                                                                                                                                       |
|-------------------------------------------------------|--------|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                       | EPBC   | BC |                      |                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                |
|                                                       |        |    |                      | silted habitats.                                                                                                                                                                                                                                                                                  |                         |                          |                      |                         |                                                                                                                                                                                                                                                                |
| Gastropods                                            |        |    |                      |                                                                                                                                                                                                                                                                                                   |                         |                          |                      |                         |                                                                                                                                                                                                                                                                |
| <i>Meridolum maryae</i><br>Maroubra<br>Woodland Snail | EN     | EN | Species              | This species can be found in leaf litter within coastal vegetation communities and is typically active at night. During dry conditions, the species can dig several centimetres deep into the soil. The species is known to occur between Royal National Park and Palm Beach, in New South Wales. | Low                     | No                       | No                   | Nil                     | <b>Excluded as a candidate.</b><br>There are 12 records for this species within 5 km of the subject land. This species inhabits leaf litter with native vegetation. This habitat is not present within the subject land. No further consideration is required. |

## Appendix 3 Flora

### Appendix 3.1 BAM plot field data

Table A 3 BAM plot floristics

| Family                 | Scientific name                              | Common name          | 43201_B01 |       | 43201_B02 |       | 43201_B03 |       |
|------------------------|----------------------------------------------|----------------------|-----------|-------|-----------|-------|-----------|-------|
|                        |                                              |                      | Cvr%      | Abund | Cvr%      | Abund | Cvr%      | Abund |
| Native species         |                                              |                      |           |       |           |       |           |       |
| Apiaceae               | Hydrocotyle callicarpa                       | Tiny Pennywort       |           |       |           |       | 0.1       | 10    |
| Asteraceae             | Euchiton spp.                                | None                 |           |       | 0.1       | 10    |           |       |
| Casuarinaceae          | Casuarina glauca                             | Swamp Oak            |           |       | 0.2       | 2     | 0.1       | 10    |
| Chenopodiaceae         | Sarcocornia quinqueflora subsp. quinqueflora | None                 |           |       |           |       | 25        | 2000  |
| Chenopodiaceae         | Suaeda australis                             | None                 |           |       |           |       | 0.5       | 20    |
| Fabaceae (Mimosoideae) | Acacia longifolia                            | None                 |           |       | 0.1       | 1     |           |       |
| Juncaceae              | Juncus usitatus                              | None                 | 0.1       | 1     | 0.1       | 10    |           |       |
| Juncaceae              | Juncus kraussii subsp. australiensis         | Sea Rush             |           |       |           |       | 0.1       | 2     |
| Oxalidaceae            | Oxalis perennans                             | None                 | 0.1       | 10    |           |       |           |       |
| Poaceae                | Cynodon dactylon                             | Common Couch         | 65        | 6000  | 1         | 30    |           |       |
| Poaceae                | Festuca spp.                                 | None                 | 0.1       | 10    |           |       |           |       |
| Poaceae                | Sporobolus virginicus                        | None                 |           |       |           |       | 20        | 200   |
| Poaceae                | Urochloa spp.                                | None                 | 0.1       | 10    |           |       |           |       |
| Poaceae                | Microlaena stipoides                         | Weeping Grass        | 0.1       | 20    |           |       |           |       |
| Introduced species     |                                              |                      |           |       |           |       |           |       |
| Fabaceae (Mimosoideae) | Acacia saligna                               | Golden Wreath Wattle | 3         | 1     | 35        | 300   |           |       |
| Polygonaceae           | Acetosa sagittata                            | Rambling Dock        |           |       | 0.1       | 2     |           |       |
| Apocynaceae            | Araujia sericifera                           | Moth Vine            |           |       | 0.1       | 5     |           |       |

|                      |                                                     |                     |     |     |     |     |  |  |
|----------------------|-----------------------------------------------------|---------------------|-----|-----|-----|-----|--|--|
| Poaceae              | <i>Cenchrus clandestinus</i>                        | Kikuyu Grass        | 0.1 | 20  |     |     |  |  |
| Caryophyllaceae      | <i>Cerastium glomeratum</i>                         | Mouse-ear Chickweed | 0.1 | 10  |     |     |  |  |
| Asteraceae           | <i>Chrysanthemoides monilifera subsp. rotundata</i> | Bitou Bush          |     |     | 0.1 | 5   |  |  |
| Asteraceae           | <i>Conyza bonariensis</i>                           | Flaxleaf Fleabane   |     |     | 0.1 | 10  |  |  |
| Poaceae              | <i>Cortaderia selloana</i>                          | Pampas Grass        |     |     | 20  | 200 |  |  |
| Cyperaceae           | <i>Cyperus rotundus</i>                             | Nutgrass            | 2   | 200 |     |     |  |  |
| Poaceae              | <i>Digitaria sanguinalis</i>                        | Crab Grass          | 0.1 | 10  |     |     |  |  |
| Poaceae              | <i>Ehrharta erecta</i>                              | Panic Veldtgrass    | 2   | 100 |     |     |  |  |
| Poaceae              | <i>Eragrostis curvula</i>                           | African Lovegrass   |     |     | 0.1 | 10  |  |  |
| Apiaceae             | <i>Hydrocotyle bonariensis</i>                      | None                | 0.1 | 20  | 0.1 | 20  |  |  |
| Poaceae              | <i>Megathyrsus maximus var. maximus</i>             | None                |     |     | 0.1 | 5   |  |  |
| Poaceae              | <i>Melinis repens</i>                               | Red Natal Grass     |     |     | 0.1 | 5   |  |  |
| Poaceae              | <i>Paspalum dilatatum</i>                           | Paspalum            |     |     | 0.1 | 10  |  |  |
| Plantaginaceae       | <i>Plantago lanceolata</i>                          | Lamb's Tongues      | 0.1 |     | 0.1 | 10  |  |  |
| Poaceae              | <i>Poa annua</i>                                    | Winter Grass        | 5   | 60  |     |     |  |  |
| Asteraceae           | <i>Senecio madagascariensis</i>                     | Fireweed            |     |     | 0.1 | 2   |  |  |
| Asteraceae           | <i>Soliva sessilis</i>                              | Bindyi              |     |     | 0.1 | 10  |  |  |
| Asteraceae           | <i>Sonchus oleraceus</i>                            | Common Sowthistle   | 0.1 | 10  | 0.1 | 5   |  |  |
| Asteraceae           | <i>Taraxacum officinale</i>                         | Dandelion           |     |     | 0.1 | 10  |  |  |
| Fabaceae (Faboideae) | <i>Trifolium repens</i>                             | White Clover        | 0.1 | 10  | 0.1 | 5   |  |  |
| Verbenaceae          | <i>Verbena bonariensis</i>                          | Purpletop           |     |     | 0.1 | 1   |  |  |



