Biodiversity Impact Assessment

# Parramatta East Public School Upgrade

Prepared for: Department of Education
10 March 2025

SMEC INTERNAL REF. 30018043-200.03

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## SMEC Company Details

| | |
|---|---|
| **Approved by** | H. Selby |
| **Address** | Level 7, 40 Mount Street, North Sydney, NSW |
| **Phone** | +61 (02) 9925 5555 |
| **Email** | Hugh.Selby@smec.com |
| **Website** | www.smec.com |
| **Signature** |  |

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# Executive Summary

This Biodiversity Impact Assessment has been prepared by SMEC Australia Pty Ltd (SMEC) on behalf of the NSW Department of Education (DoE) to evaluate the potential biodiversity impacts associated with the proposed upgrade of Parramatta East Public School (PEPS) at Brabyn Street, North Parramatta, NSW.

A desktop review and site inspection identified that the site is largely urbanised and lacks remnant native vegetation. The vegetation present consists mainly of planted native and exotic species with minimal native understorey or ground cover. The site does not support any endangered ecological communities.

Habitat values for threatened species on the site is low. Three threatened fauna species (Grey-headed Flying-fox, Eastern Coastal Free-tailed Bat, and Large Bent-winged Bat) may utilise the site for foraging but are not reliant on it for breeding or roosting.

The assessment identified limited direct impacts, largely restricted to the removal of 12 trees—two of which are native, one is locally indigenous, and eight are exotic. The removed vegetation is not classified as a native plant community under the NSW *Biodiversity Conservation Act 2016* (BC Act). No significant impact to threatened species was assessed as likely through likelihood of occurrence analysis and assessments of significance.

Landscaping plantings will replace tree numbers in excess of those lost, and tree and shrub species chosen will provide improved foraging and sheltering resources for local fauna.

Implementation of mitigation measures would result in minimal impacts of the activity on biodiversity values. Most mitigations required are standard environmental controls to be outlined in DoE project Construction Environmental Management Plans.

# 1. Introduction

This Biodiversity Assessment has been prepared by SMEC Australia Pty Ltd (SMEC) on behalf of the NSW Department of Education (DoE) to assess the potential biodiversity impacts that could arise from the Parramatta East Public School (PEPS) upgrade (the proposed activity) at Brabyn Street, North Parramatta, NSW (the site). The works are proposed by the NSW Department of Education to meet the growth in educational demand in Collet Park precinct, and the broader North Parramatta area.

In 2022, SMEC prepared a *Biodiversity Constraints: Preliminary Review Report* (referred to in this note as the Constraints Report) to provide advice on the presence of biodiversity values within the site and identify constraints to the proposed activity. It was also identified that further assessment of impacts may be required. Given that the planning pathway has now been confirmed as a Review of Environmental Factors (REF), the town planner has advised that a Biodiversity Assessment Report will need to be prepared to include a description and assessment of the proposed activity, in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the REF requirements.

This report has been prepared to provide an impact assessment in respect to the final design. It provides information on the biodiversity values within the site and assesses these values in relation to the NSW *Biodiversity Conservation Act 2016* (BC Act), the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and in accordance with the Biodiversity Assessment Method 2020 (BAM).

## 1.1 Summary of the Activity

The activity comprises upgrades to PEPS to provide replacement teaching facilities in place of the existing temporary and permanent facilities that are no longer fit for purpose, involving the following works:

- Site preparation and required earthworks;
- Demolition of existing Buildings C, D, E and F, and associated structures including adjacent ramps and walkways;
- Construction of the following:
  - A new 3-storey school building (referred to as Block R) including teaching spaces, library/administration, and staff/student amenities;
  - Upgrade of soft and hard landscape and playground areas;
  - A new at-grade parking area;
  - Formalised waste area, with access being retained from Gaggin Street;
  - Public Domain Works with upgrades to the pedestrian access south of the school, and new kiss and ride zone on Albert Street East;
  - Entrance and School logo signage along the Northern Albert Street East frontage of Block R;
- Refurbishment works to existing buildings;
- Removal of trees as required and retention where possible; and
- Installation and augmentation of services and infrastructure as required.

Refer to the Review of Environmental Factors prepared by Ethos Urban for a full description of works.

## 1.2 Site Description

The site is located at Brabyn Street within the City of Parramatta Local Government Area (LGA). Parramatta East Public School is located in the suburb of North Parramatta, NSW. The site is approximately 1.5km northeast of the Parramatta CBD and 24km west of the Sydney CBD.

The site currently comprises a single lot to make up Parramatta East Public School, referred to as Lot 100, DP1312418, and the land is owned by the Minister for Education and Early Learning.

The site has an area of approximately 1.782Ha, is of an irregular shape, and is bounded by Brabyn Street to the west, Albert Street East to the north, and Gaggin Street/Webb Street to the east. The proposed activity area is contained within the site and represents where the proposed works will be undertaken, with an area of approximately 1.492Ha.

An aerial image of the site and Proposal area is shown at Figure 1–1.


Figure 1–1: Site aerial. Source: Nearmap, Ethos Urban

# 2. Methods

## 2.1 Desktop review

Database searches and literature reviews were undertaken to identify threatened species, populations and Threatened Ecological Communities (TECs) that have been recorded or are predicted to occur within the locality.

Searches were undertaken within a five-kilometre radius, centred on the study area. Data sources used were:

- BioNet Atlas Species Sightings (DPE 2022a)
- EPBC Protected Matters Search Tool (DCCEEW 2022)
- BioNet Atlas Threatened Biodiversity Profiles (DPE 2022b)
- BioNet Vegetation Classification (DPE 2022c)
- Atlas of Living Australia online database (ALA 2022)
- The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 (OEH, 2016) VIS_ID 4489 (DPE 2016)
- The NSW State Vegetation Type Map (SVTM) – Edition C1.1.M1 (DPE 2022d) and update C2.0.M2.1 (November2024).

A likelihood of occurrence table (Appendix C) was compiled to assess the likelihood of each of the threatened species identified during desktop research being present within the study area. The assessment was based on habitat requirements in the Threatened Biodiversity Profiles Database, PlantNet, species profiles and scientific literature where available. It includes consideration of location of nearby records and observation dates; presence of key habitat features and information about species populations in the area. The likelihood table was updated following the site inspection. Exclusively marine or aquatic species were removed due to the absence of suitable habitat.

