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# Punchbowl Public School - Flora and Fauna Assessment

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**Schools Infrastructure NSW**

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## DOCUMENT TRACKING

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| <b>Project Manager</b> | Kirsten Velthuis                                   |
| <b>Prepared by</b>     | Carolina Mora                                      |
| <b>Reviewed by</b>     | Kirsten Velthuis                                   |
| <b>Approved by</b>     | Beth Medway                                        |
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Template 2.8.1

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## Abbreviations

| Abbreviation    | Description                                                                           |
|-----------------|---------------------------------------------------------------------------------------|
| BC Act          | <i>Biodiversity Conservation Act 2016</i>                                             |
| CEEC            | Critically Endangered Ecological Community                                            |
| CPW             | Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest                   |
| DEEC            | Department of Energy, Environment, and Conservation                                   |
| DotEE           | Department of the Environment and Energy (Commonwealth)                               |
| ELA             | Eco Logical Australia                                                                 |
| EPBC Act        | <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Commonwealth) |
| GHFF            | Grey-headed Flying-fox                                                                |
| LEP             | Local Environmental Plan                                                              |
| LGA             | Local Government Area                                                                 |
| MNES            | Matters of National Environmental Significance                                        |
| Biosecurity Act | <i>NSW Biosecurity Act 2015</i>                                                       |
| OEH             | NSW Office of Environment and Heritage                                                |
| PCT             | Plant Community Type                                                                  |
| SSD             | State Significant Development                                                         |
| TEC             | Threatened Ecological Community                                                       |

## Executive Summary

Eco Logical Australia was commissioned to prepare a Flora and Fauna Assessment report for the proposed works at Punchbowl Public School. This site is located within the local government area (LGA) of Canterbury-Bankstown Council. This document reports on the ecological values within the study area and considers the impacts from the proposed works in relation to current environmental legislation.

A literature review and database search of the BioNet Atlas of NSW Wildlife and EPBC Protected Matters Search Tool was conducted to identify NSW and Commonwealth listed threatened and migratory species recorded in the locality or considered to potentially occur in the subject site. The desktop review identified a total of 115 threatened flora and fauna species listed under either the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which may have the potential to occur within a 10 km radius of the subject site. Of these threatened species, the following four threatened fauna species were identified as having the potential to occur on site: *Mormopterus norfolkensis* (Eastern Freetail-bat), *Perameles nasuta* (Long-nosed Bandicoot), *Pluvialis fulva* (Pacific Golden Plover) and *Pteropus poliocephalus* (Grey-headed Flying-fox).

This was followed by a site inspection conducted by an ELA ecologist on 3 April 2019. *Eucalyptus scoparia* (Wallangarra White Gum) and *Eucalyptus nicholii* (Narrow-leaved black peppermint) are both listed as endangered species under the BC Act and EPBC Act and were both recorded within study area. However, it is highly likely that both species have been planted, as both are common trees for landscaping and do not naturally occur within the Sydney region. No threatened fauna were observed on the site during the field survey.

Approximately 0.08 ha of Plant Community Type (PCT) 830, a PCT that forms part of Cumberland Plain Woodland (CPW), was mapped as occurring within or adjacent to the study area. However, the patch did not meet the description or condition thresholds of CPW under the BC Act or EPBC Act. The proposed development will not impact the PCT on site or the limited habitat available within the site for Eastern Freetail-bat, Long-nosed Bandicoot or Pacific Golden Plover.

The proposed works will require the clearing of up to 0.14 ha of Urban Native/Exotic Vegetation and 0.04 ha of Managed Exotic Grasses. The removal of vegetation has the potential to impact foraging habitat for the Grey-headed Flying-fox. Tests under the BC Act and the EPBC Act concluded that the proposal is unlikely to constitute a significant impact to this species.

The proposed development is unlikely to trigger the Biodiversity Offset Scheme (BOS) and need for a Biodiversity Assessment Report (BDAR) under the BC Act as:

- the proposal would not impact any land mapped under the Biodiversity Values Map
- the proposal would remove 0.14 ha of urban native/exotic vegetation only and would not exceed the clearing threshold of 0.5 ha for the minimum lot size listed in the LEP
- the proposal would not have a significant impact to any threatened ecological values.

As a State Significant Development Application (SSDA) has been identified as the preferred planning approval for the proposed works, a request for Secretary's Environmental Assessment Requirements (SEARs) is currently being prepared for submission to the Department of Planning and Environment (DPE). It is recommended that the above information is included in the SEARs request to DPE.

# 1. Introduction

## 1.1 Proposed activity

Eco Logical Australia Pty Ltd (ELA) was commissioned by Punchbowl Public School and Schools Infrastructure NSW (via Root Partnerships) to prepare a preliminary flora and fauna assessment addressing a proposed development at Punchbowl Public School.

As a State Significant Development Application (SSDA) has been identified as the preferred planning approval, a request for Secretary's Environmental Assessment Requirements (SEARs) is currently being prepared for submission to the Department of Planning and Environment (DPE). It is anticipated that a Biodiversity Assessment Report (BDAR) could be required as part of the Environmental Impact Assessment to be submitted as part of the SSDA process. This report will inform the development of the Schematic Design Report to be submitted for a future Planning Approval application of the proposed project at Punchbowl Public School.

## 1.2 The study area

Punchbowl Public School is in the Canterbury Bankstown LGA, in South-Western Sydney on Rossmore Avenue, Punchbowl, NSW. The Site is located at 1333 Canterbury Road, Punchbowl.

## 1.3 Purpose

This report assesses potential impacts of the proposed works on flora and fauna listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Potential impacts were assessed through application of the Assessment of Significance pursuant to the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

## 2. Legislative context

Relevant legislation and planning policies are tabulated below.

**Table 1: Relevant statutory framework**

| Name                                                                            | Relevance to the project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Section in this Project           |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Commonwealth</b>                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |
| <i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i> | The EPBC Act aims to protect Matters of National Environmental Significance (MNES) including wetlands of international importance, threatened species and communities and listed migratory species. An action that may or is likely to have a significant impact on MNES should be referred to the Commonwealth to determine whether it is a Controlled Action that requires approval from the Commonwealth. This report assesses the likelihood of occurrence of MNES within the site and concludes that the development is not likely to have a significant impact on MNES.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Section 4.2 and Appendix A</b> |
| <b>State</b>                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |
| <i>Environmental Planning and Assessment Act 1979 (EP&amp;A Act)</i>            | The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of development proposals. The proposed development is to be assessed as a State Significant Development and is to be assessed under Part 4 of the EP&A Act. Relevant Environmental Planning Instruments are discussed below.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Section 5</b>                  |
| <i>Biodiversity Conservation Act 2016 (BC Act)</i>                              | <p>The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest wellbeing of the community, now and into the future, consistent with the principles of ecologically sustainable development. Development that has a significant impact on biodiversity values as set out in Part 7 of the BC Act and Part 7 of the Biodiversity Conservation Regulation 2017 is required to be assessed consistent with the Biodiversity Assessment Method (BAM) and a Biodiversity Development Assessment Report (BDAR) must be submitted. However, the proposal does not trigger the need for a BDAR as:</p> <ul style="list-style-type: none"> <li>the proposal would not impact any land mapped under the Biodiversity Values Map</li> <li>the proposal would remove 0.14 ha of urban native/exotic vegetation only and would not exceed the clearing threshold for the minimum lot size (minimum lot size is 1 – 40 ha. Clearing of up to 0.5 ha can occur before triggering the BAM).</li> <li>the proposal does not have a significant impact to any threatened ecological values would be likely.</li> </ul> | <b>Section 5</b>                  |
| <i>Fisheries Management Act 1994 (FM Act)</i>                                   | The objects of the FM Act are to conserve, develop and share the fishery resources of the State for the benefits of present and future generations. The Act provides protection and approval processes for activities which may impact on threatened species, protected marine vegetation or involve dredging, reclamation or obstruction of fish passage. The development does not involve harm to mangroves or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>N/A</b>                        |

| Name                                            | Relevance to the project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section in this Project |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                                 | other protected marine vegetation, dredging, reclamation or blocking of fish passage and therefore a permit under the FM Act is not required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |
| <i>Biosecurity Act 2015</i>                     | The Act provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers. Specific legal requirements apply to State determined priorities under the Greater Sydney Regional Strategic Weed Management Plan 2017-2022. Weeds listed as 'other weeds of regional concern' warrant resources for local control or management programs and are a priority to keep out of the region. No priority weeds were identified within the site.                                                                                                                                                                                                                       | <b>Appendix B</b>       |
| <i>Water Management Act 2000 (WM Act)</i>       | The WM Act provides for the sustainable and integrated management of the state's water for the benefit for both present and future generations. If a 'controlled activity' is proposed on 'waterfront land', an approval is required under the s91 of the WM Act. 'Controlled activities' include: ☐ the construction of buildings or carrying out of works (with the exception of land based private dwellings, a dual occupancy building or related ancillary facilities); ☐ the removal of material or vegetation from land by excavation or any other means; ☐ the deposition of material on land by landfill or otherwise; or ☐ any activity that affects the quantity or flow of water in a water source. The proposed development does not involve works on waterfront land and therefore a Controlled Activity Approval under s91 of the WM Act is not required. | <b>Section 5</b>        |
| <b>Planning Instruments</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                         |
| <i>Canterbury Local Environmental Plan 2012</i> | This Plan aims to make local environmental planning provisions for land in Canterbury. Under the Canterbury LEP, the subject site is zoned R3 – Medium Density Residential. Within these zones, community facilities are permitted with consent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Section 5</b>        |

## 3. Methods

### 3.1 Literature review and database search

Databases pertaining to the ecology and environmental features of the site and surrounding area and existing vegetation mapping were reviewed to identify records of threatened species, populations and communities and their potential habitat. Databases and vegetation mapping that were reviewed included:

- BioNet / Atlas of NSW Wildlife 10 km database search (OEH 2017a) accessed 2 April 2019;
- EPBC Act Protected Matters Search Tool 10 km database search (DotEE 2017) accessed 2 April 2019;
- NSW Threatened Species Profiles (OEH 2017b);
- Vegetation mapping of the subject site (OEH 2016);
- Canterbury Local Environmental Plan (LEP) 2012;
- Bankstown Local Environmental Plan (LEP) 2015; and
- Punchbowl Public School Arborist Impact Assessment (AIA) (ELA, 2019).

Aerial photography (Bing Maps and Google Earth) of the site and surrounds were also used to investigate the extent of vegetation cover and landscape features. In addition, relevant GIS datasets (soil, geology, drainage) were reviewed to guide the site inspection.

### 3.2 Likelihood of occurrence

Species from both the Wildlife Atlas and DotEE online search were combined to produce a list of threatened species, populations and communities that may occur within the subject site. The likelihood of occurrence for threatened species, populations and communities on the site was then determined based on location of database records, the likely presence or absence of suitable habitat in the subject site, and knowledge of the species' ecology. A list of potentially "affected species" was then identified (which were those that were defined as "yes", "likely" or having "potential" to occur in the study area in the table). Following the site inspection, this list of "potentially affected species" was refined with an understanding of the local environment and available habitat in the study area. The likelihood table in **Appendix A** reflects the final list of species and their likelihood of occurrence.

### 3.3 Field survey

A field survey of the subject site was conducted on 3 April 2019 by ELA ecologist Kirsten Velthuis. The purpose of the field survey was to ascertain if any threatened flora or fauna listed under the BC Act and the EPBC Act are likely to have habitat on site. The field survey was conducted to:

- Validate or 'ground truth' the extent and quality of vegetation and existing vegetation mapping
- Identify the presence of threatened species/populations or whether potential habitat for these species/populations is likely to occur
- Identify any other potential ecological values such as regionally or locally significant flora and fauna
- Assigning the best-fit Plant Community Type(s) (PCTs) for the vegetation within the study area and collect vegetation integrity and full floristic plots (plots) for PCTs.

The plot results are provided in **Appendix B**. Targeted surveys for threatened plants were not undertaken.

The field inspections were conducted outside of the optimal survey period for some flora and fauna. Thus, it is possible that flora and fauna species that may occur in the site were not recorded due to the life cycle and behaviour of species and seasonal considerations. Targeted surveys would need to be repeated over a number of seasons to more adequately capture the diversity of flora and fauna that could use the subject site. Since this was not possible, habitat assessments were undertaken to predict the likely presence of species. In addition, considering the habitat available on site, the condition of the vegetation and the proposed impacts, the survey effort was deemed satisfactory for the purposes of this report.