**Appendix 3.2      BAM plot data sheets**

| BAM Plot Data Sheet  |                  |             |              | Site Sheet no:1 of 2 |           |                       |    |
|----------------------|------------------|-------------|--------------|----------------------|-----------|-----------------------|----|
|                      |                  | Survey Name |              | Veg Zone ID          | Recorders |                       |    |
| Date                 | 06/08/2025       | Port Botany |              | Other                | NZ        |                       |    |
| Zone 56              | Datum GDA94      | Plot ID     | 43201_B01    | Plot dimensions      | 10x100    | Orientation of middle | 80 |
| Easting 334680       | Northing 6238509 | IBRA region | Sydney Basin | Photo #              |           |                       |    |
| Plant Community Type |                  | 0           |              |                      | EEC: None | Confidence M          |    |

| BAM Attribute (400m2 plot)                                  |              | Sum values |  | BAM Attribute (1000m2 plot) |                    |
|-------------------------------------------------------------|--------------|------------|--|-----------------------------|--------------------|
| Count of Native Richness                                    | Trees        | 0          |  | DBH                         | # Tree Stems Count |
|                                                             | Shrubs       | 0          |  | 80+ cm                      | 0                  |
|                                                             | Grasses etc. | 5          |  | 50 - 79 cm                  | 0                  |
|                                                             | Forbs        | 1          |  | 30 - 49 cm                  | 0                  |
|                                                             | Ferns        | 0          |  | 20 - 29cm                   | 1                  |
|                                                             | Other        | 0          |  | 10 - 19 cm                  | 0                  |
| Sum of Cover of native vascular plants by growth form group | Trees        | 0          |  | 5 - 9 cm                    | 0                  |
|                                                             | Shrubs       | 0          |  | < 5 cm                      | 0                  |
|                                                             | Grasses etc. | 65.4       |  | Length of logs (m)          | 0                  |
|                                                             | Forbs        | 0.1        |  | No. trees with hollows      | 0                  |
|                                                             | Ferns        | 0          |  |                             |                    |
|                                                             | Other        | 0          |  |                             |                    |
| High Threat Weed cover                                      |              | 2.1        |  |                             |                    |

| BAM Attribute (1 x 1m plots) | Litter cover (%) |   |   |   |   |
|------------------------------|------------------|---|---|---|---|
| Subplot score (% in each)    | 10               | 0 | 2 | 5 | 0 |
| Average of the 5 subplots    | 3.4              |   |   |   |   |

Notes

**Physiography + site features that may help in determining PCT and Management Zone**

|                  |                                 |               |      |                           |                |
|------------------|---------------------------------|---------------|------|---------------------------|----------------|
| Landform Pattern | Land adj to ocean within a port | Slope         | Flat | Soil Surface Texture      | Sandy alluvial |
| Soil Colour      | Dark brown                      | Site Drainage | Good | Distance to nearest water | 1 m            |

| Plot Disturbance                    | Severity code | Age code | Observational evidence |
|-------------------------------------|---------------|----------|------------------------|
| Clearing inc. logging)              |               |          |                        |
| Cultivation (inc. pasture)          |               |          |                        |
| Soil erosion                        |               |          |                        |
| Firewood/CWD removal                |               |          |                        |
| Grazing (identify native/livestock) |               |          |                        |
| Fire damage                         |               |          |                        |
| Storm damage                        |               |          |                        |
| Weediness                           |               |          |                        |
| Other                               |               |          |                        |

|                             |            |                |           |           |
|-----------------------------|------------|----------------|-----------|-----------|
| 400 m2 plot:Sheet<br>2 of 2 |            | Survey<br>Name | Plot ID   | Recorders |
| Date                        | 06/08/2025 | Port Botany    | 43201_B01 | NZ        |

| GF Code | Genus species           | N,E or HTE | Cover | Abund | Stratum |
|---------|-------------------------|------------|-------|-------|---------|
|         | Acacia saligna          | E          | 3     | 1     |         |
|         | Cenchrus clandestinus   | HTE        | 0.1   | 20    |         |
|         | Cerastium glomeratum    | E          | 0.1   | 10    |         |
| GG      | Cynodon dactylon        | N          | 65    | 6000  |         |
|         | Cyperus rotundus        | E          | 2     | 200   |         |
|         | Digitaria sanguinalis   | E          | 0.1   | 10    |         |
|         | Ehrharta erecta         | HTE        | 2     | 100   |         |
| GG      | Festuca spp.            | N          | 0.1   | 10    |         |
|         | Hydrocotyle bonariensis | E          | 0.1   | 20    |         |
| GG      | Juncus usitatus         | N          | 0.1   | 1     |         |
| GG      | Microlaena stipoides    | N          | 0.1   | 20    |         |
| FG      | Oxalis perennans        | N          | 0.1   | 10    |         |
|         | Plantago lanceolata     | E          | 0.1   |       |         |
|         | Poa annua               | E          | 5     | 60    |         |
|         | Sonchus oleraceus       | E          | 0.1   | 10    |         |
|         | Trifolium repens        | E          | 0.1   | 10    |         |
| GG      | Urochloa spp.           | N          | 0.1   | 10    |         |