## 2.2 Site Inspection

A site inspection of terrestrial habitat was undertaken by two ecologists on 13 September 2022. Surveys completed included:

- Vegetation plot surveys, including assessment of floristic structure and composition
- Mapping of vegetation communities
- Identification of potential habitat for threatened flora and fauna
- Opportunistic sightings of vertebrate fauna species.

Rapid Data Points (RDPs) were used to check for presence of native vegetation communities. RDPs are quick, short records of floristic information collected at specific points on the site. The objective of these RDPs is to summarise the dominant vegetation surrounding each point. They do not involve laying a standardised plot (e.g. 20 m x 20 m) but will typically involve a 10-metre radius around the point, and size may be adapted as needed to confirm or exclude a previously mapped vegetation unit. The information collected includes the dominant species for major structural layers – the canopy, shrub layer and ground layer. Additional species are also collected if they are relevant to providing diagnostic evidence to a potentially present TEC in the location. The methodology has been adapted from the Native Vegetation Interim Type Standard (Sivertsen 2009).

No formal threatened flora and fauna surveys were undertaken. A random meander through the study area was used to identify any habitat features that may be used by threatened fauna species.

# 3. Existing environment

## 3.1 Landscape attributes

The landscape in which the study area occurs is described in Table 3–1.

Table 3–1: Landscape attributes

| Value | Name | Description |
|---|---|---|
| NSW Landscape (Mitchell 3.1) (DECC 2002) | Ashfield Plains | Undulating hills and valleys on horizontal Triassic shale and siltstone, occasional quartz sandstones especially near the margin of the Port Jackson landscape. General elevation 0 to 45m, local relief <20m. Coastal extension of the Cumberland Plain landscape. Red and brown texture-contrast soils on crests grading to yellow harsh texture-contrast soils in valleys. Open forest of broad-leaved ironbark (*Eucalyptus fibrosa* ssp. *fibrosa*), grey box (*Eucalyptus moluccana*), with tea-tree (Leptospermum sp.) along creeks and forests of turpentine (*Syncarpis glomulifera*), red mahogany (*Eucalyptus resinifera*), grey gum (*Eucalyptus punctata*), Sydney blue gum (*Eucalyptus saligna*) and blackbutt (*Eucalyptus pilularis*) with a grassy understorey of kangaroo grass (*Themeda triandra*) on moister sites. |
| Soil Landscape (DECC 2008) | Blacktown (northern extent of site) | Landscape – gently undulating rises on Wianamatta Group shales and Hawkesbury shale. Local relief to 30 m, slopes are usually <5%. Broad rounded crests and ridges with gently inclined slopes. Cleared eucalypt woodland and tall open forest (wet sclerophyll forests). |
| | Birrong (southern extent of site) | Landscape – level to gently undulating alluvial floodplain draining Wianamatta Group shales. Local relief to 5 m, slopes <3%. Broad valley flats. Extensively cleared tall open-forest and woodland. |

The Parramatta River flows in an easterly direction approximately one kilometre south of the study area. Approximately 900 metres east of the study area, Vineyard Creek flows south into the Parramatta River.

## 3.2 Vegetation communities

The locality is urbanised and no remnant native vegetation is mapped on or close the study area. The closest patches of native vegetation mapped (DPE 2022d) are small patches, nearly one kilometre away from the site along Vineyard Creek to the east of James Ruse Drive. Previous broadscale mapping (DPIE 2016) had mapped vegetation at the site as 'Urban native/exotic'. Survey using RDP sampling confirmed this vegetation type but with some refinement to the extent of the patches (Figure 3–3).

Tree and shrub species across the site represent a mixture of planted native and non-native trees. Several of the more common native species are not locally indigenous including brush box (*Lophostemon confertus*) shown in Figure 3–1 and tallowwood (*Eucalyptus microcorys*). The mix of plants species identified at the various sampling points are not consistent with any native NSW plant community types (PCTs). The species observed are listed in Appendix B.

In all areas the understory vegetation is either absent or consists of non-indigenous lawn grasses (as shown in Figure 3–2), therefore the mapped vegetation extent is based on tree canopies, and clearing impacts are best assessed on a tree-by-tree basis.

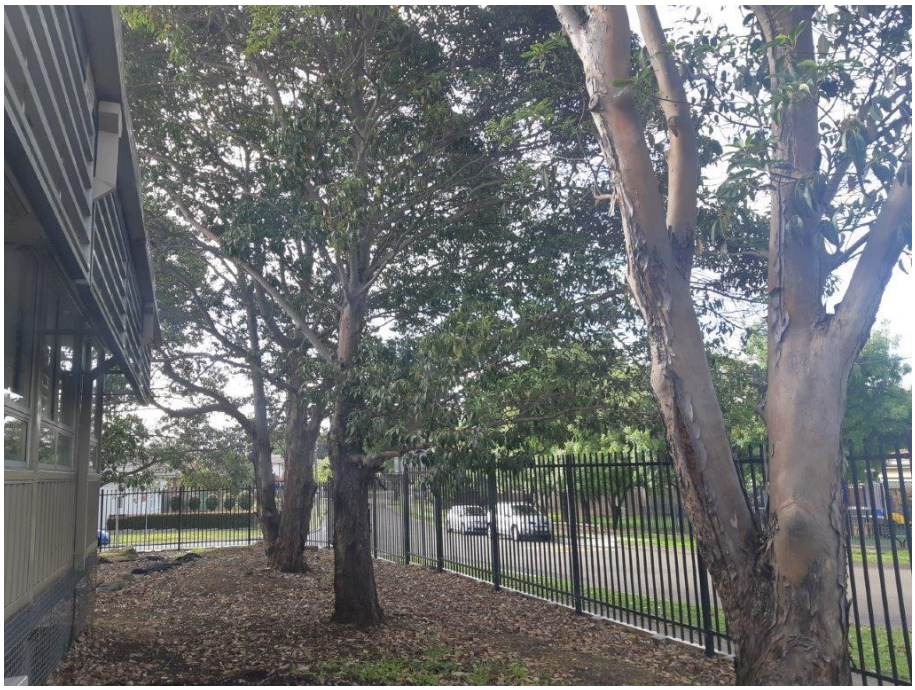

Figure 3–1: Brush box trees (*Lophostemon confertus*) along Gaggin Street are non-local native trees