## 4. Existing environment

### 4.1 Literature and data review

#### 4.1.1 Threatened ecological communities

Five threatened ecological communities (TEC) were identified during the desktop literature review to occur within the surrounds of the study area. These include:

- Castlereagh/Cooks River Ironbark Forest (Listed as Endangered under the BC Act and as Critically Endangered under the EPBC Act)
- Coastal Saltmarsh (Listed as Endangered under the BC Act and as Vulnerable under the EPBC Act)
- Shale Gravel Transition Forest (Listed as Endangered under the BC Act and as Critically Endangered under the EPBC Act)
- Swamp Oak Floodplain Forest (Listed as Endangered under the BC Act and the EPBC Act)
- Sydney Turpentine Ironbark Forest (Listed as Endangered under the BC Act and as Critically Endangered under the EPBC Act)

No TECs were identified within the study area itself.

#### 4.1.2 Plant Community Types

The desktop review identified that part of the study area consisted of vegetation mapped as Urban Exotic/Native. No PCTs were mapped as occurring within or adjacent to the study area (Figure 1).

#### 4.1.3 Threatened flora

The desktop review identified a total of 32 threatened flora species listed under the BC or EPBC Acts, with potential to occur within a 10 km radius of the subject site (Figure 2). An assessment of the likelihood of occurrence of threatened flora species within the study area is provided in **Appendix A**.

#### 4.1.4 Threatened fauna

The desktop literature review identified a total of 83 threatened fauna species listed under the BC and EPBC Acts with potential to occur within a 10 km radius of the subject site (Figure 2). An assessment of the likelihood of occurrence of threatened fauna species within the study area is provided in **Appendix A**.

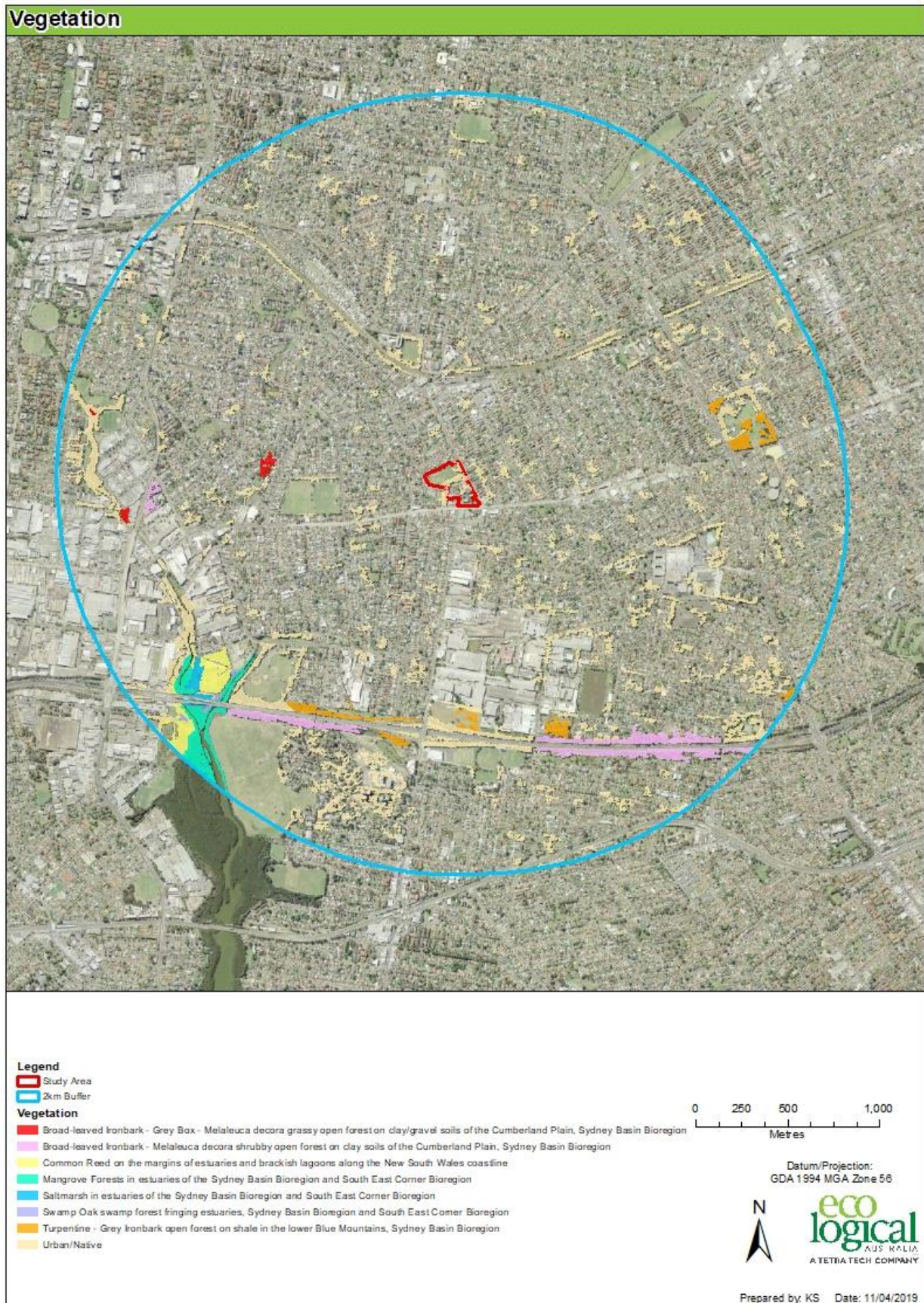


Figure 1 Plant Community Types mapped within a 2 km radius of the study area

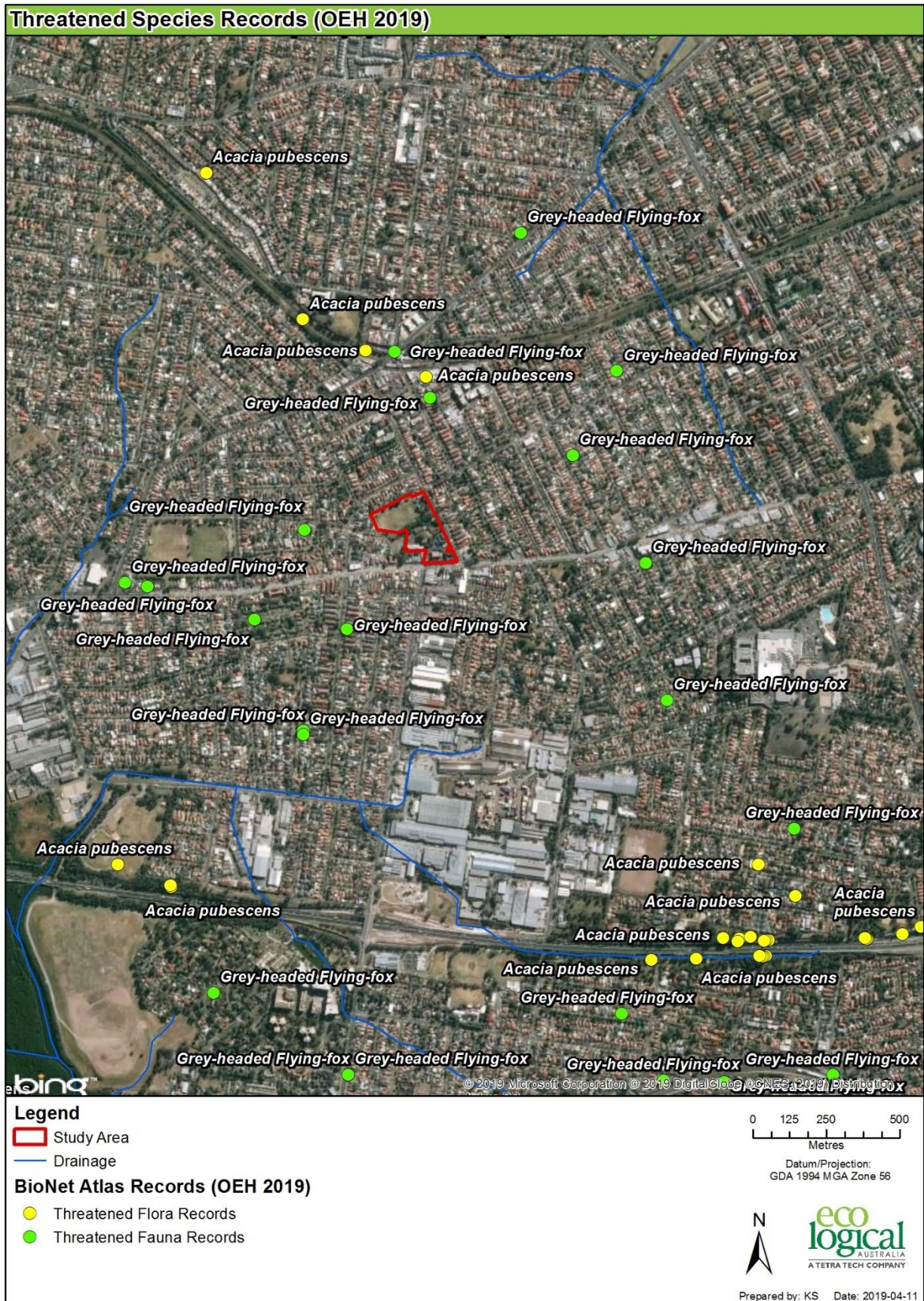


Figure 2: Threatened flora and fauna Atlas search records (10 km radius)

## 4.2 Field survey

### 4.2.1 Vegetation communities

Three plots were surveyed within the study area (refer to **Appendix C** for photographs). The field survey confirmed that the vegetation within the study area has been largely cleared of remnant vegetation and consists of *Urban Native/Exotic* and *Exotic Grassland* (Figure 2), however also identified two small disturbed patches of PCT 830 within the study area.

#### 4.2.1.1 Urban Exotic/native

The species located in those areas identified as *Urban Exotic/Native* included native canopy species, commonly planted as street trees and used within landscaping. These included *Corymbia citriodora* (Lemon-scented Gum), *Corymbia maculata* (Spotted Gum), *Lophostemon confertus* (Brushbox), *Melealeuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus scoparia* (Wallangara White Gum) and *Eucalyptus nicholii* (Narrow-leaved black peppermint). Native canopy species were generally mixed with non-native canopy species including *Jacaranda mimosifolia* (Jacaranda), *Cinnamomum camphora* (Camphor laurel), *Schinus areira* (Peppercorn Tree) and were lacking a mid-storey. Exotic grasses and forbs made up the groundcover.

Likewise, several native understorey species, commonly used within landscaping, were identified within garden beds and along the study area boundary within the Urban Exotic/Native area, including *Callistemon viminalis* (Weeping Bottlebrush), *Correa alba* (White correa), *Westringia fruticosa* (Coastal Rosemary), *Lomandra* sp and cultivars of *Grevillea*.

#### 4.2.1.2 Plant Community Type 830 - Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion

A small area of PCT 830 was present at the north-eastern boundary of the study area. The native canopy species present include *Eucalyptus sideroxylon* (Red Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum). No midstorey was present in this patch and only one native species, *Microlaena stipoides* (Weeping Grass) was present in the groundcover which was dominated by non-native grasses and forbs.

*Eucalyptus moluccana* (Grey Box) and *Eucalyptus tereticornis* (Forest Red Gum) also occur between the school buildings within the schoolyard on the south-east of the study area, both of which are canopy species for PCT 830. However, there is only one individual of each species, without any native mid-or ground cover and no other species in proximity which are part of this PCT, and hence is not consistent with this PCT.

#### 4.2.1.3 Managed exotic grasses

The vegetation within those areas described as *Exotic grassland* consisted of typical lawn and disturbed site species including *Cynodon dactylon* (Couch), *Stenotaphrum secundatum* (Buffalo Grass), *Ehrharta erecta* (Panic Veldtgrass) and *Pennisetum clandestinum* (Kikuyu). These areas were generally mown and maintained. This vegetation is not consistent with any listed native Plant Community Type.

#### 4.2.2 Threatened Ecological Communities

PCT 830 forms part of CPW, which is listed as a Critically Endangered Ecological Community (CEEC) under the BC Act and is also listed under the EPBC Act. However, it was confirmed that the assemblage of species that exists within the subject site does not meet the condition threshold criteria necessary for the vegetation to meet the definition of CPW under the EPBC Act (**Table 2**) as:

- The total patch size of the PCT 830 vegetation within the study area is 0.08 ha
- The native species cover in the perennial understorey vegetation cover is 0.1%.

Due to the lack of species diversity and minimal presence of species characteristic of Cumberland Plain Woodland, the vegetation of PCT 830 present within the subject site does not meet the BC Act description of Cumberland Plain Woodland in the Sydney Basin Bioregion. The patch contains only one characteristic canopy species, *Eucalyptus tereticornis* (Forest Red Gum), no characteristic midstorey species, and only one characteristic groundcover species, *Microlaena stipoides* (Weeping Grass) (**Appendix B**).