| BAM Plot Data Sheet  |                  |             |              | Site Sheet no:1 of 2 |           |                           |
|----------------------|------------------|-------------|--------------|----------------------|-----------|---------------------------|
|                      |                  | Survey Name |              | Veg Zone ID          | Recorders |                           |
| Date                 | 06/08/2025       | Port Botany |              | Other                | Nz        |                           |
| Zone 56              | Datum GDA94      | Plot ID     | 43201_B02    | Plot dimensions      | 50x20     | Orientation of middle 183 |
| Easting 333954       | Northing 6239759 | IBRA region | Sydney Basin | Photo #              |           |                           |
| Plant Community Type |                  | 0           |              |                      | EEC: None | Confidence H              |

| BAM Attribute (400m2 plot)                                 |              | Sum values | BAM Attribute (1000m2 plot) |                    |
|------------------------------------------------------------|--------------|------------|-----------------------------|--------------------|
| Count of Native Richness                                   | Trees        | 1          | DBH                         | # Tree Stems Count |
|                                                            | Shrubs       | 1          | 80+ cm                      | 0                  |
|                                                            | Grasses etc. | 2          | 50 - 79 cm                  | 0                  |
|                                                            | Forbs        | 1          | 30 - 49 cm                  | 0                  |
|                                                            | Ferns        | 0          | 20 - 29cm                   | 0                  |
|                                                            | Other        | 0          | 10 - 19 cm                  | 1                  |
| Sum of Cover of native vascular plans by growth form group | Trees        | 0.2        | 5 - 9 cm                    | 1                  |
|                                                            | Shrubs       | 0.1        | < 5 cm                      | 1                  |
|                                                            | Grasses etc. | 1.1        | Length of logs (m)          | 0                  |
|                                                            | Forbs        | 0.1        | No. trees with hollows      | 0                  |
|                                                            | Ferns        | 0          |                             |                    |
|                                                            | Other        | 0          |                             |                    |
| High Threat Weed cover                                     |              | 20.6       |                             |                    |

| BAM Attribute (1 x 1m plots) | Litter cover (%) |    |   |   |    |
|------------------------------|------------------|----|---|---|----|
| Subplot score (% in each)    | 3                | 95 | 5 | 1 | 90 |
| Average of the 5 subplots    | 38.8             |    |   |   |    |

| Notes                                                                                    |                             |               |      |                           |       |
|------------------------------------------------------------------------------------------|-----------------------------|---------------|------|---------------------------|-------|
| <b>Physiography + site features that may help in determining PCT and Management Zone</b> |                             |               |      |                           |       |
| Landform Pattern                                                                         | Disturbed area within port. | Slope         | Flat | Soil Surface Texture      | Sandy |
| Soil Colour                                                                              | Light brown                 | Site Drainage | Good | Distance to nearest water | 100 m |

| Plot Disturbance                   | Severity code | Age code | Observational evidence |
|------------------------------------|---------------|----------|------------------------|
| Clearing inc. logging)             |               |          |                        |
| Cultivation (inc. pasture)         |               |          |                        |
| Soil erosion                       |               |          |                        |
| Firewood/CWD removal               |               |          |                        |
| Grazing (identify native/livestock |               |          |                        |
| Fire damage                        |               |          |                        |
| Storm damage                       |               |          |                        |
| Weediness                          |               |          |                        |
| Other                              |               |          |                        |



|                             |            |                |           |           |
|-----------------------------|------------|----------------|-----------|-----------|
| 400 m2 plot:Sheet<br>2 of 2 |            | Survey<br>Name | Plot ID   | Recorders |
| Date                        | 06/08/2025 | Port Botany    | 43201_B02 | Nz        |

| GF Code | Genus species               | N,E or HTE | Cover | Abund | Stratum |
|---------|-----------------------------|------------|-------|-------|---------|
| SG      | Acacia longifolia           | N          | 0.1   | 1     |         |
|         | Acacia saligna              | E          | 35    | 300   |         |
|         | Acetosa sagittata           | HTE        | 0.1   | 2     |         |
|         | Araujia sericifera          | HTE        | 0.1   | 5     |         |
| TG      | Casuarina glauca            | N          | 0.2   | 2     |         |
|         | Chrysanthemoides monilifera | HTE        | 0.1   | 5     |         |
|         | Conyza bonariensis          | E          | 0.1   | 10    |         |
|         | Cortaderia selloana         | HTE        | 20    | 200   |         |
| GG      | Cynodon dactylon            | N          | 1     | 30    |         |
|         | Eragrostis curvula          | HTE        | 0.1   | 10    |         |
| FG      | Euchiton spp.               | N          | 0.1   | 10    |         |
|         | Hydrocotyle bonariensis     | E          | 0.1   | 20    |         |
| GG      | Juncus usitatus             | N          | 0.1   | 10    |         |
|         | Megathyrsus maximus var.    | E          | 0.1   | 5     |         |
|         | Melinis repens              | E          | 0.1   | 5     |         |
|         | Paspalum dilatatum          | HTE        | 0.1   | 10    |         |
|         | Plantago lanceolata         | E          | 0.1   | 10    |         |
|         | Senecio madagascariensis    | HTE        | 0.1   | 2     |         |
|         | Soliva sessilis             | E          | 0.1   | 10    |         |
|         | Sonchus oleraceus           | E          | 0.1   | 5     |         |
|         | Taraxacum officinale        | E          | 0.1   | 10    |         |
|         | Trifolium repens            | E          | 0.1   | 5     |         |
|         | Verbena bonariensis         | E          | 0.1   | 1     |         |

|                      |                  |             |              |                       |              |
|----------------------|------------------|-------------|--------------|-----------------------|--------------|
| BAM Plot Data Sheet  |                  |             |              | Site Sheet no:1 of 2  |              |
|                      |                  | Survey Name | Veg Zone ID  | Recorders             |              |
| Date                 | 06/08/2025       | Port Botany | High         | NZ                    |              |
| Zone 56              | Datum GDA94      | Plot ID     | 43201_B03    | Plot dimensions       | 50x20        |
|                      |                  |             |              | Orientation of middle | 88           |
| Easting 334422       | Northing 6240639 | IBRA region | Sydney Basin | Photo #               |              |
| Plant Community Type |                  | 4097        |              | EEC: None             | Confidence H |