Figure 3–2: Southern open area with mixed native and exotic trees without a native understory or ground layer


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## Legend

- Site Boundary

**Vegetation Mapping**

- Urban Exotic/Native

**Rapid Data Points**

- Rapid Data Points

**Fauna Surveys**

- Drey or nest

**Flora Surveys**

- Magenta Lillypilly (Syzygium paniculatum)

**Sources:**
1. Roads © Roadnet MDS 2020
2. Vegetation Mapping © State Government of NSW and Department of Planning and Environment 2016
3. Basemap © public_NSW_Imagery: © Department of Customer Service 2020
Light Gray Base: DESI, Esri, TomTom, Garmin, FAO, NOAA, USGS
Light Gray Reference: DESI, Esri, TomTom, Garmin, FAO, NOAA, USGS



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| **Date:** | 6/03/2025 |
| **Created by:** | LL16284 |
| **Page Size:** | A3 |

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## 3.3 Weeds

The site appears well managed and no weeds with priority biosecurity control measure under the NSW Biosecurity Act 2015 were observed. As noted in the Arborist report, camphor laurel trees (*Cinnamomum camphora*) are considered a weed species. Within the Greater Sydney Area camphor laurels fall under the general biosecurity duty of the NSW Biosecurity Act 2015, which states – "Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised". As the site is some distance from remnant bushland the risk posed by this species of spreading and causing environmental damage should be considered low and their removal not necessary if there are reasons to retain them for amenity value.

## 3.4 Habitat features

Although the vegetation within the study area is not considered a native vegetation community, it still provides important habitat features that support urban tolerant fauna. Nine diurnal bird species were recorded within or nearby the study area during the site visit (Appendix B). Habitat features that were observed in the study area, included:

- Tree hollows – small notches (less than five-centimetre diameter) and crevices were observed occasionally in mature canopy trees and rough-barked trees
- Flowering Eucalypts including spotted gum (*Corymbia maculata*) and tallowwood (*Eucalyptus microcorys*) are important food sources for nectar feeding species and are already given the highest retention rating in the Arborist report.
- Flowering shrubs – planted flowering shrubs and large shrubs in street plantings provide foraging habitat for nectar feeding species (Figure 3–4).

A possible possum drey was observed in the canopy of a brush box near the corner of Gaggin Street. The nest noted in the arborist report in Casuarina tree 19 was also noted and appeared to be a poorly formed clump of twigs and leaves that did not appear to be in recent use and is located well away from proposed disturbance areas.

Figure 3–4: School landscape plantings

## 3.5 Threatened species

The study area does not provide suitable habitat for any threatened flora species and none are considered likely to occur (Appendix C). Two magenta lillypilly (*Syzygium paniculatum*) - listed as endangered under the BC Act and vulnerable under the EPBC Act, were identified within the study area (Figure 3–3). This is a commonly planted species and planted specimens outside their endemic vegetation habitat are not considered threatened.

Three threatened fauna with greater than a moderate likelihood of occurrence (Appendix C) have been identified:

- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*).

Each of these species are nocturnal so would only utilise the study area outside usual construction and operation hours of the school facilities.

Microbats may use the aerial space above and around the canopy trees for foraging and some species may use small notches and crevices in mature trees or buildings for roosting. None of these roosts would be suitable as maternity roosts.

The site is likely to form part of a much wider foraging area for the Grey-headed Flying-fox, with individuals from numerous camps able to access the site including Parramatta Park (1.8 kilometres west) and Clyde (3.6 kilometres south).

Vegetation within the study area has been mapped as potential Koala habitat, however, given the urban locality it is considered unlikely the species would occur.

# 4. Impact assessment

## 4.1 Direct impacts

The following direct impacts have the potential to occur:

- Construction
  - Vegetation clearing
  - Removal of habitat features
  - Spread of invasive plants
  - Disturbance of resident native fauna.

No additional impacts are likely during operation.

### 4.1.1 Vegetation clearing

The vegetation requiring removal is assessed as a mixed urban exotic/native community and the approximately 0.14 hectares for removal is not clearing of a native plant community as defined under the BC Act. The ground cover is composed of exotic lawn grasses and planted garden beds, and the impact is best quantified in terms of the trees removed.

Construction requires the removal of 12 trees of which two are native, one is a local species, eight are exotic and one is dead (Civica 2025). Only one of these trees was identified as having high retention value. The location of trees to be removed are shown on Figure 4–1. The trees to be removed have been assessed for ecological values (Table 4–1). The one tree with a high retention value in the arborist's report (Civica 2025; Tree 5) corresponds to the only large tree of a locally indigenous species (a spotted gum). The other two native trees species are commonly planted and not a component of a local native plant community.

Table 4–1: Ecological appraisal of trees for removal as identified in the arborist report (Civica 2025)

| Tree number | Species | Ecological value | Notes |
|---|---|---|---|
| 1 | Cypress (*Cupressus* sp.) | Low | Exotic |
| 2 | Cypress (*Cupressus* sp.) | Low | Exotic |
| 3 | Chinese Elm (*Ulmus parvifolia*) | Low | Exotic |
| 4 | Chinese Elm (*Ulmus parvifolia*) | Low | Exotic |
| 5 | Spotted gum (*Corybia maculata*) | High | Native – provides nectar and seeds eaten by some birds. Know feed species for grey-headed flying foxes. |
| 6 | Chinese Elm (*Ulmus parvifolia*) | Low | Exotic |
| 7 | Chinese Elm (*Ulmus parvifolia*) | Low | Exotic |
| 45 | Dead tree | Low | Small, no habitat |
| 46 | Kanooka (*Tristaniopsis laurina*) | Moderate | Commonly planted native. Summer flowering, mainly attracts insects. |
| 47 | *Pistacia chinense* | Low | Exotic |
| 49 | Pine (*Pinus radiata*) | Low | Exotic |
| 51 | *Eucalyptus scoparia* | Moderate | Commonly planted ornamental, indigenous to northern NSW. Small summer blossoms suitable forage for insects and small birds. |

New trees proposed for planting in the Landscape plan will include 15 ivory curl (*Buckinghamia celissima*) and one brushbox (*Lophostomon confertus*), both known to provide nectar resources for flying foxes. Other trees include grey myrtle (*Backhousia myrtifolia*) and blue berry ash (*Elaeocarpus reticulatus*), both attract pollinating insects during flowering and blueberry ash produce berries which attract a range of native birds. Shrub species in the landscape plan including bottle brushes (*Callistemon citrinus*) and *Banksia spinulosa* are also excellent resources for nectar feeding animals.