**Table 2: Condition thresholds for patches that meet the description for the Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest ecological community**

| Category and rationale                                                                                                                                                                                                  | Thresholds                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A.</b> Core thresholds that apply under most circumstances: patches with an understorey dominated by natives and a minimum size that is functional and consistent with the minimum mapping unit size applied in NSW. | Minimum patch size is $\geq 0.5$ ha;<br><b>AND</b><br>$\geq 50\%$ of the perennial understorey vegetation cover <sup>4</sup> is made up of native species.                                                                                                                  |
| <b>OR</b>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |
| <b>B.</b> Larger patches which are inherently valuable due to their rarity                                                                                                                                              | The patch size is $\geq 5$ ha;<br><b>AND</b><br>$\geq 30\%$ of the perennial understorey vegetation cover is made up of native species                                                                                                                                      |
| <b>OR</b>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |
| <b>C.</b> Patches with connectivity to other large native vegetation remnants in the landscape                                                                                                                          | The patch size is $\geq 0.5$ ha;<br><b>AND</b><br>The patch is contiguous <sup>5</sup> with a native vegetation remnant (any native vegetation where cover in each layer present is dominated by native species) that is $\geq 5$ ha in area.                               |
| <b>OR</b>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |
| <b>D.</b> Patches that have large mature trees or trees with hollows (habitat) that are very scarce on the Cumberland Plain.                                                                                            | The patch size is $\geq 0.5$ ha in size;<br><b>AND</b><br>$\geq 30\%$ of the perennial understorey vegetation cover is made up of native species;<br><b>AND</b><br>The patch has at least one tree with hollows per hectare or at least one large tree ( $\geq 80$ dbh) per |

| Category and rationale | Thresholds                                                                           |
|------------------------|--------------------------------------------------------------------------------------|
|                        | hectare from the upper tree layer species outlined in the Description in Appendix A. |

#### 4.2.3 Threatened Flora

*Eucalyptus scoparia* (Wallangarra White Gum), listed as an endangered species under the BC Act and EPBC Act, was recorded within the study area.

*Eucalyptus nicholii* (Narrow-leaved black peppermint) is listed as an endangered species under the BC Act and the EPBC Act and was also recorded within the study area.

It is highly likely that both species have been planted, as both are common trees for landscaping and do not naturally occur within the Sydney region- the distribution of *Eucalyptus scoparia* is near Tenterfield in NSW and Stanthorpe Plateau in Queensland; and the distribution of *Eucalyptus nicholii* is on the New England Tablelands. Neither species are native to any PCTs within the IBRA Bioregion.

#### 4.2.4 Threatened Fauna

No threatened fauna species were observed during the field survey.

#### 4.2.5 Weeds

Two high threat weeds were identified within the study area:

- Moth vine (*Araujia sericifera*)
- Paspalum (*Paspalum dilatatum*)

## 5. Impact Assessment

### 5.1 Summary of impacts

The potential impact of the proposal to selected threatened species and communities listed under the BC Act was assessed by undertaking Assessments of Significance (**Appendix D**).

According to the DECC (2007) guidelines, unless adequate surveys have been undertaken to show that a threatened species, population or community does not occur on the site, then that species, population or community "should be considered in the rationale that determines the list of threatened species, populations and ecological communities for the assessment of significance" (DECC 2007). Accordingly, the threatened or migratory species for which targeted surveys have not been undertaken have been considered in the rationale that determines the list of species that require an assessment of significance. The rationale is based on the level of knowledge of habitats on the site and the potential for threatened species to occur, which is provided in the likelihood table in **Appendix A**.

Species were selected for the assessment of significance by considering how they and their habitat might be affected by the proposal. Some species which are wide-ranging, mobile and breed in habitat not present on the site may still occur within the subject site from time to time e.g. some highly mobile birds. The proposal will impact the foraging habitat of *Pteropus poliocephalus* (Grey-headed Flying-fox, GHFF) therefore Assessments of Significance and Significant Impact Criteria were applied.

#### 5.1.1 Direct impacts

An assessment of likely direct impacts from the proposed works was conducted based on the proposed footprint from Root Partnerships (Figure 3).

The proposal would result in direct impacts to the following vegetation communities:

- removal of about 19% of the Urban Native/Exotic vegetation present within the study area
- removal of about 3% of the Managed Exotic Grasses present within the study area
- no removal (0%) of PCT 830.

The direct impacts are associated with the removal of vegetation for the proposed construction.

#### 5.1.2 Indirect impacts

Potential indirect impacts may result from any proposed development and include:

- changes to hydrology through run off, sedimentation and erosion from construction works
- increased edge effects (including spread of weeds), due to the increase in human access to the vegetation within the subject site.

#### 5.1.3 Key threatening processes

Of the Key Threatening Processes (KTPs) listed under the BC Act and / or EPBC Act, the one likely to be relevant to the proposed works is the clearing of native vegetation.



Figure 3: Vegetation impacts within the study area

## 5.2 NSW BC Act s7.3 Test of Significance

If a species, population or ecological community listed under Schedules 1 or 2 of the BC Act is likely to be impacted, the factors set out to establish if there is likely to be a significant impact on that species, population, ecological community or habitat, must be assessed. Section 7.3 of the BC Act sets out five factors that must be addressed as part of a Test of Significance. This enables a decision to be made as to whether there is likely to be a significant impact on the species and if a BDAR is required. The triggers for the BAM include:

- impacts to land mapped on the Biodiversity Values Map
- clearing of native vegetation above the threshold for the minimum lot size
- conclusion in a test of significance that a proposed development is likely to have a significant impact on a threatened ecological value.

The proposal is unlikely to trigger the BAM because:

- the proposal would not impact any land mapped under the Biodiversity Values Map
- the proposal would remove 0.14 ha of urban native/exotic vegetation only and would not exceed the clearing threshold for the minimum lot size (minimum lot size is 1 – 40 ha. Clearing of up to 0.5 ha can occur before triggering the BAM)
- the proposal has not concluded that a significant impact to any threatened ecological values would be likely.

### 5.2.1 Threatened ecological communities

The PCT 830 found on site forms part of CPW, which is listed under both BC and EPBC Acts. However, no Tests of Significance were applied because the assemblage of species that exists within the subject site does not meet the description of Cumberland Plain Woodland in the Sydney Basin Bioregion under the BC Act.

### 5.2.2 Threatened flora

*Eucalyptus scoparia* (Wallangarra White Gum) and *Eucalyptus nicholii* (Narrow-leaved black peppermint) are threatened species under the BC Act and the EPBC Act which were recorded within the study area.

However, it is considered highly likely that both species have been planted, as both are common trees for landscaping and do not naturally occur within the Sydney region. The distribution of *Eucalyptus scoparia* is near Tenterfield in NSW and Stanthorpe Plateau in Queensland; and the distribution of *Eucalyptus nicholii* is on the New England Tablelands. Considering these species are not within natural habitat as part of a viable population in the locality, the presence on site has been regarded as a cultural planting and no Test of Significance was applied to these species.

### 5.2.3 Threatened fauna

*Pteropus poliocephalus* (GHFF) was identified as having the potential to occur on site (**Appendix A**), therefore Tests of Significance were applied and are provided in **Appendix D**. The assessment concluded that the impact would not be significant given that:

- The proposed works would constitute a minor impact to an area of potential foraging habitat compared to larger areas of suitable foraging habitat due to be retained within the site

- The proposal would not isolate or fragment any currently connecting areas of habitat in terms of use by highly mobile species
- GHFF camps will not be disturbed.

Therefore, under the BC Act, there will be no requirement for a Biodiversity Assessment Report (BDAR) or offsets under the Biodiversity Offsetting Scheme.

### 5.3 EPBC Act Impact Assessment

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where Matters of National Environmental Significance (NES) may be affected. Under the Act, any action which “has, will have, or is likely to have a significant impact on a matter of NES is defined as a controlled action and requires approval from the Commonwealth Department of the Environment and Energy (DotEE).

The process includes the application of Significant Impact Criteria for listed matter of NES that will be affected as a result of the proposed action. Impact assessment guidelines outline a number of criteria to provide assistance in conducting the assessment and help decide whether a referral to the Commonwealth is recommended. These guidelines were used in applying the Significant Impact Criteria.

#### 5.3.1 Threatened ecological communities

PCT 830 forms part of CPW, which is listed as a Critically Endangered Ecological Community (CEEC) under the BC Act and is also listed under the EPBC Act. However, it was confirmed that the assemblage of species that exists within the subject site does not meet the condition threshold criteria necessary for the vegetation to meet the definition of CPW under either Act, hence no Significant Impact Criteria were applied.

#### 5.3.2 Threatened flora

*Eucalyptus scoparia* (Wallangarra White Gum) and *Eucalyptus nicholii* (Narrow-leaved black peppermint) are both listed as an endangered species under the EPBC Act and were both recorded within study area. However, neither species are native to any PCTs within the IBRA Bioregion therefore no Significant Impact Criteria were applied.

#### 5.3.3 Threatened fauna

*Pteropus poliocephalus* (GHFF) was identified as having the potential to occur on site (**Appendix A**), therefore Tests of Significance were applied and is provided in **0**. The assessment concluded that the impact would not be significant because the proposed action is unlikely to impact the lifecycle of the GHFF or lead to a decline in the population of GHFF. Therefore, a referral to the Commonwealth is not required.

## 6. Mitigation measures

The following general mitigation measures are recommended to reduce the ecological impacts associated with the proposed works within the subject site:

- Develop and implement a Construction Environmental Management Plan which contains the measures to ameliorate and mitigate against potential impacts to biodiversity values outside of the impact footprint.
- Construction fencing should be implemented pre-construction and during construction to ensure that related impacts are contained within the work areas.
- Erosion/sediment controls should be implemented during any excavation or construction works to avoid offsite impacts or areas of native vegetation being retained.
- Weeds should be controlled within the subject site.

## 7. References

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## Appendix A Likelihood of occurrence

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database search. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the site inspection and professional judgement. Some Migratory or Marine species identified from the Commonwealth database search have been excluded from the assessment, due to lack of habitat. The terms for likelihood of occurrence are defined below:

“yes” - the species was or has been observed on the site

“likely” = a medium to high probability that a species uses the site

“potential” = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur

“unlikely” = a very low to low probability that a species uses the site

“no” = habitat on site and in the vicinity is unsuitable for the species.

An assessment of significance was conducted for threatened species or ecological communities that were recorded within the site or had a higher likelihood of occurring and were not recorded during the site visit and that potential to be significantly impacted. It is noted that some threatened fauna species that are highly mobile, wide ranging and vagrant may use portions of the site intermittently for foraging. For these fauna species, the habitat present and likely to be impacted is not considered to be important to the threatened species, particularly in relation to the amount of similar habitat remaining in the surrounding landscape. As such, an assessment of significance in reference to State or Commonwealth legislation was not considered necessary.

Note, that assessments for the likelihood of occurrence were made both prior to site inspection and following site inspection. The pre-survey assessments were performed to determine which species were “affected species”, and hence determine which sorts of habitat to look for during site inspection. The post-survey assessments to determine “final affected species” were made after observing the available habitat in the site and are depicted in the table below.

The records column refers to the number of records occurring within 5 km of the subject site, as provided by the NSW Wildlife Atlas (BioNet) database search.

Information provided in the habitat associations’ column has primarily been extracted (and modified) from the Commonwealth Species Profile and Threats Database (DotEE 2017b) and the NSW Threatened Species Profiles (OEH 2016a).