|                                                            |              |            |                             |                    |
|------------------------------------------------------------|--------------|------------|-----------------------------|--------------------|
| BAM Attribute (400m2 plot)                                 |              | Sum values | BAM Attribute (1000m2 plot) |                    |
| Count of Native Richness                                   | Trees        | 1          | DBH                         | # Tree Stems Count |
|                                                            | Shrubs       | 2          | 80+ cm                      | 0                  |
|                                                            | Grasses etc. | 2          | 50 - 79 cm                  | 0                  |
|                                                            | Forbs        | 1          | 30 - 49 cm                  | 0                  |
|                                                            | Ferns        | 0          | 20 - 29cm                   | 0                  |
|                                                            | Other        | 0          | 10 - 19 cm                  | 0                  |
| Sum of Cover of native vascular plans by growth form group | Trees        | 0.1        | 5 - 9 cm                    | 0                  |
|                                                            | Shrubs       | 25.5       | < 5 cm                      | 0                  |
|                                                            | Grasses etc. | 20.1       | Length of logs (m)          | 0                  |
|                                                            | Forbs        | 0.1        | No. trees with hollows      | 0                  |
|                                                            | Ferns        | 0          |                             |                    |
|                                                            | Other        | 0          |                             |                    |
| High Threat Weed cover                                     |              | 0          |                             |                    |

|                              |                  |   |   |   |   |
|------------------------------|------------------|---|---|---|---|
| BAM Attribute (1 x 1m plots) | Litter cover (%) |   |   |   |   |
| Subplot score (% in each)    | 0                | 0 | 0 | 0 | 0 |
| Average of the 5 subplots    | 0                |   |   |   |   |

|       |            |
|-------|------------|
| Notes | Tidal flat |
|-------|------------|

Physiography + site features that may help in determining PCT and Management Zone

|                  |             |               |      |                           |      |
|------------------|-------------|---------------|------|---------------------------|------|
| Landform Pattern |             | Slope         | Flat | Soil Surface Texture      | Sand |
| Soil Colour      | Light brown | Site Drainage | Good | Distance to nearest water | 0    |

|                                    |               |          |                        |
|------------------------------------|---------------|----------|------------------------|
| Plot Disturbance                   | Severity code | Age code | Observational evidence |
| Clearing inc. logging)             |               |          |                        |
| Cultivation (inc. pasture)         |               |          |                        |
| Soil erosion                       |               |          |                        |
| Firewood/CWD removal               |               |          |                        |
| Grazing (identify native/livestock |               |          |                        |
| Fire damage                        |               |          |                        |
| Storm damage                       |               |          |                        |
| Weediness                          |               |          |                        |

|                             |            |                |           |           |
|-----------------------------|------------|----------------|-----------|-----------|
| 400 m2 plot:Sheet<br>2 of 2 |            | Survey<br>Name | Plot ID   | Recorders |
| Date                        | 06/08/2025 | Port Botany    | 43201_B03 | NZ        |

| GF Code | Genus species                   | N,E or HTE | Cover | Abund | Stratum |
|---------|---------------------------------|------------|-------|-------|---------|
| TG      | Casuarina glauca                | N          | 0.1   | 10    |         |
| FG      | Hydrocotyle callicarpa          | N          | 0.1   | 10    |         |
| GG      | Juncus kraussii subsp.          | N          | 0.1   | 2     |         |
| SG      | Sarcocornia quinqueflora subsp. | N          | 25    | 2000  |         |
| GG      | Sporobolus virginicus           | N          | 20    | 200   |         |
| SG      | Suaeda australis                | N          | 0.5   | 20    |         |

## Appendix 4 Fauna

**Table A 4 Fauna species recorded at the subject land**

| Common name                     | Scientific name                        | Status   |               | Source                          |
|---------------------------------|----------------------------------------|----------|---------------|---------------------------------|
|                                 |                                        | EPBC Act | BC Act/FM Act |                                 |
| Mammals                         |                                        |          |               |                                 |
| Australian Fur Seal             | <i>Arctocephalus pusillus</i>          | -        | VU            | Stantec (2025)                  |
| Indo-Pacific Bottlenose Dolphin | <i>Tursiops aduncus</i>                | -        | -             | Stantec (2025)                  |
| Birds                           |                                        |          |               |                                 |
| Australasian Darter             | <i>Anhinga novaehollandiae</i>         | -        | -             | Stantec (2025)<br>Biosis (2025) |
| Australian Raven                | <i>Corvus coronoides</i>               | -        | -             | Stantec (2025)                  |
| Australian White Ibis           | <i>Threskiornis molucca</i>            | -        | -             | Stantec (2025)                  |
| Eastern Osprey                  | <i>Pandion cristatus</i>               | -        | VU            | Stantec (2025)<br>Biosis (2025) |
| Great Cormorant                 | <i>Phalacrocorax carbo</i>             | -        | -             | Stantec (2025)                  |
| Little Black Cormorant          | <i>Phalacrocorax sulcirostris</i>      | -        | -             | Biosis (2025)                   |
| Little Pied Cormorant           | <i>Microcarbo melanoleucos</i>         | -        | -             | Biosis (2025)                   |
| Magpie Lark                     | <i>Grallina cyanoleuca</i>             | -        | -             | Biosis (2025)                   |
| Masked Lapwing                  | <i>Vanellus miles</i>                  | -        | -             | Biosis (2025)                   |
| Noisy Miner                     | <i>Manorina melanocephala</i>          | -        | -             | Stantec (2025)                  |
| Peaceful Dove                   | <i>Geopelia placida</i>                | -        | -             | Biosis (2025)                   |
| Pied Cormorant                  | <i>Phalacrocorax varius</i>            | -        | -             | Stantec (2025)                  |
| Pied Oystercatcher              | <i>Haematopus longirostris</i>         | -        | -             | Stantec (2025)                  |
| Silver Gull                     | <i>Chroicocephalus novaehollandiae</i> | -        | -             | Stantec (2025)<br>Biosis (2025) |
| Welcome Swallow                 | <i>Hirundo neoxena</i>                 | -        | -             | Stantec (2025)                  |
| Fish                            |                                        |          |               |                                 |
| Eastern Fiddler Ray             | <i>Trygonorrhina fasciata</i>          | -        | -             | Stantec (2025)                  |
| Eastern Hulafish                | <i>Trachinops taeniatus</i>            | -        | -             | Stantec (2025)                  |
| Luderick                        | <i>Girella tricuspidata</i>            | -        | -             | Stantec (2025)                  |
| Sand Whiting                    | <i>Sillago ciliata</i>                 | -        | -             | Stantec (2025)                  |
| Rock Cale                       | <i>Aplodactylus lophodon</i>           | -        | -             | Stantec (2025)                  |