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## Legend

- Site Boundary
- Existing tree to be removed
- Existing tree to be Retained
- Structural Root Zone
- Tree Protection Zone
- Proposed Tree

**Constraints Mapping**

- Low
- Medium

## Project Location


**Sources:**
1. Roads © Roadnet MDS 2020
2. © JDH Architects 2024
2. Australia latest:
Light Gray Base: DESI, Esri, TomTom, Garmin, FAO, NOAA, USGS
Light Gray Reference: DESI, Esri, TomTom, Garmin, FAO, NOAA, USGS



**Project No:** 30018043
**Figure No:** 4-1
**Figure Name:** Location of trees to be removed in relation to constraints mapping
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### 4.1.2 Threatened species habitat

No important habitat features for threatened species potentially occurring in the locality will be impacted. The trees to be removed include potential foraging habitat for nectar feeding species and microbats. In assessment of the value of these trees, foraging opportunities for Grey-headed Flying-foxes and some microbats were considered. No significant impacts were found in assessments of significance (Appendix A).

### 4.1.3 Spread of invasive plants

The risks are considered very low within the managed gardens of the site and no specific mitigation measures are proposed.

### 4.1.4 Disturbance of resident native fauna

Trees in which possible nests or possum dreys were observed will not be removed. It is possible that microbats may utilise buildings for roosting, however, this is unlikely due to the variable temperatures that occur in demountable buildings. No specific mitigation measures are proposed.

## 4.2 Indirect impacts

The following indirect construction impacts were identified in the constraints report:

- Construction
  - Disturbance of resident native fauna
  - Increased noise and air pollution during construction hours
  - Changes to drainage
  - Increase in sedimentation
- Operation
  - Marginal increase in noise pollution due to increased student numbers.

In the context of the site's urban environment and low likelihood of threatened species presence, none of these impacts are likely to present significant impacts. Standard construction environmental control measures implemented through the Project Construction Environmental Management Plan (CEMP) is expected to minimise all indirect construction impacts. Operational impacts are minor and unavoidable.

# 5. Mitigation measures

The following mitigation measure in Table 5–1 are to be implemented to reduce impacts on ecological values.

Table 5–1: Mitigation measure for ecological values.

| Proposal Stage<br>Design(D)<br>Construction (C)<br>Operation (O) | Mitigation Measure | Reason for mitigation measure |
|---|---|---|
| C | Prior to the commencement of any construction work, trees not approved to be pruned or removed are to be protected and maintained in accordance with AS 4970-2009 Protection of Trees on Development Sites and a Tree Protection Plan, included in the CEMP.<br>The Tree Protection Plan should include all specific tree protection measures identified as needed in the Arboricultural Impact Assessment (Civica 2025). The tree protection measures are to remain in place until the completion of all construction work. | Minimise additional impacts to retained trees. |
| D, O | New lighting must avoid beaming directly into tree canopies | Reduced disturbance to nocturnal fauna. |

# 6. Conclusion

The proposed activity does not present significant risks to biodiversity values within the site or locality. The planned mitigation measures will further minimise potential impacts, ensuring compliance with the State and Federal biodiversity legislation.

# References

Atlas of Living Australia (2022) Atlas of Living Australia sightings search. Available at https://www.ala.org.au/. CSIRO, Canberra, ACT.

Civica (2025) Arboricultural Impact Assessment. Report prepared for School Infrastructure NSW.

DAWE (2021) National Recovery Plan for the Grey-headed Flying-fox 'Pteropus poliocephalus'. Department of Agriculture, Water and the Environment, Canberra, ACT.

Department of Climate Change, Energy, the Environment and Water (2022) Protected Matter Search Tool. Available at https://www.awe.gov.au/environment/epbc/protected-matters-search-tool [Accessed 11 July 2022] Department of Climate Change, Energy, the Environment and Water, Canberra, ACT.

Department of Environment and Climate Change (DECC) (2002) Descriptions for NSW (Mitchell) Landscapes - Version 2. Department of Environment and Climate Change, NSW.

Department of Environment and Climate Change (DECC) (2008) Soil and Land Resources of the Hawkesbury-Nepean Catchment. Department of Environment and Climate Change, Sydney, NSW.

Department of Planning and Environment (2016) The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 (OEH, 2016) VIS_ID 4489. Available at https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-the-sydney-metropolitan-area-oeh-2016-vis-id-4489. Department of Planning and Environment, Parramatta, NSW

Department of Planning and Environment (2022a) BioNet Atlas Threatened Biodiversity Profiles. Available at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet [Accessed February 2022]. NSW Department of Planning and the Environment, Parramatta, NSW.

Department of Planning and Environment (2022b) BioNet Vegetation Classification. Available at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet [Accessed September 2022]. NSW Department of Planning and the Environment, Parramatta, NSW.

Department of Planning and Environment (2022c) NSW State Vegetation Type Map. Available at https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map. NSW Department of Planning and the Environment, Parramatta, NSW.

Department of Planning and Environment (2024) BioNet Atlas Species Sightings. Available at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet [Accessed 10 February 2025]. NSW Department of Planning and the Environment, Parramatta, NSW.

Department of Planning, Industry and Environment (DPIE) (2020) Biodiversity Assessment Method. Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta NSW.

Department of Primary Industries (DPI) (2022) NSW WeedWise. Available at https://weeds.dpi.nsw.gov.au/ [Accessed various dates June 2022]. Department of Primary Industries, Orange, NSW.

JDH Architects (2022) Strategic Masterplan: Parramatta East Public School [Draft]. Report prepared for School Infrastructure NSW.

Sivertsen, D. (2009) Native Vegetation Interim Type Standard. Department of Environment, Climate Change and Water NSW, Sydney.

SMEC (2022) Biodiversity Constraints: Preliminary Review Report. Report prepared for School Infrastructure NSW.

Space Landscape Designs (2024) Landscape master plan (Rev E). Plan prepared for School Infrastructure NSW.

# Appendix A Assessments of Significance

### Eastern Coastal Free-tailed Bat and Large Bent-winged Bat – BC Act

The Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) and Large Bent-winged Bat (*Miniopterus orianae oceanensis*) are listed as Vulnerable under the BC Act. No targeted surveys were undertaken however both species have been recorded within 10 kilometres of the study area.