## THREATENED FLORA SPECIES LIKELIHOOD TABLE

| Scientific Name                             | Common Name     | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                              | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|---------------------------------------------|-----------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
| <i>Acacia bynoeana</i>                      | Bynoe's Wattle  | E             | V               | Found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains and has recently been found in the Colymea and Parma Creek areas west of Nowra. It is found in heath and dry sclerophyll forest, typically on a sand or sandy clay substrate, often with ironstone gravels.                          | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Acacia prominens</i>                     | Gosford Wattle  | E2            |                 | Occurs at a few sites along the railway line at Penshurst, at Carss Bush Park, Carss Park and there is an unconfirmed siting at Oatley Park, Oatley. Open situations on clayey or sandy soils.                                                                                                                                                                        | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Acacia pubescens</i>                     | Downy Wattle    | V             | V               | Occurs on the NSW Central Coast in Western Sydney, mainly in the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. It is associated with Cumberland Plains Woodlands, Shale / Gravel Forest and Shale / Sandstone Transition Forest growing on clay soils, often with ironstone gravel. | 5822                                | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Acacia terminalis subsp. terminalis</i>  | Sunshine Wattle | E1            | E               | Limited mainly to near-coastal areas from the northern shores of Sydney Harbour south to Botany Bay. Coastal scrub and dry sclerophyll woodland on sandy soils.                                                                                                                                                                                                       | 8                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Allocasuarina diminuta subsp. mimica</i> | -               | E2            | -               | The endangered population occurs along sandstone ridges and upper hillsides in the region northwest                                                                                                                                                                                                                                                                   | 1                                   | Unlikely.                                      | No.                                                           |

| Scientific Name                            | Common Name             | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                 | Records within 10 km radius of site | Likelihood of Occurrence on site                                    | Assessment of Significance required                        |
|--------------------------------------------|-------------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------|
|                                            |                         |               |                 | from Heathcote, towards Menai and Holsworthy, in heathy and low open woodland communities. It is restricted to the Local Government Areas listed in this instance (Sutherland and Liverpool). Other occurrences in the Blue Mountains and Southern Highlands (Blackheath to Bundanoon and Taralga), and also in the coastal communities from Kingsford to Little Bay) are not included in the Endangered population listing. Heathy woodland, heathlands |                                     | Not observed during field survey.                                   | No suitable habitat available within the subject site.     |
| <i>Allocasuarina glareicola</i>            | -                       | -             | E               | Primarily restricted to the Richmond district on the north-west Cumberland Plain, with an outlier population found at Voyager Point. It grows in Castlereagh woodland on lateritic soil.                                                                                                                                                                                                                                                                 | 1                                   | Unlikely. Not observed during field survey.                         | No. No suitable habitat available within the subject site. |
| <i>Caesia parviflora</i> var. <i>minor</i> | Small Pale Grass-lily   | E1            | -               | In NSW, found in Barcoongere State Forest, between Grafton and Coffs Harbour. Damp places in open forest on sandstone.                                                                                                                                                                                                                                                                                                                                   | 1                                   | Unlikely. Not observed during field survey.                         | No. No suitable habitat available within the subject site. |
| <i>Caladenia tessellata</i>                | Thick Lip Spider Orchid | E1            | V               | Currently known from two disjunct areas; one population near Braidwood on the Southern Tablelands and three populations in the Wyong area on the Central Coast. Grassy sclerophyll woodland on clay loam or sandy soils, or low woodland with stony soil.                                                                                                                                                                                                | 0                                   | Unlikely. Not observed during field survey. Not known from locality | No                                                         |
| <i>Callistemon linearifolius</i>           | Netted Bottle Brush     | V             | -               | Found from the Georges River to Hawkesbury River in the Sydney area (limited to the Hornsby Plateau                                                                                                                                                                                                                                                                                                                                                      | 30                                  | Unlikely. Not observed during field survey.                         | No. No suitable habitat available                          |

| Scientific Name                                         | Common Name              | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                          | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                           |
|---------------------------------------------------------|--------------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
|                                                         |                          |               |                 | area), and north to the Nelson Bay area of NSW. Also Coalcliff in the northern Illawarra.                                                                                                                         |                                     |                                                                        | within the subject site.                                      |
| <i>Cryptostylis hunteriana</i>                          | Leafless Tongue-orchid   | -             | V               | Coastal heathlands, margins of coastal swamps and sedgeland, coastal forest, dry woodland, and lowland forest.                                                                                                    | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                            |
| <i>Cynanchum elegans</i>                                | White-flowered Wax Plant | E             | E               | Restricted to eastern NSW, from Brunswick Heads on the north coast to Gerroa in the Illawarra region, and as far west as Merriwa in the upper Hunter River valley.                                                | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                            |
| <i>Deyeuxia appressa</i>                                | -                        | E1            | E               | NSW endemic known only from two pre-1942 records in the Sydney area: Herne Bay south of Bankstown and Killara, near Hornsby. Found in moist conditions.                                                           | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                            |
| <i>Epacris purpurascens</i><br><i>var. purpurascens</i> | -                        | V             | -               | Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Sclerophyll forest, scrubs and swamps. Most habitats have a strong shale soil influence. | 148                                 | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Eucalyptus camfieldii</i>                            | Camfield's Stringybark   | V             | V               | Found in a narrow band from the Raymond Terrace area south to Waterfall. Coastal heath on shallow sandy soils overlying Hawkesbury sandstone, mostly on exposed sandy ridges.                                     | 0                                   | Unlikely.<br>Not observed during field survey. Not                     | No                                                            |

| Scientific Name                                      | Common Name                    | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                           |
|------------------------------------------------------|--------------------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------|
|                                                      |                                |               |                 |                                                                                                                                                                                                                                                                                                         |                                     | known from locality.                                                    |                                                               |
| <i>Eucalyptus nicholii</i>                           | Narrow-leaved Black Peppermint | V             | V               | New England Tablelands from Nundle to north of Tenterfield. Dry grassy woodland, on shallow soils of slopes and ridges.                                                                                                                                                                                 | 5                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site. |
| <i>Eucalyptus scoparia</i>                           | Wallangarra White Gum          | E1            | V               | In NSW it is known from only three locations near Tenterfield. Open eucalypt forest, woodland and heaths on well-drained granite/rhyolite hilltops, slopes and rocky outcrops, typically at high altitudes.                                                                                             | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site. |
| <i>Genoplesium baueri</i>                            | Yellow Gnat-orchid             | V             | E               | Known from coastal areas from northern Sydney south to the Nowra district. Previous records from the Hunter Valley and Nelson Bay are now thought to be erroneous. Grows in shrubby woodland in open forest on shallow sandy soils and flowers from December to March.                                  | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                            |
| <i>Grevillea beadleana</i>                           | Beadle's Grevillea             | E1            | E               | Found in four separate areas of north-east NSW: the Torrington area west of Tenterfield, Oxley Wild Rivers National Park, Guy Fawkes River National Park and at Shannon Creek south-west of Grafton. Open eucalypt forest with a shrubby understorey, mainly on steep granite slopes at high altitudes. | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site. |
| <i>Grevillea parviflora</i> subsp. <i>parviflora</i> | Small-flower Grevillea         | V             | V               | Heath and shrubby woodland to open forest on sandy or light clay soils usually over thin shales.                                                                                                                                                                                                        | 37                                  | Unlikely.                                                               | No.                                                           |

| Scientific Name                              | Common Name          | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                           | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                                       |
|----------------------------------------------|----------------------|---------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------|
|                                              |                      |               |                 |                                                                                                                                                                                                                                    |                                     | Not observed during field survey.              | No suitable habitat available within the subject site.                                    |
| <i>Hibbertia puberula</i>                    | -                    | E             | -               | Low heath, dry sclerophyll woodland, upland swamps, on sandy soils or clay.                                                                                                                                                        | 4                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.<br>within the subject site. |
| <i>Hibbertia puberula subsp. glabrescens</i> | -                    | E4A           | CE              | Known to occur in only one population, at Bankstown Airport in Sydney's southern suburbs. Heavily modified low grass/shrub association (ex Cooks River/Castlereagh Ironbark Forest) on sandy alluvium with a high silt content.    | 101                                 | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site.                        |
| <i>Hibbertia stricta subsp. furcatula</i>    | -                    | E1            | -               | Two known populations: one in the southern outskirts of Sydney around the Woronora River gorge, near Loftus and in Royal National Park; the other is near Nowra on the mid-South Coast. Found in dry eucalypt forest and woodland. | 36                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.                             |
| <i>Leucopogon exolasius</i>                  | Woronora Beard-heath | V             | V               | Found in woodland on sandstone.                                                                                                                                                                                                    | 1                                   | Unlikely.                                      | No.<br>Limited suitable                                                                   |

| Scientific Name                                           | Common Name        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|-----------------------------------------------------------|--------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
|                                                           |                    |               |                 |                                                                                                                                                                                         |                                     | Not observed during field survey.                                       | habitat available within the subject site.                         |
| <i>Marsdenia viridiflora</i><br><i>subsp. viridiflora</i> | Native Pear        | E2            | -               | Razorback Range, also recorded at Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Found in vine thickets and open shale woodland.                                       | 347                                 | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <i>Melaleuca biconvexa</i>                                | Biconvex Paperbark | V             | V               | Only found in NSW, populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Damp places, often near streams or low-lying areas on alluvial soils. | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Melaleuca deanei</i>                                   | Deane's Paperbark  | V             | V               | Heath on sandstone.                                                                                                                                                                     | 105                                 | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <i>Persoonia hirsuta</i>                                  | Hairy Geebung      | E             | E               | Sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.                                                                                                            | 13                                  | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available                          |

| Scientific Name                                  | Common Name          | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                               | Records within 10 km radius of site | Likelihood of Occurrence on site                                     | Assessment of Significance required                             |
|--------------------------------------------------|----------------------|---------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------|
|                                                  |                      |               |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     |                                                                      | within the subject site.                                        |
| <i>Persoonia nutans</i>                          | Nodding Geebung      | E1            | E               | Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations: sclerophyll forest and woodland (Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland and Cooks River / Castlereagh Ironbark Forest) on aeolian and alluvial sediments. Southern populations: tertiary alluvium, shale sandstone transition communities and Cooks River / Castlereagh Ironbark Forest. | 35                                  | Unlikely. Not observed during field survey.                          | No. Limited suitable habitat available within the subject site. |
| <i>Pimelea curviflora</i> var. <i>curviflora</i> | -                    | V             | V               | Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. It grows on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Flowers October to May.                                                                                                                                                                             | 0                                   | Unlikely. Not observed during field survey. Not known from locality. | No                                                              |
| <i>Pimelea spicata</i>                           | Spiked Rice-flower   | E             | E               | In western Sydney, <i>Pimelea spicata</i> occurs on an undulating topography of well-structured clay soils, derived from Wianamatta shale. It is associated with Cumberland Plains Woodland, in open woodland and grassland often in moist depressions or near creek lines. Has been located in disturbed areas.                                                                                                                                       | 633                                 | Unlikely. Not observed during field survey.                          | No. Limited suitable habitat available within the subject site. |
| <i>Pomaderris prunifolia</i>                     | Plum-leaf Pomaderris | E2            | -               | Population is known from only three sites: at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. At Rydalmere it occurs among grass species on sandstone near a creek.                                                                                                                                                                                                                                                                 | 17                                  | Unlikely. Not observed during field survey.                          | No. Limited suitable habitat available                          |

| Scientific Name              | Common Name             | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                      | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|------------------------------|-------------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
|                              |                         |               |                 |                                                                                                                                                                                                                                               |                                     |                                                                         | within the subject site.                                           |
| <i>Prostanthera saxicola</i> | -                       | E2            |                 | Primarily in Eucalypt forest, heath and low shrubland, often in damp or moist sites. This population is restricted to the named local government areas (Liverpool and Sutherland) in the southern to south-western parts of Sydney.           | 0                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |
| <i>Pterostylis gibbosa</i>   | Illawarra Greenhood     | E1            | E               | Known from a small number of populations in the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra). Open forest or woodland, on flat or gently sloping land with poor drainage. | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Pterostylis saxicola</i>  | Sydney Plains Greenhood | E             | E               | Small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines, adjacent to sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.                                                      | 17                                  | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <i>Pultenaea aristata</i>    | Prickly Bush-pea        | V             | V               | Restricted to the Woronora Plateau. Dry sclerophyll woodland or wet heath on sandstone.                                                                                                                                                       | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |
| <i>Pultenaea parviflora</i>  | Sydney Bush-pea         | E1            | V               | Endemic to the Cumberland Plain. Mainly from Windsor to Penrith and east to Dean Park, with                                                                                                                                                   | 2                                   | Unlikely.                                                               | No.                                                                |

| Scientific Name                | Common Name          | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                     | Records within 10 km radius of site | Likelihood of Occurrence on site                                    | Assessment of Significance required                             |
|--------------------------------|----------------------|---------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|
|                                |                      |               |                 | outlier populations at Kemps Creek and Wilberforce. Dry sclerophyll forest, especially Castlereagh Ironbark Forest, Shale Gravel Transition Forest and transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland.                                                                  |                                     | Not observed during field survey.                                   | No suitable habitat available within the subject site.          |
| <i>Pultenaea pedunculata</i>   | Matted Bush-pea      | E1            |                 | In NSW it is represented by just three disjunct populations, in the Cumberland Plains in Sydney, the coast between Tathra and Bermagui and the Windellama area south of Goulburn. Woodland, sclerophyll forest, road batters and coastal cliffs.                                                             | 13                                  | Unlikely. Not observed during field survey.                         | No. Limited suitable habitat available within the subject site. |
| <i>Syzygium paniculatum</i>    | Magenta Lillypilly   | V             | V               | This species occupies a narrow coastal area between Bulahdelah and Conjola State Forests in NSW. Occurs on Quaternary gravels, sands, silts and clays, in riparian gallery rainforests and remnant littoral rainforest communities.                                                                          | 21                                  | Unlikely. Not observed during field survey.                         | No. No suitable habitat available within the subject site.      |
| <i>Thelymitra kangaloonica</i> | Kangaloon Sun Orchid | E             | CE              | Swamps in sedgelands over grey silty grey loam soils.                                                                                                                                                                                                                                                        | 0                                   | Unlikely. Not observed during field survey. Not known from locality | No                                                              |
| <i>Thesium australe</i>        | Austral Toadflax     | V             | V               | Widespread throughout the eastern third of NSW but most common on the North Western Slopes, Northern Tablelands and North Coast. Occurs in grassland or grassy woodland. Often found in damp sites in association with Kangaroo Grass ( <i>Themeda australis</i> ) (DECC 2007). The preferred soil type is a | 0                                   | Unlikely. Not observed during field survey. Not known from locality | No                                                              |

| Scientific Name                 | Common Name            | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                        | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|---------------------------------|------------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
|                                 |                        |               |                 | fertile loam derived from basalt although it occasionally occurs on metasediments and granite.                                                                                                                                                                                                                                                                                                                                  |                                     |                                                |                                                                    |
| <i>Wahlenbergia multicaulis</i> | Tadgell's Bluebell     | E2            |                 | 13 known sites, two of which are in northern Sydney (Thornleigh and Mt Ku-Ring-Gai) with the remainder in western Sydney (Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre). In Hornsby LGA it occurs in or adjacent to sandstone gully forest. In Western Sydney it is found in remnants of Cooks River/ Castlereagh Ironbark Forest. Typically occurs in damp, disturbed sites. | 684                                 | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Wilsonia backhousei</i>      | Narrow-leafed Wilsonia | V             | -               | In NSW, found on the coast between Mimosa Rocks National Park and Wamberal north of Sydney (Nelson's Lake, Potato Point, Sussex Inlet, Wowly Gully, Parramatta River at Ermington, Clovelly, Voyager Point, Wollongong and Royal National Park). Margins of salt marshes and lakes.                                                                                                                                             | 579                                 | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Zannichellia palustris</i>   | -                      | E1            | -               | In NSW, known from the lower Hunter and in Sydney Olympic Park. Fresh or slightly saline stationary or slowly flowing water.                                                                                                                                                                                                                                                                                                    | 4                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |

V= Vulnerable; E= Endangered; E2= Endangered population; E= Endangered, CE= Critically Endangered.