## Appendix 5 Significant Impact Criteria assessments

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### Appendix 5.1 Eastern Curlew *Numenius madagascariensis*

The Eastern Curlew is listed as Critically Endangered under the EPBC Act.

#### Distribution

The Eastern Curlew is a migratory shorebird, the species Breeds in Russia and north east China and migrates to the east coast of Australia in the non-breeding season. Within Australia the Eastern Curlew is found primarily along the coast in all states, but in particular through the north, east and south-east regions of Australia including as far south as Tasmania. Immature non-breeding birds often do not migrate from Australia but move to northern areas in winter. Eastern Curlew numbers have declined by 80% in the past 30 years (Cth DCCEEW 2023).

#### Habitat requirements

Foraging resources throughout the migratory path are important for the species to be able to regain condition in order to migrate and breed. The species prefers foraging in estuaries, coastal lakes, inlets, bays and is mainly found in intertidal mudflats, and sometimes saltmarsh of sheltered coasts, ocean beaches, coral reef, rock platforms and rocky islets. The species forages the intertidal areas for crustaceans, molluscs and insects, roosting on protected sand spits, mangroves and sometimes marine structures such as oyster leases (Cth DCCEEW 2023).

Global populations of the Eastern Curlew are declining, primarily due to loss and degradation of critical coastal mudflats around the Yellow Sea which provide staging and stopover sites (National Environmental Science Program Threatened Species Research Hub 2019). Key threats to the Eastern Curlew in Australia include disturbance from recreational activities (beach walkers, off-leash dogs), loss, fragmentation and degradation of coastal mudflats and coastal development and land reclamation along the migratory flyway (Cth DCCEEW 2023).

Within Port Botany the Eastern Curlew forages and roosts in suitable intertidal areas, mudflats and saltmarsh, intertidal rock platforms, sandspits and Oyster Leases. The main areas within Botany Bay used by these birds is around Towra Point and associated sandspits, and within Penrhyn Estuary. Penrhyn Estuary was artificially created during the reclamation of the Botany foreshore between 1975 and 1978, and is now the only significant shorebird habitat on the northern side of Botany Bay (Avifauna Research & Services & (NSW/ACT) Cardno 2019).

#### Survey observation

The Project involves expansion of the Port Botany Quayline and is located over the water and including developed land on the perimeter of the water between two existing arms of the Quay. The southern area is proposed to accommodate longer container vessels and provide an additional 5.3 hectares of wharf hardstand while the northern arm will involve changes to the bulk liquids berths.

The species was not recorded within the subject land as part of current assessment. The species likely occurs in the local area, predominantly at the shoreline at Towra Point (approximately 3.2 km south across the Bay), and also within Penrhyn Estuary directly to the north of the Quay.

**Table A 5 SIC assessment for Eastern Curlew**
**SIC assessment for critically endangered or endangered species**
**Lead to a long-term decrease in the size of a population.**

The Eastern Curlew occurring in NSW is a highly mobile species which undertakes long-distance migration between breeding and non-breeding habitat. The species occurs as a single population across the locality of the proposed works and broader eastern Australian occurrence.

The Project will extend the existing port further into areas previously cleared of vegetation located adjacent to/within existing infrastructure. The Project will impact the existing hardstand areas on the Quay and extending into the marine areas inside the north and south arms of the Quay. The area covered by water in Port Botany is mapped as important habitat for this species. However, the impact area does not contain foraging, nesting or other (ie resting) land-based habitat for this species. Therefore, while the proposed work will occur in the distribution of the species mapped as important habitat, the works will not directly impact habitat for the species. The activities conducted during the operational phase of the Project are not expected to vary greatly from the existing operation of the port and no impact is expected to arise from operational proceedings.

The proposed works will involve dredging of the Quay, which disrupts the benthic layer of the dredged area and results in suspended sediment particles in the water which can drift to other areas and carry increased nutrients, reduce dissolved oxygen and block sunlight. Port Botany has a history of dredging to allow ship passage at the entrance of the Bay, such as for construction and operation of the former Caltex Oil refinery, materials and construction of the parallel airport runway and as part of the construction and access and the existing port infrastructure. Re-dredging of the port area will not directly impact foraging habitat for Eastern Curlew. Dredging may temporarily increase turbidity across the wider Botany Bay area and include changes to increased turbidity and deposition of sediments, which can impact marine flora and fauna.

Mitigation measures to reduce suspended particles are proposed, modelling of the dredge plume indicate localised impacts of increased suspended sediment with minimal dispersal of sediment beyond Brotherson dock (Aecom 2025). Given the Project will not directly reduce availability of breeding or foraging habitat, it is not likely that the Project would result in a long-term decrease in the population of Eastern Curlew.