Although preferred habitat varies, both species forage in woodland or forest. They roost in tree hollows and/or man-made structures. No suitable maternity roosts occur in the study area. Both species are commonly detected in urban areas.

The proposed activity will require removal of trees that may provide foraging habitat for these species.

**(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 proposed activity requires the removal of 12 trees that provide potential habitat for the Eastern Coastal Free-tailed Bat and Large Bent-winged Bat. This habitat occurs in an urban landscape and does not form part of a native vegetation community.

The proposed activity is unlikely to result in the extinction of a viable local population of these species due to the availability of other more suitable habitat outside the study area.

**(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 to a threatened species.

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

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

The proposed activity requires the removal of 12 trees that provide potential habitat for the Eastern Coastal Free-tailed Bat and Large Bent-winged Bat.

**(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 occurs in a urban landscape. Given the ability of these species to negotiate fragmented habitats, the proposed activity is unlikely to result in fragmentation or isolation of any microbat habitat.

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

This habitat occurs in an urban landscape and does not form part of a native vegetation community. More suitable habitat, including breeding habitat, occurs outside the site.

**(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)**

No areas of outstanding biodiversity value have been identified in the locality.

**(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**

No key threatening process are considered relevant to the proposed activity and the Eastern Coastal Free-tailed Bat and Large Bent-winged Bat.

**Conclusion**

The proposed activity will result in the removal of 12 trees that may provide suitable foraging habitat for these microbat species. No breeding habitat will be impacted. The trees are not part of a native vegetation community and occur in an urban landscape. More suitable, larger areas of habitat area available in the locality.

The proposed activity is unlikely to have a significant impact on the Eastern Coastal Free-tailed Bat or Large Bent-winged Bat.

### Grey-headed Flying-fox – BC Act

The Grey-headed Flying-fox (*Pteropus poliocephalus*) is listed as Vulnerable under the BC Act. No targeted surveys were undertaken however the species is known to occur within 10 kilometres of the study area. They are distributed from Ingham in Queensland to Adelaide in South Australia, occupying the coastal lowlands and slopes (DAWE 2021).

Grey-headed Flying-foxes feed on flowering trees and fleshy-fruited trees and assist seed and pollen dispersal these species. They migrate in response to the seasonal availability of food resources and are capable of using fragmented and degraded habitat. They socialise, roost and breed in camps that are generally used repeatedly although occupation varies between some that are occupied continuously and some that are rarely used. Numbers at important camps often exceed 10,000 individuals (DAWE 2021).

The proposed activity requires removal of 12 trees, only one of which is a known feed tree (spotted gum) – producing nectar rich flowers in winter and spring. No camps would be impacted.

**(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**

Grey-headed Flying-foxes are known to occur in the locality but would only use the study area for foraging. The proposed activity requires removal of one tree that may provide foraging habitat for the Grey-headed Flying-fox.

The proposed activity is unlikely to result in the extinction of a viable local population of Grey-headed Flying-fox due to the availability of other suitable foraging habitat outside the study area and the lack of disturbance to any camps.

**(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 to a threatened species

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

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

The proposed activity requires removal of one tree that may provide foraging habitat for the Grey-headed Flying-fox. No camps occur near the study area.

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

The Grey-headed Flying-fox can undertake long-distance movements in response to the availability of feeding resources. The removal of vegetation within an urban area is unlikely to fragment the Grey-headed Flying-fox population.

**(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**

Grey-headed Flying-foxes breed in large numbers in camps that are used repeatably over the years. No flying-fox camps were identified in the study area. The nearest camp occurs at Parramatta Park.

The vegetation to be removed includes potential foraging habitat for the Grey-headed Flying-fox when suitable species are in flower. The locality contains larger areas of suitable foraging habitat.

The habitat to be removed is unlikely to be important to the long-term survival of the Grey-headed Flying-fox.

**(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)**

No areas of outstanding biodiversity value have been identified in the locality.

**(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**

No key threatening process are considered relevant to the proposed activity and the Grey-headed Flying-fox:

**Conclusion**

The proposed activity requires removal of one tree that may provide foraging habitat for the Grey-headed Flying-fox No camps would be impacted.

The proposed activity is unlikely to have a significant impact on the Grey-headed Flying-fox.

### Grey-headed Flying-fox – EPBC Act

The Grey-headed Flying-fox (*Pteropus poliocephalus*) is listed as Vulnerable under the EPBC Act.

According to the National Recovery Plan for the Grey-headed Flying-fox (DAWE 2021), the species is a single, mobile population across its range. Therefore, this population is considered an important population.

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

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

Grey-headed Flying-foxes forage opportunistically on fruits and flowers across a large range. They roost and breed in camps that are used repeatedly between years.

The proposed activity requires removal of 12 trees that may provide foraging habitat, only one of which is a known feed tree for the Grey-headed Flying-fox. (spotted gum) – producing nectar rich flowers in winter and spring. No camps would be affected although many occur within foraging range of the study area.

Due to the absence of nearby camps and availability of food resources in the region, the proposed activity is unlikely to lead to a long-term decrease in the Grey-headed Flying-fox population.

- **reduce the area of occupancy of an important population**

The area of occupancy of the Grey-headed Flying-fox extends along the east coast of Australia from Queensland to South Australia. The removal of potential Grey-headed Flying-fox foraging habitat in an urban area would not reduce the area of occupancy of the species.

- **fragment an existing important population into two or more populations**

The Grey-headed Flying-fox can undertake long-distance movements in response to the availability of feeding resources. The removal of trees in an urban area is unlikely to fragment the Grey-headed Flying-fox population.

- **adversely affect habitat critical to the survival of a species**

Habitat critical to the survival of the Grey-headed Flying-fox is identified as important winter and spring flowering vegetation. Within the locality, there are other areas of better-quality vegetation with more diverse foraging habitat. The one tree identified as a potential foraging source is winter flowering species but does not constitute a significant patch of vegetation. Spotted gum is commonly planted in parks and on streets in the locality.

The proposed activity is unlikely to have an adverse effect on habitat critical to the survival of the Grey-headed Flying-fox due to their wide foraging range and availability of large areas of suitable habitat in the locality.