## THREATENED FAUNA SPECIES LIKELIHOOD TABLE

| Scientific Name               | Common Name                | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                     | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|-------------------------------|----------------------------|---------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
| <b>Amphibia</b>               |                            |               |                 |                                                                                                                                                                                                                                                                              |                                     |                                                |                                                               |
| <i>Crinia tinnula</i>         | Wallum Froglet             | V             | -               | Found along the coastal margin from Litabella National Park in south-east Qld to Kurnell in Sydney. Acidic swamps on coastal sand plains (typically in sedgelands and wet heathlands), drainage lines, and swamp sclerophyll forests.                                        | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Litoria aurea</i>          | Green and Golden Bell Frog | E             | V               | It can utilise a variety of natural and man-made waterbodies and other structures capable of storing water.                                                                                                                                                                  | 23092                               | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Pseudophryne australis</i> | Red-crowned Toadlet        | V             | -               | Open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings.                                                                                                       | 9                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <b>Aves</b>                   |                            |               |                 |                                                                                                                                                                                                                                                                              |                                     |                                                |                                                               |
| <i>Actitis hypoleucos</i>     | Common Sandpiper           | -             | M               | Summer migrant. In NSW, widespread along coastline and also occurs in many areas inland. Coastal wetlands and some inland wetlands, especially muddy margins or rocky shores. Also estuaries and deltas, lakes, pools, billabongs, reservoirs, dams and claypans, mangroves. | 25                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |

| Scientific Name            | Common Name       | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|----------------------------|-------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <i>Anthochaera phrygia</i> | Regent Honeyeater | E4A           | CE              | Inland slopes of south-east Australia, and less frequently in coastal areas. In NSW, most records are from the North-West Plains, North-West and South-West Slopes, Northern Tablelands, Central Tablelands and Southern Tablelands regions; also recorded in the Central Coast and Hunter Valley regions. Eucalypt woodland and open forest, wooded farmland and urban areas with mature eucalypts, and riparian forests of <i>Casuarina cunninghamiana</i> (River Oak). | 5                                   | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Apus pacificus</i>      | Fork-tailed Swift | -             | M               | Recorded in all regions of NSW. Riparian woodland., swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.                                                                                                                                                                                                                                                                                             | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Ardea alba</i>          | Great Egret       | -             | -               | Widespread, occurring across all states/territories. Also a vagrant on Lord Howe and Norfolk Island. Swamps and marshes, grasslands, margins of rivers and lakes, salt pans, estuarine mudflats and other wetland habitats.                                                                                                                                                                                                                                               | 0                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Ardea ibis</i>          | Cattle Egret      | -             | -               | Widespread and common across NSW. Grasslands, wooded lands and terrestrial wetlands.                                                                                                                                                                                                                                                                                                                                                                                      | 493                                 | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |

| Scientific Name               | Common Name            | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                       | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                           |
|-------------------------------|------------------------|---------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
| <i>Arenaria interpres</i>     | Ruddy Turnstone        | -             | M               | Summer migrant to most coastal regions, with occasional records inland, including in NSW. Tidal reefs and pools; pebbly, shelly and sandy shores; mudflats; inland shallow waters; sewage ponds, saltfields; ploughed ground.                                                  | 1                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Botaurus poiciloptilus</i> | Australasian Bittern   | E1            | E               | Found over most of NSW except for the far north-west. Permanent freshwater wetlands with tall, dense vegetation, particularly Typha spp. (bullrushes) and Eleocharis spp. (spikerushes).                                                                                       | 5                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No.<br>No suitable habitat available within the subject site. |
| <i>Burhinus grallarius</i>    | Bush Stone-curlew      | E1            | -               | In NSW, found sporadically in coastal areas, and west of the divide throughout the sheep-wheat belt. In NSW, it occurs in lowland grassy woodland and open forest.                                                                                                             | 4                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Calidris acuminata</i>     | Sharp-tailed Sandpiper | -             | M               | Summer migrant. Widespread in most regions of NSW, especially in coastal areas, but sparse in the south-central Western Plain and east Lower Western Regions. Shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. | 3744                                | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Calidris alba</i>          | Sanderling             | V             | M               | Occur along the NSW coast, with occasional inland sightings. Arrives from September and leaves by May (some may overwinter in Australia). Coastal areas on low beaches of firm sand, near reefs and inlets, along                                                              | 2                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available                          |

| Scientific Name            | Common Name        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                           |
|----------------------------|--------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
|                            |                    |               |                 | tidal mudflats and lagoons; rarely recorded in near-coastal wetlands.                                                                                                                                                                                                                                                                                                                                                   |                                     |                                                                        | within the subject site.                                      |
| <i>Calidris canutus</i>    | Red Knot           | -             | E, M            | Summer migrant to Australia. In NSW, widespread in suitable habitat along the coast. Occasionally recorded inland in all regions. Intertidal mudflats, sandflats sheltered sandy beaches, estuaries, bays, inlets, lagoons, harbours, sandy ocean beaches, rock platforms, coral reefs, terrestrial saline wetlands near the coast, sewage ponds and saltworks. Rarely inland lakes or swamps.                          | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                            |
| <i>Calidris ferruginea</i> | Curlew Sandpiper   | E1            | CE, M           | Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin. Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.                                                                                                                                                                          | 2110                                | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Calidris melanotos</i>  | Pectoral Sandpiper | -             | M               | Summer migrant to Australia. Widespread but scattered in NSW. East of the Great Divide, recorded from Casino and Ballina, south to Ulladulla. West of the Great Divide, widespread in the Riverina and Lower Western regions. Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. | 101                                 | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Calidris ruficollis</i> | Red-necked Stint   | -             | M               | Summer migrant to Australia, widespread coastal and inland NSW. Tidal mudflats, saltmarshes, sandy and shelly beaches, saline and freshwater wetlands, saltfields, sewage ponds.                                                                                                                                                                                                                                        | 1                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available                          |

| Scientific Name                 | Common Name         | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                             | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|---------------------------------|---------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
|                                 |                     |               |                 |                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                                | within the subject site.                                           |
| <i>Calidris tenuirostris</i>    | Great Knot          | V             | CE, M           | In NSW, recorded at scattered sites along the coast down to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.                                                                                                               | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Callocephalon fimbriatum</i> | Gang-gang Cockatoo  | V             | -               | In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee. Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas. | 6                                   | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Charadrius leschenaultii</i> | Greater Sand-plover | V             | V, M            | In NSW, recorded between the northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries. Almost entirely restricted to coastal areas in NSW, mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.                                                                  | 2                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Charadrius mongolus</i>      | Lesser Sand-plover  | V             | E, M            | Summer migrant to Australia. Found around the entire coast but in NSW most common on north coast. Rarely recorded south of the Shoalhaven estuary, and there are few inland records. Almost entirely coastal in NSW, using sheltered bays, harbours and estuaries with large intertidal sandflats                                                                    | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |

| Scientific Name                         | Common Name                            | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                           |
|-----------------------------------------|----------------------------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
|                                         |                                        |               |                 | or mudflats, sandy beaches, coral reefs and rock platforms.                                                                                                                                                                                                                                                                                                                             |                                     |                                                                        |                                                               |
| <i>Circus assimilis</i>                 | Spotted Harrier                        | V             | -               | Found throughout the Australian mainland, except in densely forested or wooded habitats, and rarely in Tasmania. Grassy open woodland, inland riparian woodland, grassland, shrub steppe, agricultural land and edges of inland wetlands.                                                                                                                                               | 7                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Climacteris picumnus victoriarum</i> | Brown Treecreeper (eastern subspecies) | V             | -               | From eastern through central NSW, west to Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell. Eucalypt woodlands and dry open forest.                                                                                                                                                                                                                                              | 1                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Daphoenositta chrysoptera</i>        | Varied Sittella                        | V             | -               | Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, mallee and Acacia woodland.                                                                                                                                                                                                                                           | 31                                  | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site. |
| <i>Dasyornis brachypterus</i>           | Eastern Bristlebird                    | E1            | E               | There are three main populations: Northern - southern Qld/northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. Central and southern populations inhabit heath and open woodland with a heathy understorey. In northern | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                            |

| Scientific Name                   | Common Name        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                            | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|-----------------------------------|--------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
|                                   |                    |               |                 | NSW, habitat comprises open forest with dense tussocky grass understorey.                                                                                                                                                                                                           |                                     |                                                |                                                               |
| <i>Egretta sacra</i>              | Eastern Reef Egret | -             | -               | Coast and islands of most of Australia, including NSW. Beaches, rocky shores, tidal rivers and inlets, mangroves, and exposed coral reefs.                                                                                                                                          | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Ephippiorhynchus asiaticus</i> | Black-necked Stork | E1            | -               | Coastal and subcoastal northern and eastern Australia, south to central-eastern NSW and with vagrants recorded further south and inland. In NSW, floodplain wetlands of the major coastal rivers are key habitat. Also minor floodplains, coastal sandplain wetlands and estuaries. | 2                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Epthianura albifrons</i>       | White-fronted Chat | E2, V, P      | -               | Occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Saltmarsh vegetation, open grasslands and sometimes low shrubs bordering wetland areas.                                                | 82                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Falco subniger</i>             | Black Falcon       | V             | -               | Sparsely distributed in NSW, occurring mostly in inland regions. Woodland, shrubland and grassland, especially riparian woodland and agricultural land. Often associated with streams or wetlands.                                                                                  | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |

| Scientific Name             | Common Name        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                         | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|-----------------------------|--------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
| <i>Fregata ariel</i>        | Lesser Frigatebird | -             | M               | In NSW, irregularly observed after tropical cyclones south to central coast, sometimes observed south to Merimbula. Marine.                                                                                                      | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Fregata minor</i>        | Great Frigatebird  | -             | M               | Occasionally observed coastal north-east NSW after cyclones, straggler to central coastal NSW. Marine.                                                                                                                           | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Gallinago hardwickii</i> | Latham's Snipe     | -             | M               | Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW. Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands. | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |
| <i>Glossopsitta pusilla</i> | Little Lorikeet    | V             | -               | In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.                                                          | 90                                  | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <i>Grantiella picta</i>     | Painted Honeyeater | V             | V               | Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding                                                                                                                             | 0                                   | Unlikely.<br>Not observed during field                                  | No                                                                 |

| Scientific Name                | Common Name             | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                            | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|--------------------------------|-------------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
|                                |                         |               |                 | arid areas. Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests.                                                                                                                                                                                                                                                                                                         |                                     | survey. Not known from locality.               |                                                                    |
| <i>Haematopus fuliginosus</i>  | Sooty Oystercatcher     | V             | -               | Distributed along the entire NSW coast. Rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries.                                                                                                                                                                                                                                                 | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Haematopus longirostris</i> | Pied Oystercatcher      | E1            | -               | Thinly scattered along the entire NSW coast. Intertidal flats of inlets and bays, open beaches and sandbanks.                                                                                                                                                                                                                                                                       | 5                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Haliaeetus leucogaster</i>  | White-bellied Sea-Eagle | V             | -               | Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas. | 96                                  | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Hieraaetus morphnoides</i>  | Little Eagle            | V             | -               | Throughout the Australian mainland, with the exception of the most densely-forested parts of the Dividing Range escarpment. Open eucalypt forest, woodland or open woodland, including sheoak or Acacia woodlands and riparian woodlands of interior NSW.                                                                                                                           | 12                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |

| Scientific Name               | Common Name               | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                       | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|-------------------------------|---------------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <i>Hirundapus caudacutus</i>  | White-throated Needletail | -             | M               | All coastal regions of NSW, inland to the western slopes and inland plains of the Great Divide. Occur most often over open forest and rainforest, as well as heathland, and remnant vegetation in farmland.                                                    | 156                                 | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Hydroprogne caspia</i>     | Caspian Tern              | -             | M               | Widespread in coastal and inland NSW. Coastal offshore waters, beaches, mudflats, estuaries, rivers, lakes.                                                                                                                                                    | 39                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Ixobrychus flavicollis</i> | Black Bittern             | V             | -               | In NSW, records are scattered along the east coast, with individuals rarely being recorded south of Sydney or inland. Terrestrial and estuarine wetlands. Also flooded grassland, forest, woodland, rainforest and mangroves where permanent water is present. | 12                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Lathamus discolor</i>      | Swift Parrot              | E1            | CE              | Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and south west slopes. Box-ironbark forests and woodlands.                                                                                                 | 58                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Limicola falcinellus</i>   | Broad-billed Sandpiper    | V             | M               | Occur occasionally on the southern Australian coast. In NSW, mainly recorded in Hunter River estuary, with birds occasionally reaching the Shoalhaven estuary. There are few records for inland NSW.                                                           | 2                                   | Unlikely.                                      | No.<br>No suitable habitat                                         |

| Scientific Name               | Common Name               | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                         | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|-------------------------------|---------------------------|---------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
|                               |                           |               |                 | Sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayments, lagoons, saltmarshes and reefs.                                                                                                                                                                                                                                                                                                                     |                                     | Not observed during field survey.              | available within the subject site.                                 |
| <i>Limosa lapponica</i>       | Bar-tailed Godwit         | -             | M               | Summer migrant to Australia. Widespread along the coast of NSW, including the offshore islands. Also numerous scattered inland records. Intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons, bays, seagrass beds, saltmarsh, sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. Rarely inland wetlands, paddocks and airstrips. | 6951                                | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Limosa limosa</i>          | Black-tailed Godwit       | V             | M               | Arrives in August and leaves in March. In NSW, most frequently recorded at Kooragang Island, with occasional records elsewhere along the coast, and inland in the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Usually sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats.                                                        | 7                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Lophochroa leadbeateri</i> | Major Mitchell's Cockatoo | V             | -               | In NSW, occurs across the arid and semi-arid inland, as far east as Bourke and Griffith, and sporadically even further east. Wide range of treed and treeless inland habitats, always within easy reach of water.                                                                                                                                                                                                                                | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Lophoictinia isura</i>     | Square-tailed Kite        | V             | -               | In NSW, it is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east,                                                                                                                                                                                                                                                                                     | 8                                   | Unlikely.                                      | No.<br>Limited suitable                                            |

| Scientific Name                     | Common Name                                   | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                      | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                                |
|-------------------------------------|-----------------------------------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|
|                                     |                                               |               |                 | including the NSW south coast. Timbered habitats including dry woodlands and open forests, particularly timbered watercourses.                                                                                                                                                                                                                                                                                |                                     | Not observed during field survey.                                      | habitat available within the subject site.                         |
| <i>Melithreptus gularis gularis</i> | Black-chinned Honeyeater (eastern subspecies) | V             | -               | Widespread in NSW from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Also Richmond and Clarence River areas and a few scattered sites in the Hunter, Central Coast and Illawarra regions. Open forests or woodlands dominated by box and ironbark eucalypts, or by smooth-barked gums, stringybarks, river sheoaks and tea-trees. | 8                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>No suitable habitat available within the subject site.      |
| <i>Merops ornatus</i>               | Rainbow Bee-eater                             | -             | -               | Distributed across much of mainland Australia, including NSW. Open forests and woodlands, shrublands, farmland, areas of human habitation, inland and coastal sand dune systems, heathland, sedgeland, vine forest and vine thicket.                                                                                                                                                                          | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No                                                                 |
| <i>Monarcha melanopsis</i>          | Black-faced Monarch                           | -             | M               | In NSW, occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park and Wombeyan Caves. It is rarely recorded farther inland. Rainforest, open eucalypt forests, dry sclerophyll forests and woodlands, gullies in mountain areas or coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks and gardens.       | 0                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>Limited suitable habitat available within the subject site. |

| Scientific Name              | Common Name           | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                 | Records within 10 km radius of site | Likelihood of Occurrence on site                                       | Assessment of Significance required                                |
|------------------------------|-----------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|
| <i>Monarcha trivirgatus</i>  | Spectacled Monarch    | -             | -               | Coastal eastern Australia south to Port Stephens in NSW. Mountain/lowland rainforest, wooded gullies, riparian vegetation including mangroves.                                                                                                                                                                                                                                                                                                           | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality | No.<br>No suitable habitat available within the subject site.      |
| <i>Motacilla flava</i>       | Yellow Wagtail        | -             | M               | Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA. Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns.                                                                                                                                                                                                                          | 0                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>Limited suitable habitat available within the subject site. |
| <i>Myiagra cyanoleuca</i>    | Satin Flycatcher      | -             | M               | In NSW, widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Eucalypt-dominated forests, especially near wetlands, watercourses, and heavily-vegetated gullies.                                                                                                                                                                                                  | 0                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>Limited suitable habitat available within the subject site. |
| <i>Neophema chrysogaster</i> | Orange-bellied Parrot | E4A           | CE              | Breeds in Tasmania and migrates in autumn to spend the winter on the mainland coast of south-eastern SA and southern Victoria. Occasional reports from NSW, most recently Shellharbour and Maroubra in May 2003. Winter habitat is mostly within 3 km of the coast in sheltered bays, lagoons, estuaries, coastal dunes and saltmarshes. Also small islands and peninsulas, saltworks, golf courses, low samphire herbland and taller coastal shrubland. | 0                                   | Unlikely.<br>Not observed during field survey.                         | No.<br>Limited suitable habitat available within the subject site. |

| Scientific Name                  | Common Name      | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                              | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                                |
|----------------------------------|------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| <i>Neophema pulchella</i>        | Turquoise Parrot | V             | 3               | Occurs along the length of NSW from the coastal plains to the western slopes of the Great Dividing Range. Eucalypt and cypress pine open forests and woodlands, ecotones between woodland and grassland, or coastal forest and heath.                                                                                                                 | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Ninox strenua</i>             | Powerful Owl     | V             | -               | In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains. Woodland, open sclerophyll forest, tall open wet forest and rainforest.                                                                                                                 | 137                                 | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Numenius madagascariensis</i> | Eastern Curlew   | -             | CE, M           | Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records. Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks and sewage farms.                             | 59                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site.      |
| <i>Numenius minutus</i>          | Little Curlew    | -             | M               | Summer migrant to Australia. In NSW, most records scattered east of the Great Dividing Range, from Casino, south to Greenwell Point with a few scattered records west of the Great Dividing Range. Dry grasslands, open woodlands, floodplains, margins of drying swamps, tidal mudflats, airfields, playing fields, crops, saltfields, sewage ponds. | 0                                   | Unlikely.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site. |
| <i>Numenius phaeopus</i>         | Whimbrel         | -             | M               | Summer migrant to Australia. Found along almost the entire coast of NSW; scattered inland records. Estuaries, mangroves, tidal flats, coral cays, exposed                                                                                                                                                                                             | 5                                   | Unlikely.                                      | No.<br>Limited suitable                                            |

| Scientific Name           | Common Name    | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|---------------------------|----------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
|                           |                |               |                 | reefs, flooded paddocks, sewage ponds, grasslands, sports fields, lawns.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     | Not observed during field survey.              | habitat available within the subject site.                    |
| <i>Pandion cristatus</i>  | Eastern Osprey | V             | -               | Common around the northern NSW coast, and uncommon to rare from coast further south. Some records from inland areas. Rocky shorelines, islands, reefs, mouths of large rivers, lagoons and lakes.                                                                                                                                                                                                                                                                                                                                                         | 23                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Petroica boodang</i>   | Scarlet Robin  | V             | -               | In NSW, it occurs from the coast to the inland slopes. Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.                                                                                                                                                                                                                                                                                                                                                                                          | 4                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Petroica phoenicea</i> | Flame Robin    | V             | -               | In NSW, breeds in upland areas, and in winter many birds move to the inland slopes and plains, or occasionally to coastal areas. Likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands. In winter uses dry forests, open woodlands, heathlands, pastures and native grasslands. Occasionally occurs in temperate rainforest, herbfields, heathlands, shrublands and sedgeland at high altitudes. | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Philomachus pugnax</i> | Ruff           | -             | M               | Regular but rare summer migrant to Australia. In NSW, recorded at Kurnell, Tomki, Casino, Ballina,                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3                                   | Unlikely.                                      | No.                                                           |

| Scientific Name             | Common Name           | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                            | Records within 10 km radius of site | Likelihood of Occurrence on site                | Assessment of Significance required                                                     |
|-----------------------------|-----------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|
|                             |                       |               |                 | Kooragang Island, Broadwater Lagoon and Little Cattai Creek. Also found around the Riverina, including Windouran Swamp, Wanganella, Fivebough Swamo and the Tullakool Saltworks. Terrestrial wetlands including lakes, swamps, pools, lagoons, tidal rivers, swampy fields and floodlands. Occasionally harbours, estuaries, seashores, sewage farms and saltworks. |                                     | Not observed during field survey.               | No suitable habitat available within the subject site.                                  |
| <i>Plegadis falcinellus</i> | Glossy Ibis           | -             | M               | Recorded over much of NSW. Spring/summer breeding migrant to southern Murray-Darling region and Macquarie Marshes. Edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. Occasionally estuaries, deltas, saltmarshes and coastal lagoons.                             | 49                                  | Unlikely.<br>Not observed during field survey.  | No.<br>No suitable habitat available within the subject site.                           |
| <i>Pluvialis fulva</i>      | Pacific Golden Plover | -             | M               | Regular widespread summer migrant to Australia, including coastal NSW, Lord Howe and Norfolk Island. Estuaries, mudflats, saltmarshes, mangroves, rocky reefs, inland swamps, ocean shores, paddocks, sewage ponds, ploughed land, airfields, playing fields.                                                                                                       | 234                                 | Potential.<br>Not observed during field survey. | No.<br>Limited suitable habitat available within the subject site will not be impacted. |
| <i>Pluvialis squatarola</i> | Grey Plover           | -             | M               | Regular summer migrant to coastal Australia, including NSW. Rarely inland, on passage. Mudflats, saltmarsh, tidal reefs and estuaries.                                                                                                                                                                                                                              | 1                                   | Unlikely.<br>Not observed during field survey.  | No.<br>No suitable habitat available                                                    |

| Scientific Name              | Common Name              | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                  | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|------------------------------|--------------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
|                              |                          |               |                 |                                                                                                                                                                                                                                                                                                           |                                     |                                                                         | within the subject site.                                           |
| <i>Ptilinopus superb</i>     | Superb Fruit-Dove        | V             | -               | Principally from north-eastern Qld to north-eastern NSW. Further south, it is confined to pockets of suitable habitat, and occurs as far south as Moruya. Rainforest and closed forests. May also forage in eucalypt or acacia woodland where there are fruit-bearing trees.                              | 2                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <i>Rhipidura rufifrons</i>   | Rufous Fantail           | -             | M               | Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW. Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands.                                                                | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Rostratula australis</i>  | Australian Painted Snipe | E1            | E               | In NSW most records are from the Murray-Darling Basin. Other recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Swamps, dams and nearby marshy areas.                                                                                                     | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Stagonopleura guttata</i> | Diamond Firetail         | V             | -               | "Widely distributed in NSW, mainly recorded in the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina, and less commonly found in coastal areas and further inland. Grassy eucalypt woodlands, open forest, mallee, Natural | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |

| Scientific Name           | Common Name         | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                            | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|---------------------------|---------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
|                           |                     |               |                 | Temperate Grassland, secondary derived grassland, riparian areas and lightly wooded farmland.                                                                                                                                                                                                                                                                                                                                                       |                                     |                                                |                                                               |
| <i>Sterna hirundo</i>     | Common Tern         | -             | M               | Regular summer migrant to northern and eastern coastal Australia, including coastal NSW. Also scattered inland records. Offshore waters, ocean beaches, estuaries, large lakes. Less commonly freshwater swamps, floodwaters, sewage farms and brackish and saline lakes.                                                                                                                                                                           | 57                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Sternula albifrons</i> | Little Tern         | E1            | M               | In NSW, it arrives from September to November, occurring mainly north of Sydney, with smaller numbers found south to Victoria. Sheltered coastal environments, harbours, inlets and rivers.                                                                                                                                                                                                                                                         | 4                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Tringa brevipes</i>    | Grey-tailed Tattler | -             | M               | Summer migrant to Australia. In NSW, distributed along most of the coast from the Qld border, south to Tilba Lake. More heavily distributed along coastal regions north of Sydney. Sheltered coasts with reefs and rock platforms or intertidal mudflats; intertidal rocky, coral or stony reefs; shores of rock, shingle, gravel or shells; embayments, estuaries and coastal lagoons; lagoons and lakes; and ponds in sewage farms and saltworks. | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Tringa glareola</i>    | Wood Sandpiper      | -             | M               | Summer migrant to Australia. In NSW, recorded east of the Great Divide, from Stratheden and Casino, south to Nowra and elsewhere, mostly from the Riverina, but also from the Upper and Lower Western Regions. Well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools                                                                                                                                               | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available                          |

| Scientific Name           | Common Name       | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|---------------------------|-------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
|                           |                   |               |                 | and waterholes; inundated grasslands; floodplains; irrigated crops; sewage ponds; reservoirs; large farm dams; bore drains; rarely brackish wetlands and saltmarsh.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                     |                                                | within the subject site.                                      |
| <i>Tringa incana</i>      | Wandering Tattler | -             | M               | Uncommon summer migrant. Recorded along the east coast, often on offshore or nearshore islands including Lord Howe and Norfolk Island, south as far as Moruya in NSW. Rocky coasts with reefs and platforms, offshore islands, shingle beaches or beds; occasionally coral reefs or beaches.                                                                                                                                                                                                                                                                                                                                                    | 2                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Tringa nebularia</i>   | Common Greenshank | -             | M               | Summer migrant to Australia. Recorded in most coastal regions of NSW; also widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions. Terrestrial wetlands (swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, saltflats, sewage farms and saltworks dams, inundated rice crops and bores) and sheltered coastal habitats (mudflats, saltmarsh, mangroves, embayments, harbours, river estuaries, deltas, lagoons, tidal pools, rock-flats and rock platforms). | 27                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Tringa stagnatilis</i> | Marsh Sandpiper   | -             | M               | Summer migrant to Australia. Recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. Swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, intertidal mudflats, sewage farms and                                                                                                                                                                                                                                                                                                                            | 16                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |

| Scientific Name               | Common Name                 | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                           | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
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|                               |                             |               |                 | saltworks, reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes.                                                                                                                                                                                                              |                                     |                                                |                                                               |
| <i>Tyto novaehollandiae</i>   | Masked Owl                  | V             | -               | Recorded over approximately 90% of NSW, excluding the most arid north-western corner. Most abundant on the coast but extends to the western plains. Dry eucalypt forests and woodlands from sea level to 1100 m.                                                                                   | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Tyto tenebricosa</i>       | Sooty Owl                   | V             | -               | Occupies the easternmost one-eighth of NSW, occurring on the coast, coastal escarpment and eastern tablelands. Dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.                                                                                       | 1                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Xenus cinereus</i>         | Terek Sandpiper             | V             | M               | A rare migrant to the eastern and southern Australian coasts. The two main sites in NSW are the Richmond River estuary and the Hunter River estuary. Mudbanks and sandbanks near mangroves, rocky pools and reefs, and occasionally up to 10 km inland around brackish pools.                      | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <b>Gastropoda</b>             |                             |               |                 |                                                                                                                                                                                                                                                                                                    |                                     |                                                |                                                               |
| <i>Meridolum corneovirens</i> | Cumberland Plain Land Snail | E1            | -               | Recorded in areas of the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool, west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains. Primarily inhabits Cumberland Plain Woodland. Also known from Shale Gravel Transition Forests, | 30                                  | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |

| Scientific Name                   | Common Name               | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                                                  | Records within 10 km radius of site | Likelihood of Occurrence on site               | Assessment of Significance required                           |
|-----------------------------------|---------------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------------------------------------------------|
|                                   |                           |               |                 | Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest.                                                                                                                                                                                                                                                                |                                     |                                                |                                                               |
| Mammalia                          |                           |               |                 |                                                                                                                                                                                                                                                                                                                                           |                                     |                                                |                                                               |
| <i>Cercartetus nanus</i>          | Eastern Pygmy-possum      | V             | -               | In NSW it extents from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Rainforest, sclerophyll forest (including Box-Ironbark), woodland and heath.                                                                                                                                          | 3                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Chalinolobus dwyeri</i>        | Large-eared Pied Bat      | V             | V               | Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes. Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, sub-alpine woodland, edges of rainforests and sandstone outcrop country. | 4                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Dasyurus maculatus</i>         | Spotted-tailed Quoll      | V             | E               | Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.                                                                                                                                 | 2                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |
| <i>Falsistrellus tasmaniensis</i> | Eastern False Pipistrelle | V             |                 | South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range. Tall (greater than 20m) moist habitats.                                                                                                                                   | 7                                   | Unlikely.<br>Not observed during field survey. | No.<br>No suitable habitat available within the subject site. |

| Scientific Name                            | Common Name                        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                            | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|--------------------------------------------|------------------------------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
| <i>Isoodon obesulus obesulus</i>           | Southern Brown Bandicoot (eastern) | E1            | E               | Found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River. Heath or open forest with a heathy understorey on sandy or friable soils.                                                             | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Miniopterus australis</i>               | Little Bentwing-bat                | V             | -               | East coast and ranges south to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.                                       | 6                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |
| <i>Miniopterus schreibersii oceanensis</i> | Eastern Bentwing-bat               | V             | -               | In NSW it occurs on both sides of the Great Dividing Range, from the coast inland to Moree, Dubbo and Wagga Wagga. Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland. | 551                                 | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |
| <i>Mormopterus norfolkensis</i>            | Eastern Freetail-bat               | V             | -               | Found along the east coast from south Qld to southern NSW. Dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.                                                                   | 8                                   | Potential. Not observed during field survey.                            | No.<br>Limited suitable habitat available within the subject site. |
| <i>Myotis macropus</i>                     | Southern Myotis                    | V             | -               | In NSW, found in the coastal band. It is rarely found more than 100 km inland, except along major rivers. Foraging habitat is waterbodies (including streams,                                                                       | 66                                  | Unlikely.                                                               | No.<br>No foraging habitat                                         |

| Scientific Name              | Common Name                                                        | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                 | Records within 10 km radius of site | Likelihood of Occurrence on site                                     | Assessment of Significance required                                                  |
|------------------------------|--------------------------------------------------------------------|---------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                              |                                                                    |               |                 | or lakes or reservoirs) and fringing areas of vegetation up to 20m.                                                                                                                                                                                      |                                     | Not observed during field survey.                                    | available within the subject site.                                                   |
| <i>Perameles nasuta</i>      | Long-nosed Bandicoot population in inner western Sydney            | E2            | -               | The exact area occupied by the population is not clearly defined, and includes the local government areas (LGA) of Marrickville and Canada Bay, with the likelihood that it also includes Canterbury, Ashfield and Leichhardt LGAs. Backyards, parkland. | 28                                  | Potential. Not observed during field survey.                         | No. Limited suitable habitat available within the subject site will not be impacted. |
| <i>Petauroides volans</i>    | Greater Glider population in the Eurobodalla local government area | E2            | V               | This population on the south coast of NSW is bounded by the Moruya River to the north, Coila Lake to the south and the Princes Highway and cleared land exceeding 700 m in width to the west. Eucalypt forests and woodlands.                            | 0                                   | Unlikely. Not observed during field survey. Not known from locality. | No                                                                                   |
| <i>Petaurus australis</i>    | Yellow-bellied Glider                                              | V             |                 | Along the eastern coast to the western slopes of the Great Dividing Range, from southern Qld to Victoria. Tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils.                                                     | 1                                   | Unlikely. Not observed during field survey.                          | No. No suitable habitat available within the subject site.                           |
| <i>Petrogale penicillata</i> | Brush-tailed Rock-wallaby                                          | E1            | V               | In NSW they occur from the Qld border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Rocky escarpments, outcrops and cliffs with a                                                 | 0                                   | Unlikely. Not observed during field survey. Not                      | No                                                                                   |

| Scientific Name                  | Common Name                    | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                                                                                      | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                                       |
|----------------------------------|--------------------------------|---------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                                  |                                |               |                 | preference for complex structures with fissures, caves and ledges.                                                                                                                                                                                                                                            |                                     | known from locality.                                                    |                                                                                           |
| <i>Phascolarctos cinereus</i>    | Koala                          | V             | V               | In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands. Eucalypt woodlands and forests.                              | 48                                  | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.                             |
| <i>Pseudomys novaehollandiae</i> | New Holland Mouse              | -             | V               | Fragmented distribution across eastern NSW. Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.                                                                                                                                                                        | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                                        |
| <i>Pteropus poliocephalus</i>    | Grey-headed Flying-fox         | V             | V               | Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.                                                                   | 309484                              | Potential. Not observed during field survey.                            | Yes.<br>Foraging habitat within the subject site will be directly or indirectly impacted. |
| <i>Saccolaimus flaviventris</i>  | Yellow-bellied Sheath-tail-bat | V             | -               | There are scattered records of this species across the New England Tablelands and North West Slopes. Rare visitor in late summer and autumn to south-western NSW. Almost all habitats, including wet and dry sclerophyll forest, open woodland, open country, mallee, rainforests, heathland and waterbodies. | 6                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.                             |

| Scientific Name                  | Common Name             | BC Act Status | EPBC Act Status | Distribution and Habitat                                                                                                                                                                                                                             | Records within 10 km radius of site | Likelihood of Occurrence on site                                        | Assessment of Significance required                                |
|----------------------------------|-------------------------|---------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------|
| <i>Scoteanax rueppellii</i>      | Greater Broad-nosed Bat | V             | -               | Both sides of the great divide, from the Atherton Tableland in Qld to north-eastern Victoria, mainly along river systems and gullies. In NSW it is widespread on the New England Tablelands. Woodland, moist and dry eucalypt forest and rainforest. | 4                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>Limited suitable habitat available within the subject site. |
| <b>Reptilia</b>                  |                         |               |                 |                                                                                                                                                                                                                                                      |                                     |                                                                         |                                                                    |
| <i>Hoplocephalus bungaroides</i> | Broad-headed Snake      | E1            | V               | Largely confined to Triassic and Permian sandstones within the coast and ranges in an area within approximately 250 km of Sydney. Dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths, grassy woodlands. | 0                                   | Unlikely.<br>Not observed during field survey. Not known from locality. | No                                                                 |
| <i>Varanus rosenbergi</i>        | Rosenberg's Goanna      | V             | -               | In NSW, found on the Sydney Sandstone in Wollemi National Park, in the Goulburn and ACT regions and near Cooma in the south. Also recorded from the South West Slopes near Khancoban and Tooma River. Heath, open forest and woodland.               | 1                                   | Unlikely.<br>Not observed during field survey.                          | No.<br>No suitable habitat available within the subject site.      |

V= Vulnerable; E= Endangered; E2= Endangered population; E= Endangered, CE= Critically Endangered