**Reduce the area of occupancy of the species.**

The Project will not impact any land based habitat for this species and occurs in an area previously developed as part of Port Botany. Operation of the area post-construction will not result in a change in activities from the current land use and it is expected that the activities associated with the completion of the proposed works will not impact the species such that it would reduce the area of occupancy of the species. Mitigation measures for proposed dredging works and modelled outcomes of the dredging plume (Aecom 2025) indicate there is unlikely to be a significant impact to foraging habitat from increased suspended particles (turbidity) and sediment deposition. As such, the Project is not expected to reduce the area of occupancy of the species.

**Fragment an existing population into two or more populations.**

The Eastern Curlew is a highly mobile seasonal migratory species, it is reliant on foraging areas for acquiring body condition required for long flights as part of its migration. The Project will not result in destruction of foraging or breeding habitat and is not expected to have indirect impact to foraging resources such that the species occurring in the locality would be fragmented from the overall population.

**Adversely affect habitat critical to the survival of a species.**

Habitat critical to the survival of the Eastern Curlew in Australia includes foraging habitat which is critical to the species building condition following the breeding season, and in preparation for their migration back to breeding grounds. Foraging habitat for the Eastern Curlew occurs at numerous sites along the Australian Coastline.

### SIC assessment for critically endangered or endangered species

The proposed works will not impact habitat critical to the survival of the species as impacts occur on previously cleared and developed land. Dredging will be conducted on the inside of the existing Quay area. Assessment of hydrodynamics and coastal processes and of hydrology and water quality undertaken as part of the EIS have indicated that any indirect impacts associated with increased suspended sediment will result in minimal turbidity across the broader Bay area, with adequate mitigation measures put in place (Aecom 2025).

The current land use in the areas surrounding Penrhyn Estuary includes industrial noise and light from the operation of vehicles and machinery. Given that birds currently utilise this habitat for foraging and roosting it can be deduced they tolerate a level of noise and light from these sources (also see Section 6.2.3 for a detailed assessment). The potential increased impacts of construction would be short-term and are not likely to continue post construction. The level of indirect impact from these sources would return to a similar state as the current operational impacts, post construction when the expanded port is in operation. In addition, the birds utilising Penrhyn Estuary would be able to move short distances to other areas of Botany Bay to continue to forage if disrupted by noise and light during construction hours. Given that no impacts will occur to the foraging habitat of the species, construction phase mitigation measures will minimise potential indirect impacts, and the operational phase of the Project will be consistent with the current use of the site, the proposed expansion is not considered to adversely affect habitat critical to the survival of the Eastern Curlew.

#### Disrupt the breeding cycle of a population.

The Project will not impact land-based breeding habitat, or important foraging habitat required for successful migration and breeding.

The current land use in the areas surrounding Penrhyn Estuary includes industrial noise and light from the operation of vehicles and machinery. Given that birds currently utilise this habitat for foraging and roosting it can be deduced they tolerate a level of noise and light from these sources (also see Section 6.2.3 for a detailed assessment).

The potential increased impacts of construction would be short-term and are not likely to continue post construction. The level of indirect impact from these sources would return to a similar state as the current operational impacts, post construction when the expanded port is in operation.

Given these factors the Project is not expected to result in an impact that would significantly reduce the availability of foraging resources in the Botany Bay area such that the breeding cycle of the Eastern Curlew would be disrupted.

#### Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

The Project will not destroy, remove, isolate or decrease the availability of habitat for the Eastern Curlew.

An assessment of indirect impacts associated with disturbance from noise and light is detailed in 6.2.3. which concluded that indirect impacts from these factors will be negligible. Mitigation measures are also proposed to reduce the impacts of suspended sediments from dredging, with modelling indicating impacts primarily localised within Brotherson Dock and only minimal increase in suspended sediment across the wider Botany Bay area. It is unlikely that increased suspended sediment from dredging the existing Quay area would lead to a decrease in the quality of habitat to the extent that the species as a whole, is unable to migrate and breed and therefore is not likely to lead to a species decline.

These birds will be able to move short distances to other foraging habitat within Botany Bay, such as Towra Point during periods of increased disturbance. Operation of the expanded port will result in similar activities to the current use of the port and is not likely to introduce significant increase to levels of disturbance. , It is therefore unlikely that the Project would lead to a decrease in the available habitat to the extent that the species is likely to decline.

#### Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

### SIC assessment for critically endangered or endangered species

The Project will not result in a change in land use of the port and is not likely to introduce invasive species harmful to the Eastern Curlew.

A number of Introduced species occur in Australia that are harmful to the Eastern Curlew including European foxes *Vulpes vulpes* and domestic Cats *Felis catus* and Dogs *Canis lupus familiaris*. Introduced pigs (*Sus* species) and plants such as water hyacinth (*Eichhornia crassipes*) degrade wetland habitat. Introduction of marine pests through ballast water and hull transport resulting in loss of benthic food sources is a particular concern for migratory shorebirds such as the Eastern Curlew (DoE 2015).

The port expansion will not result in new uses of the port and is not likely to result in invasive species becoming established or result in increased pressure from existing exotic species.

#### Introduce disease that may cause the species to decline.

The Project will not result in a change in land use of the port and is not likely to introduce disease harmful to the Eastern Curlew.

#### Interfere with the recovery of the species.

Eastern Curlew is part of an international single species action plan and is included in the Australian threatened species strategy. In addition, The Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015) and the NSW biodiversity database profile (NSW DCCEE 2025b) for the species, lists actions important for the recovery of the species and known threats occurring in NSW.

Actions for the recovery of the species in NSW include:

- Protect coastal areas from pollution
- Protect and maintain known or potential coastal habitat
- Undertake assessment for the species prior to development
- Control dogs on beaches and in estuaries
- Raise awareness of coastal users regarding their impacts to threatened species and their habitat
- Control disturbance to, and protect roosting and foraging areas.
- Manage estuaries, inland water bodies and the surrounding landscape to maintain the natural hydrological regimes.
- Protect important foraging and roosting sites through the migratory flight path.

The proposed works will expand the existing port and are not considered to interfere with the recovery of the species.