- **disrupt the breeding cycle of an important population**

Grey-headed Flying-foxes breed in large numbers in camps that are used repeatably over the years. No flying-fox camps were identified in the study area. The nearest camp occurs at Parramatta Park.

The proposed activity is unlikely to disrupt the breeding cycle of any Grey-headed Flying-foxes.

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

The proposed activity would result in the removal of 12 trees, with one that may provide foraging habitat for the Grey-headed Flying-fox. No roost camps would be affected.

The removal of potential foraging trees in an urban environment is unlikely to result in the decline of the Grey-headed Flying-fox.

- **result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

No invasive species are considered relevant to the Grey-headed Flying-fox in the study area and none would be introduced by the proposed activity.

- **introduce disease that may cause the species to decline, or**

No diseases are considered relevant to the Grey-headed Flying-fox in the study area and none would be introduced by the proposed activity.

- **interfere substantially with the recovery of the species**

A National Recovery Plan has been prepared for the Grey-headed Flying-fox (DAWE 2021). The proposed activity will not interfere with any of the recovery objectives or priority actions outlined in the plan.

**Conclusion**

The proposed activity requires removal of one tree that may provide foraging habitat for the Grey-headed Flying-fox that may provide suitable foraging habitat for the Grey-headed Flying-fox. No camps would be impacted.

The proposed activity is therefore unlikely to have a significant impact on the Grey-headed Flying-fox.

# Appendix B Species lists

## Opportunistic fauna sightings

| Scientific Name | Common Name |
|---|---|
| **Birds** | |
| *Trichoglossus moluccanus* | Rainbow Lorikeet |
| *Threskiornis moluccus* | Australian White Ibis |
| *Manorina melanocephala* | Noisy Miner |
| *Cacatua tenuirostris* | Long-billed Corella |
| *Cacatua galerita* | Sulphur-crested Cockatoo |
| *Eolophus roseicapilla* | Galah |
| *Columba livia** | Rock Dove |
| *Gymnorhina tibicen* | Australian Magpie |
| *Ocyphaps lophotes* | Crested Pigeon |
| *Hirundo neoxena* | Welcome Swallow |

* denotes an introduced species

## Vegetation survey results

| Scientific Name | Common Name | Exotic* or Non Indigenous (ni) |
|---|---|---|
| **RPD01** | | |
| *Lophostemon confertus* | Brush box | ni |
| *Poa annua* | Annual bluegrass | * |
| *Ehrharta erecta* | Panic veldtgrass | * |
| **RPD02** | | |
| *Syzygium australe* | Brush cherry | |
| *Brachychiton acerifolius* | Flame bottletree | |
| *Davidsonia jerseyana* | Davidson plum | ni |
| *Eupomatia laurina* | Bolwarra | |
| *Morus nigra* | Black mulberry | |
| *Austromyrtus dulcis* | Midgen berry | ni |
| **RPD03** | | |
| *Lagerstroemia spp.* | Crepe myrtle | * |
| *Citrus* spp. | Citrus tree | * |
| *Camellia sinensis* | Tea plant | * |
| *Litchi chinensis* | Lychee plant | * |
| *Mangifera indica* | Mango tree | * |

| Scientific Name | Common Name | Exotic* or Non Indigenous (ni) |
|---|---|---|
| *Diospyros nigra* | Black sapote | * |
| *Ficus carica* | Fig tree | * |
| *Psidium guajava* | Guava tree | * |
| **RPD04** | | |
| *Pinus* spp. | Pine tree | * |
| *Callistemon salignus* | Willow bottlebrush | |
| *Melaleuca quinquenervia* | Broad-leaved Paperbark | |
| *Syzygium paniculatum* | Magenta Lilly-pilly | |
| *Malus* spp. | Apple tree | * |
| *Rosa* spp. | Roses | * |
| *Olea europaea* | Olive tree | * |
| **RPD05** | | |
| *Lophostemon confertus* | Brush box | * |
| *Cinnamomum camphora* | Camphor laurel | * |
| *Eucalyptus sclerophylla* | Scribbly gum | |
| *Ulmus parvifolia* | Chinese elm | * |
| *Eucalyptus microcorys* | Tallowwood | ni |
| *Bromus catharticus* | Prarie grass | * |
| *Ehrharta erecta* | Panic veldtgrass | * |
| **RPD06** | | |
| *Lophostemon confertus* | Brush box | ni |
| *Glochidion ferdinandi* | Cheese tree | |
| *Acacia implexa* | Hickory wattle | |
| *Casuarina glauca* | Swamp sheoak | |
| *Eucalyptus saligna* | Sydney Blue Gum | |
| *Lagerstroemia spp.* | Crepe myrtle | * |
| *Banksia integrifolia* | Coast banksia | |
| *Yucca* spp. | Yucca | * |
| *Cynodon dactylon* | Common couch | |
| *Poa annua* | Annual bluegrass | * |
| *Microlaena stipoides* | Weeping grass | |
| *Stenotaphrum secundatum* | Buffalo grass | * |
| *Soliva sessilis* | Bindi | * |