## Appendix B Vegetation Plot Data

### SPECIES MATRIX (SPECIES RECORDED BY PLOT)

| Form | Species name                                      | Common name           | Exotic (*) | High Threat Weed | Cover (%) Plot 1 | Abundance Plot 1 | Cover (%) Plot 2 | Abundance Plot 2 | Cover (%) Plot 3 | Abundance Plot 3 |
|------|---------------------------------------------------|-----------------------|------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| TG   | <i>Acacia longifolia</i> subsp. <i>longifolia</i> | Sydney Golden Wattle  |            |                  |                  |                  |                  |                  | 2                | 1                |
| GG   | <i>Cynodon dactylon</i>                           | Couch                 | *          |                  |                  |                  | 0.2              | 20               |                  |                  |
| GG   | <i>Paspalum dilatatum</i>                         |                       | *          | *                |                  |                  | 2                | 50               |                  |                  |
| FG   | <i>Plantago lanceolata</i>                        | Plantain              | *          |                  |                  |                  | 3                | 50               |                  |                  |
| FG   | <i>Trifolium repens</i>                           | White Clover          | *          |                  |                  |                  | 3                | 100              |                  |                  |
| TG   | <i>Eucalyptus sideroxylon</i>                     | Red Ironbark          |            |                  | 7                | 1                |                  |                  |                  |                  |
| TG   | <i>Eucalyptus scoparia</i>                        | Wallangara White Gum  |            |                  |                  |                  | 8                | 2                |                  |                  |
| TG   | <i>Quercus ilux</i>                               | Hom Oak               | *          |                  |                  |                  | 1                | 10               |                  |                  |
| TG   | <i>Eucalyptus teriticornis</i>                    | Forest Red Gum        |            |                  | 8                | 2                |                  |                  |                  |                  |
| TG   | <i>Melaleuca quinquenervia</i>                    | Broadleaved Paperbark |            |                  | 5                | 4                |                  |                  |                  |                  |
| TG   | <i>Lophostemon confertus</i>                      | Brush Box             |            |                  |                  |                  |                  |                  | 10               | 2                |
| TG   | <i>Ficus microcarpa</i>                           | Chinese bunyan        | *          |                  |                  |                  |                  |                  | 20               | 3                |
| GG   | <i>Stenotaphrum secundatum</i>                    | Buffalo Grass         | *          |                  | 75               | 100              | 50               | 100              |                  |                  |
| GG   | <i>Sporobolus africanus</i>                       | Parramatta Grass      | *          |                  | 0.1              | 10               | 0.1              | 5                | 15               | 100              |
| GG   | <i>Ehrharta erecta</i>                            | Panic Veldtgrass      | *          |                  | 3                | 50               | 2                | 40               | 10               | 100              |
| GG   | <i>Microleana stipoides</i>                       | Microleana            |            |                  | 0.1              | 1                |                  |                  |                  |                  |
| GG   | <i>Digitaria ciliaris</i>                         | Summer Grass          | *          |                  | 0.1              | 20               |                  |                  |                  |                  |
| GG   | <i>Eleusine indica</i>                            | Crowsfoot Grass       | *          |                  | 0.1              | 10               |                  |                  |                  |                  |
| GG   | <i>Bromus catharticus</i>                         | Prairie Grass         | *          |                  | 0.1              | 20               |                  |                  |                  |                  |

| Form | Species name                   | Common name       | Exotic (*) | High Threat Weed | Cover (%) Plot 1 | Abundance Plot 1 | Cover (%) Plot 2 | Abundance Plot 2 | Cover (%) Plot 3 | Abundance Plot 3 |
|------|--------------------------------|-------------------|------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| FG   | <i>Sida rhombifolia</i>        | Paddy's Lucerne   | *          |                  | 0.1              | 3                | 0.5              | 50               | 1                | 30               |
| FG   | <i>Sonchus oleraceus</i>       | Common sowthistle | *          |                  | 0.1              | 15               | 0.5              | 30               | 1                | 20               |
| FG   | <i>Oxalis sp</i>               | Oxalis            | *          |                  | 1                | 50               |                  |                  |                  |                  |
| FG   | <i>Conyza bonariensis</i>      | Flaxleaf Fleabane | *          |                  | 0.1              | 5                |                  |                  |                  |                  |
| OG   | <i>Arauja sericifera</i>       | Moth Vine         | *          | *                | 0.1              | 2                |                  |                  |                  |                  |
| FG   | <i>Capsella bursa-pastoris</i> | Shepherd's Purse  | *          |                  |                  |                  | 0.15             |                  |                  |                  |

Tree (TG), Shrub (SG), Grass & Grasslike (GG), Forb (FG), Fern (EG), Other (OG)

## VEGETATION INTEGRITY DATA (COMPOSITION, STRUCTURE AND FUNCTION)

### Plot location data

| Plot no. | PCT                               | PCT Condition | Eastings | Northings | Bearing |
|----------|-----------------------------------|---------------|----------|-----------|---------|
| 1        | PCT 830                           | Low           | 0336728  | 6248564   | 297°    |
| 2        | Does not meet any PCT description | N/A           | 0320423  | 6243832   | 295°    |
| 3        | Does not meet any PCT description | N/A           | 0320293  | 6243840   | 286°    |

### Composition (number of native species)

| Plot no. | Tree | Shrub | Grass | Forb | Fern | Other |
|----------|------|-------|-------|------|------|-------|
| 1        | 3    | 0     | 1     | 0    | 0    | 0     |
| 2        | 1    | 0     | 0     | 0    | 0    | 0     |
| 3        | 3    | 0     | 0     | 0    | 0    | 0     |

### Structure (Total cover)

| Plot no. | Tree | Shrub | Grass | Forb | Fern | Other |
|----------|------|-------|-------|------|------|-------|
| 1        | 20   | 0     | 0.1   | 0    | 0    | 0     |
| 2        | 8    | 0     | 0     | 0    | 0    | 0     |
| 3        | 37   | 0     | 0     | 0    | 0    | 0     |

| Function |                                    |              |              |                    |                |                  |                  |                 |                 |               |            |                        |
|----------|------------------------------------|--------------|--------------|--------------------|----------------|------------------|------------------|-----------------|-----------------|---------------|------------|------------------------|
| Plot no. | Large Trees (as per PCT Benchmark) | Hollow trees | Litter Cover | Length Fallen Logs | Tree Stem 5- 9 | Tree Stem 10-1 9 | Tree Stem 20-2 9 | Tree Stem 30-49 | Tree Stem 50-79 | Tree Stem 80+ | Tree Regen | High Threat Weed Cover |
| 1        | N/A                                | 0            | 12.50        | 0                  | 1              | 2                | 1                | 6               | 6               | 0             | 0          | 0.1                    |
| 2        | N/A                                | 0            | 4.4          | 0                  | 1              | 1                | 0                | 2               | 2               | 1             | 3          | 2                      |
| 3        | N/A                                | 1            | 0            | 1                  | 0              | 0                | 1                | 1               | 2               | 1             | 1          | 0                      |

## Appendix C Plot and vegetation zone photos





**Figure 4: Photographs of the start and end of each transect**

## Appendix D Tests of Significance

Section 7.3 of the BC Act 2016 requires a number of factors to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. These factors are addressed below for the species likely to be impacted.

### ***Pteropus poliocephalus* (Grey-headed Flying-fox)**

*Pteropus poliocephalus* (Grey-headed Flying-fox, GHFF) utilises a wide variety of habitats (including disturbed areas) for foraging and are recorded as travelling long distances on feeding forays (Churchill 1998). Fruits and flowering plants of a wide variety of species are the main food source. The species roosts in large 'camps' of up to 200,000 individuals. Camps are usually formed close to water and along gullies however the species has been known to form camps in urban areas (Churchill 1998).

This species was not recorded on site during the survey but has been recorded within 10 km of the site (Figure 2, **Appendix A**). GHFF do not use the subject site for roosting, but the trees (particular Fig within the site are potential foraging habitat. The closest Nationally Important Flying-fox Camp is located approximately 9 km away at Wolli creek, and another Flying-fox Camp approximately 5 km away at Oatley.

*(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The GHFF is considered to be one population that intermixes up and down the east coast of Australia, therefore any bat population is a meta-population of this one population. Impacts to GHFF that are likely to place this population at risk of extinction would include widespread loss of foraging habitat or disturbance of roosting sites. The proposed development will impact 0.14 ha of the Urban Native/Exotic Vegetation that includes potential foraging habitat. This loss of vegetation is minor compared to the 0.61 ha of it that are being retained. As such, the proposal is unlikely to adversely affect GHFF such that its population will be placed at risk of extinction.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*

*(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,*

Not applicable.

*(c) in relation to the habitat of a threatened species or ecological community:*

*(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*

This vegetation being removed and modified as part of the proposed development represents potential foraging habitat for the GHFF. Given that a larger proportion of potential foraging habitat will be retained by the proposed development, this impact is minor.

*(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*

The study area is not part of a wildlife corridor due to its use as a school within a highly urbanised area. Trees and shrubs are scattered throughout the study area and surrounding land, including planted street trees. The proposed development will not have an adverse impact on habitat connectivity. GHFF is a highly mobile species and will continue to use the study area and surrounds for foraging.

*(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,*

The habitat to be removed is a minor amount of marginal foraging habitat for GHFF and is not important for the long-term survival of the GHFF in the locality

*(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

The proposed development will not directly or indirectly impact any declared area of outstanding biodiversity value.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.*

One key threatening process, “clearing of native vegetation”, is relevant to this proposal. However, with respect to the GHFF, the proposed development involves a minimal impact to potential foraging habitat.

## Conclusion

The proposal is unlikely to constitute a significant impact on GHFF given that:

The proposed works would constitute a minor disturbance to an area of potential foraging habitat compared to larger areas of suitable foraging habitat within the site and the overall region,

The proposal would not isolate or fragment any currently connecting areas of habitat in terms of use by highly mobile species,

GHFF camps will not be disturbed.

Under the BC Act, there will be no requirement for a Biodiversity Assessment Report (BDAR) or offsets under the Biodiversity Offsetting Scheme.

## Appendix E Application of Significant Impact Criteria (EPBC Act)

This assessment has been prepared in accordance with the EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DoE 2013). These guidelines have been established to assist proponents to determine whether a proposed action is likely to result in a significant impact on a matter of national environmental significance.

### ***Pteropus poliocephalus (Grey-headed Flying-fox)***

This species was not recorded on site during the survey, but has been recorded within 10 km of the site (Figure 2, **Appendix A**). The closest Nationally Important Flying-fox Camp is located approximately 9 km away at Wolli creek, and another Flying-fox Camp approximately 5 km away at Oatley. This species is known to utilise the same camp site for consecutive years with some camps being used for over a century (OEH 2017). The vegetation within the study area provides potential foraging habitat for the species.

*An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:*

*Criterion a: lead to a long-term decrease in the size of an important population of a species*

An important population is defined as a population that is necessary for a species' long-term survival and recovery (DoE 2013). The GHFF is considered to be one population that intermixes up and down the east coast, therefore any bat population is a meta-population of this one "important population".

Under the proposed action 0.14 ha of the Urban Native/Exotic Vegetation that includes potential foraging habitat will be impacted. This removal of vegetation is minor compared to the 0.61 ha of Urban Native/Exotic Vegetation being retained. The removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of GHFF.

*Criterion b: reduce the area of occupancy of an important population;*

The distribution of the GHFF extends from Bundaberg in Queensland to Melbourne, Victoria and from the coast inland to the western slopes of New South Wales. The removal of potential foraging habitat from the study area would not reduce the area of occupancy of an important population of GHFF. The GHFF is not known to occupy the study site but may occasionally forage within the study area.

*Criterion c: fragment an existing important population into two or more populations;*

The GHFF is a highly mobile species and forms one large intermixing population along the east Australian coast. No roosting habitat will be impacted and large areas of foraging habitat are present in the region. The proposed action will not fragment an existing important population into two or more populations.

*Criterion d: adversely affect habitat critical to the survival of a species;*

The draft recovery plan for GHFF (DECCW 2009) identifies foraging habitat that is critical to the survival of GHFF as follows:

Foraging habitat that meets at least one of the following criteria can be explicitly identified as habitat critical to survival, or essential habitat, for GHFF. Natural foraging habitat that is:

1. productive during winter and spring, when food bottlenecks have been identified
2. known to support populations of > 30 000 individuals within an area of 50 km radius (the maximum foraging distance of an adult)
3. productive during the final weeks of gestation, and during the weeks of birth, lactation and conception (September to May)
4. productive during the final stages of fruit development and ripening in commercial crops affected by Grey-headed Flying-foxes (months vary between regions)
5. known to support a continuously occupied camp.

There are several GHFF camps within 50 km of the study area (DoE 2017). While populations fluctuate between the camps, the Wolli Creek bat camp (situated approximately 9 km east of the study area) and the Centennial Parklands bat camp (situated approximately 17 km northeast of the study area) have each been known to have a population greater than 30,000 individuals.

*Criterion e: disrupt the breeding cycle of an important population;*

The proposed action will not disrupt the breeding cycle of the GHFF given that the closest camps are located at a minimum of 5 km away from the study area.

*Criterion f: modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;*

No GHFF camps would be removed or disturbed, and extensive foraging habitat exists in the region within large conservation areas, in urban areas and within the site itself. The proposed works will not modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

*Criterion g: result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;*

The site is already disturbed and modified and the proposed works will not result in the establishment of an invasive species that is harmful to the GHFF.

*Criterion h: introduce disease that may cause the species to decline; or*

Grey-headed Flying-fox are reservoirs for the Australian bat lyssavirus and can cause clinical disease and mortality in GHFF (DECCW 2009). The proposed action would not increase the incidence of this disease.

*Criterion i: interfere substantially with the recovery of the species*

A Draft National Recovery Plan for the GHFF was developed in 2009. The relatively small amount of foraging habitat to be removed is unlikely to substantially interfere with the recovery of this species.

## Conclusion

The proposed works will result in the loss 0.14 ha of the Urban Native/Exotic Vegetation that includes potential foraging habitat for GHFF. The proposed action is unlikely to impact the lifecycle of the GHFF or lead to a decline in the population of GHFF. Based on the information provided above, the proposed works are unlikely to result in a significant impact for the GHFF. Therefore, a referral to the Commonwealth is not required.