#### Conclusion.

The proposed work will expand the existing port and will not impact the habitat of the Eastern Curlew. The Project will not:

- Lead to a long-term decrease in the size of a population
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of the species
- Disrupt the breeding cycle of the population
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.
- Introduce disease that may cause the species to decline
- Interfere with the recovery of the species.



### SIC assessment for critically endangered or endangered species

As such, a referral to the minister for the species is not recommended.

## Appendix 5.2 Bar-tailed Godwit *Limosa lapponica menzbieri*

The Bar-tailed Godwit *Limosa lapponica menzbieri* (Bar-tailed Godwit northern Siberian) is listed Vulnerable under the EPBC Act.

### Distribution

The Bar-tailed Godwit is a migratory shorebird undertaking the longest non-stop flight of any species from breeding grounds in the Arctic to foraging grounds in the Southern Hemisphere. The Bar-tailed Godwit is found in coastal waters of all Australian states and territories.

For the species, the global extent of occurrence is estimated to be 1,470,000 km<sup>2</sup> (BirdLife International 2015).

A small number of sites in NSW support a large number of the species, and in particular sites at major estuaries in NSW are important for this species. The Lower Hunter and Kooragang Island support large numbers of Bar-tailed Godwit (NSW DCCEEW 2024e).

### Habitat requirements

The Bar-tailed Godwit breeds in the northern hemisphere with subspecies *menzbieri* breeding in Siberia, there is no breeding habitat within Australia. They have been recorded as far south as sub-Antarctic Islands such as Macquarie Island and Campbell Island. species forage on crustaceans and invertebrates in large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It also occurs less frequently in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms, and is often at sites with seagrass or salt marsh (TSSC 2024). The Bar-tailed Godwit roosts on sandy beaches, sand spits and sometimes saltmarsh.

The Bar-tailed Godwit (*menzbieri*) stages in areas around the Yellow Sea during its migration. The decline in Bar-tailed Godwit is in large part linked to loss of foraging and roosting habitat in areas around the Yellow sea.

### Survey observation

The species was not observed within the subject land during the survey, and the subject land is comprised of previously cleared and developed land forming part of the Port Botany Quay and water in-between the northern and southern arms of the Quay.

Foraging resources throughout the migratory path are important for the species to be able to regain condition in order to migrate and breed. The species prefers foraging in estuaries, coastal lakes, inlets, bays and is mainly found in intertidal mudflats, and sometimes saltmarsh of sheltered coasts, ocean beaches, coral reef, rock platforms and rocky islets. The species forages the intertidal areas for crustaceans, molluscs and insects, roosting on protected sand spits, mangroves and sometimes marine structures such as oyster leases.

Within Port Botany the Bar-tailed Godwit forages and roosts in suitable intertidal areas, mudflats and saltmarsh, intertidal rock platforms, sandspits and Oyster Leases. The main areas within Botany Bay used by

these birds is around Towra Point and associated sandspits, and within Penrhyn Estuary. Penrhyn Estuary was artificially created during the reclamation of the Botany foreshore between 1975 and 1978, and is now the only significant shorebird habitat on the northern side of Botany Bay (Avifauna Research & Services & (NSW/ACT) Cardno 2019).

**Table A 6 SIC assessment for Bar-tailed Godwit *Limosa lapponica menzbieri***

#### SIC assessment for vulnerable species

##### Lead to the long-term decrease in the size of an important population of a species.

The sub-population of Bar-tailed Godwit occurring in Botany Bay is part of the overall Northern Siberian breeding population (*Limosa lapponica menzbieri*) which occurs across the coast of Australia, including Tasmania. The population undertakes long migrations through the trans-pacific route between breeding grounds and foraging grounds outside of the breeding season.

Habitat of the Bar-tailed Godwit in Australia includes foraging habitat which is critical to the species building condition following the breeding season, and in preparation for their migration back to breeding grounds. Foraging habitat for the Bar-tailed Godwit occurs at numerous sites along the Australian Coastline but key areas occur around major coastal river estuaries including Botany Bay (NSW DCCEEW 2024e).

The proposed works will not impact habitat for the species as construction associated with the Project occur on previously cleared and developed land.

The proposed works will involve dredging of the Quay, which disrupts the benthic layer of the dredged area and results in suspended sediment particles in the water which can drift to other areas and carry increased nutrients, reduce dissolved oxygen and block sunlight. Port Botany has a history of dredging to allow ship passage at the entrance of the Bay, such as for construction and operation of the former Caltex Oil refinery, materials and construction of the parallel airport runway and as part of the construction and access and the existing port infrastructure. Re-dredging of the port area will not directly impact foraging habitat for Bar-tailed Godwit. Dredging may temporarily increase turbidity across the wider Botany Bay area and include changes to increased turbidity and deposition of sediments, which can impact marine flora and fauna.

Mitigation measures to reduce suspended particles are proposed, modelling of the dredge plume indicate localised impacts of increased suspended sediment with minimal dispersal of sediment beyond Brotherson dock (Aecom 2025). Given the Project will not directly reduce availability of breeding or foraging habitat, it is not likely that the Project would result in a long-term decrease in the population of Bar-tailed Godwit.

##### Reduce the area of occupancy of an important population.

The Project will not impact any land based habitat for this species and occurs in an area previously developed as part of Port Botany. Operation of the area post-construction will not result in a change in activities from the current land use and it is expected that the activities associated with the completion of the proposed works will not impact the species such that it would reduce the area of occupancy of the species. Mitigation measures for proposed dredging works and modelled outcomes of the dredging plume (Aecom 2025) indicate there is unlikely to be a significant impact to foraging habitat from increased suspended particles (turbidity) and sediment deposition. As such, the Project is not expected to reduce the area of occupancy of the species.

##### Fragment an existing important population into two or more populations.

The Bar-tailed Godwit is a highly mobile seasonal migratory species, it is reliant on foraging areas for acquiring body condition required for long flights as part of its migration. The Project will not result in destruction of foraging or breeding habitat and is not expected to have indirect impact to foraging resources such that the species occurring in the locality would be fragmented from the overall population.