# Appendix C Likelihood of occurrence assessment table

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| **Flora** | | | | | | | |
| *Acacia bynoeana* | Bynoe's Wattle, Tiny Wattle | E | V | - | PMST | Occurs mainly in heath, dry sclerophyll forest, open woodlands with a sparse shrub cover and a grass/sedge ground cover, and heathlands with a sparse overstorey. This species grows in sand or sandy clay substrate, often with ironstone gravel and usually well drained, infertile soil. | Low. No suitable habitat present. |
| *Acacia pubescens* | Downy Wattle | V | V | 13 | BioNet, PMST | Grows on alluviums, shales and the intergrade between shales and sandstones that support open woodlands and forests. The communities this wattle has been recorded in include Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. | Low. No suitable habitat present. |
| *Allocasuarina glareicola* | null | E | E | - | PMST | Primarily restricted to the Richmond (NW Cumberland Plain) district. Grows in Castlereagh woodland on lateritic soil. Found in open woodland with *Eucalyptus parramattensis*, *Eucalyptus fibrosa*, *Angophora bakeri*, *Eucalyptus sclerophylla* and *Melaleuca decora*. Common associated understorey species include *Melaleuca nodosa*, *Hakea dactyloides*, *Hakea sericea*, *Dillwynia tenuifolia*, *Micromyrtus minutiflora*, *Acacia elongata*, *Acacia brownei*, *Themeda australis* and *Xanthorrhoea minor*. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Asterolasia elegans* | null | E | E | - | PMST | Occurs in the northern hills of Sydney. Habitat requirements are wet, sheltered sclerophyll forests on the mid to lower slopes of moist gullies and rocky outcrops. | Low. No suitable habitat present. |
| *Caladenia tessellata* | Thick-lipped Spider-orchid, Daddy Long-legs | E | V | - | PMST | Occurs in low, dry sclerophyll woodland with a heathy or sometimes grassy understorey on clay loams or sandy soils. Specifically this orchid grows in dry, low Brittle Gum (*Eucalyptus mannifera*), Inland Scribbly Gum (*E. rossii*) and Allocasuarina woodland with a sparse understorey and stony soil. | Low. No suitable habitat present. |
| *Callistemon linearifolius* | Netted Bottle Brush | V | - | 3 | BioNet | Inhabits dry sclerophyll forest on the coast and adjacent ranges. | Low. No suitable habitat present. |
| *Cryptostylis hunteriana* | Leafless Tongue-orchid | V | V | - | PMST | Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. Larger populations typically occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*). Appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (*C. subulata*) and Tartan Tongue Orchid (*C. erecta*). | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Darwinia biflora* | null | V | V | - | PMST | Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Occurs in Sydney Sandstone Ridgetop Woodland, often on rock shelves. Associated overstorey species include *Eucalyptus haemastoma*, *Corymbia gummifera* and/or *E. squamosa*. The vegetation structure is usually woodland, open forest or scrub-heath. | Low. No suitable habitat present. |
| *Dillwynia tenuifolia* | Dillwynia tenuifolia Sieber ex D.C. in the Baulkham Hills local government area | V | - | 1 | BioNet | The endangered population includes all locations for the species within the Baulkham Hills local government area. Only two confirmed locations are known, both near the junction of Wisemans Ferry and Sackville Roads. Occurs in vegetation similar to Cumberland Plain Woodland, on Wianamatta Shale soils. | Low. No suitable habitat present. |
| *Epacris purpurascens* var. *purpurascens* | | V | - | 81 | BioNet | Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Found in a range of habitat types, most of which have a strong shale soil influence. | Low. No suitable habitat present. |
| *Eucalyptus camfieldii* | Camfield's Stringybark | V | V | - | PMST | Occurs as small, scattered stands in exposed situations on sandstone plateaus, ridges and slopes near the coast. These stands often grow on the boundary of tall coastal heaths or low open woodland. Requires shallow sandy soils. | Low. No suitable habitat present. |
| *Eucalyptus sp. Cattai* (Gregson s.n., 28 Aug 1954) | null | CE | CE | - | PMST | Only known from north-western Sydney between Castle Hill and Cattai. In Cattai grows as isolated trees or small groups of trees in scrub, heath and low woodland, on sandstone-derived soils. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Genoplesium baueri* | Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid | E | E | - | PMST | Occurs in coastal areas. Habitats include heathland, open forest, shrubby forest, heathy forest and woodland with sandy/sandy loam and well draining soils. | Low. No suitable habitat present. |
| *Grammitis stenophylla* | Narrow-leaf Finger Fern | E | - | 1 | BioNet | Grows on basalt, conglomerate, granite and sandstone substrate and rocks in rainforest and in wet sclerophyll forest. | Low. No suitable habitat present. |
| *Hibbertia superans* | | E | - | 43 | BioNet | Occurs from Baulkham Hills to South Maroota in the northern outskirts of Sydney, where there are currently 16 known sites, and at one locality at Mount Boss. The species occurs on sandstone ridgetops often near the shale/sandstone boundary. Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides. | Low. No suitable habitat present. |
| *Isotoma fluviatilis* subsp. *Fluviatilis* | | - | X | 1 | BioNet | Currently known from only two adjacent sites on a single private property at Erskine Park in the Penrith LGA. Previous sightings are all from western Sydney, at Homebush and at Agnes Banks. Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone. | Low. No suitable habitat present. |
| *Lasiopetalum joyceae* | null | V | V | - | PMST | Grows in heath on sandstone. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Macadamia integrifolia* | Macadamia Nut | - | V | 1 | BioNet | Not known to occur naturally in NSW. The Macadamia Nut grows in remnant rainforest, preferring partially open areas such as rainforest edges. Prefers to grow in mild frost-free areas with a reasonably high rainfall. There have been records of planted specimens bearing fruit as far south as Sydney. | Low. No suitable habitat present. |
| *Marsdenia viridiflora* subsp. *Viridiflora* | Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas | E | - | 1 | BioNet | Recent records are from Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Previously known north from Razorback Range. Grows in vine thickets and open shale woodland. | Low. No suitable habitat present. |
| *Melaleuca biconvexa* | Biconvex Paperbark | V | V | - | PMST | The species may occur in dense stands forming a narrow strip adjacent to watercourses, in association with other Melaleuca species or as an understorey species in wet forest. | Low. No suitable habitat present. |
| *Melaleuca deanei* | Deane's Melaleuca | V | V | - | PMST | Endemic to Sydney Basin region and grows in heath on sandstone or flat broad ridge tops. Strongly associated with sandy loam soils that are low in nutrients, sometimes with ironstone present | Low. No suitable habitat present. |
| *Persicaria elatior* | Knotweed, Tall Knotweed | V | V | - | PMST | Normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Persoonia hirsuta* | Hairy Geebung, Hairy Persoonia | E | E | - | PMST | Occurs in shrub-woodlands and dry sclerophyll forest. It grows in sandy to stony soils derived from sandstone or very rarely on shale, from near sea level to 600 m altitude. | Low. No suitable habitat present. |
| *Persoonia nutans* | Nodding Geebung | E | E | - | PMST | Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Core distribution occurs within the Penrith, and to a lesser extent Hawkesbury, LGAs. Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River / Castlereagh Ironbark Forests. Southern populations also occupy tertiary alluvium, but extend onto shale sandstone transition communities and into Cooks River / Castlereagh Ironbark Forest. | Low. No suitable habitat present. |