##### Adversely affect habitat critical to the survival of a species.

### SIC assessment for vulnerable species

Habitat critical to the survival of the Bar-tailed Godwit in Australia includes foraging habitat which is critical to the species building condition following the breeding season, and in preparation for their migration back to breeding grounds. Foraging habitat for the Bar-tailed Godwit occurs at numerous sites along the Australian Coastline.

The proposed works will not impact habitat critical to the survival of the species as impacts occur on previously cleared and developed land. Dredging will be conducted on the inside of the existing Quay area. Assessment of hydrodynamics and coastal processes and of hydrology and water quality undertaken as part of the EIS have indicated that any indirect impacts associated with increased suspended sediment will result in minimal turbidity across the broader Bay area, with adequate mitigation measures put in place (Aecom 2025).

The current land use in the areas surrounding Penrhyn Estuary includes industrial noise and light from the operation of vehicles and machinery. Given that birds currently utilise this habitat for foraging and roosting it can be deduced they tolerate a level of noise and light from these sources (also see Section 6.2.3 for a detailed assessment). The potential increased impacts of construction would be short-term and are not likely to continue post construction. The level of indirect impact from these sources would return to a similar state as the current operational impacts, post construction when the expanded port is in operation. In addition, the birds utilising Penrhyn Estuary would be able to move short distances to other areas of Botany Bay to continue to forage if disrupted by noise and light during construction hours. Given that no impacts will occur to the foraging habitat of the species, construction phase mitigation measures will minimise potential indirect impacts, and the operational phase of the Project will be consistent with the current use of the site, the proposed expansion is not considered to adversely affect habitat critical to the survival of the Bar-tailed Godwit.

#### **Disrupt the breeding cycle of an important population.**

The Project will not impact land-based breeding habitat, or important foraging habitat required for successful migration and breeding.

The current land use in the areas surrounding Penrhyn Estuary includes industrial noise and light from the operation of vehicles and machinery. Given that birds currently utilise this habitat for foraging and roosting it can be deduced they tolerate a level of noise and light from these sources (also see Section 6.2.3 for a detailed assessment).

The potential increased impacts of construction would be short-term and are not likely to continue post construction. The level of indirect impact from these sources would return to a similar state as the current operational impacts, post construction when the expanded port is in operation.

Given these factors the Project is not expected to result in an impact that would significantly reduce the availability of foraging resources in the Botany Bay area such that the breeding cycle of the Bar-tailed Godwit would be disrupted.

#### **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

The Project will not destroy, remove, isolate or decrease the availability of habitat for the Bar-tailed Godwit.

An assessment of indirect impacts associated with disturbance from noise and light is detailed in 6.2.3. which concluded that indirect impacts from these factors will be negligible. Mitigation measures are also proposed to reduce the impacts of suspended sediments from dredging, with modelling indicating impacts primarily localised within Brotherson Dock and only minimal increase in suspended sediment across the wider Botany Bay area. It is unlikely that increased suspended sediment from dredging the existing Quay area would lead to a decrease in the quality of habitat to the extent that the species as a whole, is unable to migrate and breed and therefore is not likely to lead to a species decline.

These birds will be able to move short distances to other foraging habitat within Botany Bay, such as Towra Point during periods of increased disturbance. Operation of the expanded port will result in similar activities to the current use of the port and is not likely to introduce significant increase to levels of disturbance. , It is therefore unlikely that the Project would lead to a decrease in the available habitat to the extent that the species is likely to decline.

## SIC assessment for vulnerable species

### Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

The Project will not result in a change in land use of the port and is not likely to introduce invasive species harmful to the Bar-tailed Godwit.

A number of Introduced species occur in Australia that are harmful to the Bar-tailed Godwit including European foxes *Vulpes vulpes* and domestic Cats *Felis catus* and Dogs *Canis lupus familiaris*. Introduced pigs (*Sus* species) and plants such as water hyacinth (*Eichhornia crassipes*) degrade wetland habitat. Introduction of marine pests through ballast water and hull transport resulting in loss of benthic food sources is a particular concern for migratory shorebirds such as the Bar-tailed Godwit (DoE 2015).

The port expansion will not result in new uses of the port and is not likely to result in invasive species becoming established or result in increased pressure from existing exotic species.

### Introduce disease that may cause the species to decline.

The Project will not result in a change in the type of use of the port and is not likely to introduce new mechanisms of disease transmission harmful to the Bar-tailed Godwit.

### Interfere substantially with the recovery of the species.

Recovery of the species is linked to protection of breeding habitat and foraging resources throughout the species range, including important staging areas (such as coastal areas of the Yellow Sea) utilised during migration.

Bar-tailed Godwit is part of an international single species action plan and is included in the Australian threatened species strategy. In addition, The Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015) and the NSW biodiversity database profile (NSW DCCEEW 2024e) for the species, lists actions important for the recovery of the species and known threats.

Actions for the recovery of the species include:

- Protect coastal areas from pollution
- Protect and maintain known or potential coastal habitat
- Undertake assessment for the species prior to development
- Control dogs on beaches and in estuaries
- Raise awareness of coastal users regarding their impacts to threatened species and their habitat
- Control disturbance to, and protect roosting and foraging areas.
- Manage estuaries, inland water bodies and the surrounding landscape to maintain the natural hydrological regimes.
- Protect important foraging and roosting sites through the migratory flight path.

The proposed works will expand the existing port and are not considered to interfere substantially with the recovery of the species.

### Conclusion.

The proposed work will expand the existing port and will not impact the habitat of the Bar-tailed Godwit. The Project will not:

- Lead to the long-term decrease in the size of an important population of a species.
- Reduce the area of occupancy of an important population
- Fragment an existing important population into two or more
- Adversely affect habitat critical to the survival of a species
- Disrupt the breeding cycle of an important population



### SIC assessment for vulnerable species

- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.
- Introduce disease that may cause the species to decline
- Interfere substantially with the recovery of the species.

As such, a referral to the minister for the species is not recommended.