| *Pimelea curviflora* var. *curviflora* | | V | V | 6 | BioNet, PMST | Confined to the coastal area of the Sydney and Illawarra regions. Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowalnd Grassy Woodland habitat at Albion Park on the Illawaraa coastal plain. | Low. No suitable habitat present. |
| *Pimelea spicata* | Spiked Rice-flower | E | E | 2 | BioNet, PMST | Occurs on an undulating topography with well-structured clay soils. In the Illawarra area it often grows in association with Coastal Banksia in woodlands and headland complexes. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Pomaderris brunnea* | Rufous Pomaderris, Brown Pomaderris | E | V | - | PMST | Found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. Grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. | Low. No suitable habitat present. |
| *Pomaderris prunifolia* | P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas | E | - | 7 | BioNet | This population is known from three sites; at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. At Rydalmere it occurs along a road reserve near a creek, among grass species on sandstone. | Low. No suitable habitat present. |
| *Pterostylis gibbosa* | Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood | E | E | - | PMST | 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). It is apparently extinct in western Sydney, which is the area where it was first collected (1803). | Low. No suitable habitat present and likely to be extinct in Sydney. |
| *Pterostylis saxicola* | Sydney Plains Greenhood | E | E | 2 | BioNet, PMST | This orchid is restricted to western Sydney between Freemans Reach and Picton. While there are very few known populations, the ones that have been recorded were in small pockets of shallow soil in depressions above sandstone cliff lines. | Low. No suitable habitat present. |
| *Rhizanthella slateri* | Eastern Underground Orchid | V | E | - | PMST | Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. Flowers September to November. | Low. No suitable habitat present. |
| *Rhodamnia rubescens* | Scrub Turpentine | CE | CE | 4 | BioNet, PMST | Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Rhodomyrtus psidioides* | Native Guava | CE | CE | - | PMST | Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. | Low. No suitable habitat present. |
| *Syzygium paniculatum* | Magenta Lilly Pilly | E | V | 4 | BioNet, PMST | Grows in subtropical and littoral rainforest on sandy soils or stabilized dunes near the sea. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral rainforest. | Low. No suitable habitat present, although some planted individuals observed. |
| *Tetratheca glandulosa* | | V | - | 1 | BioNet | Restricted to the following Local Government Areas: Baulkham Hills, Gosford, Hawkesbury, Hornsby, Ku-ring-gai, Pittwater, Ryde, Warringah, and Wyong. There are approximately 150 populations of this plant ranging from Sampons Pass (Yengo NP) in the north to West Pymble (Lane Cove NP) in the south. The eastern limit is at Ingleside (Pittwater LGA) and the western limit is at East Kurrajong (Wollemi NP). Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone. Vegetation structure varies from heaths and scrub to woodlands/open woodlands, and open forest. | Low. No suitable habitat present. |
| *Thesium australe* | Austral Toadflax, Toadflax | V | V | - | PMST | Suitable habitat for this species includes grassland and grassy woodland, often in damp sites. This species is often found growing in association with Kangaroo Grass (*Themeda australis*). | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Triplarina imbricata* | Creek Triplarina | E | E | 4 | BioNet | Found only in a few locations in the ranges south-west of Glenreagh and near Tabulam in north-east NSW. The species was previously recorded in Parramatta, near Sydney, however, the species is no longer thought to occur in this area. Occurs along watercourses in low open forest with Water Gum (*Tristaniopsis laurina*) or in montane bogs, often with *Baekea amissa*. | Low. No suitable habitat present. |
| *Wilsonia backhousei* | Narrow-leafed Wilsonia | V | - | 60 | BioNet | In NSW Narrow-leaf Wilsonia is found on the coast between Mimosa Rocks National Park and Wamberal north of Sydney. Occurs on the margins of salt marshes and lakes. | Low. No suitable habitat present. |
| **Amphibians** | | | | | | | |
| *Heleioporus australiacus* | Giant Burrowing Frog | V | V | - | PMST | Distributed through the Sydney Basin sandstone country in woodland, open woodland and heath vegetation, breeding habitat is generally soaks or pools within first or second order streams, but also 'hanging swamp' seepage lines and where small pools form from the collected water. Spend the majority of time in non-breeding habitat up to 300 m away and burrows in soil surface or leaf litter. | Low. No suitable habitat present. |
| *Litoria aurea* | Green and Golden Bell Frog | E | V | 8194 | BioNet, PMST | Large populations in NSW are located around coastal and near coastal areas of the metropolitan areas of Sydney, Shoalhaven and mid north coast. It Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (Typha spp.) or spikerushes (Eleocharis spp.) | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Mixophyes balbus* | Stuttering Frog | E | V | - | PMST | Inhabits rainforest and wet, tall open forest. Breeds in streams after summer rains and deposits eggs on rock shelves or in shallow riffles. Non-breeding habitat includes thick understorey vegetation and deep leaf litter on forest floors. | Low. No suitable habitat present. |
| *Pseudophryne australis* | Red-crowned Toadlet | V | - | 3 | BioNet | Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter. Breeding congregations occur in dense vegetation and debris beside ephemeral creeks and gutters. | Low. No suitable habitat present. |
| **Birds** | | | | | | | |
| *Anthochaera phrygia* | Regent Honeyeater | CE | CE | 2 | BioNet, PMST | Inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. In NSW the distribution is very patchy and mainly confined to the two main breeding areas at Capertee Valley and the Bundarra-Barraba region and surrounding fragmented woodlands. Birds are also found in drier coastal woodlands and forests. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak. These habitats have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Artamus cyanopterus cyanopterus* | Dusky Woodswallow | V | - | 17 | BioNet | Often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. Has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Understorey is typically open with sparse eucalypt saplings, acacias and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris | Low. No suitable habitat present. |
| *Botaurus poiciloptilus* | Australasian Bittern | E | E | 4 | BioNet, PMST | Inhabits temperate freshwater wetlands and occasionally estuarine reedbeds, with a preference for permanent waterbodies with tall dense vegetation. The species prefers wetlands with dense vegetation, including sedges, rushes and reeds. Freshwater is generally preferred, although dense saltmarsh vegetation in estuaries and flooded grasslands are also used by the species. | Low. No suitable habitat present. |
| *Calidris canutus* | Red Knot | - | E, M | 1 | BioNet | Tidal mudflats, sandflats, beaches, saltmarsh, ploughed fields, flooded pasture | None. No suitable habitat present. |
| *Calidris ferruginea* | Curlew Sandpiper | E | CE, M | 15 | BioNet, PMST | Coastal migratory species with a NSW distribution from Hastings Point to Shoalhaven Heads. Found in open, sandy beaches with exposed sand bars and rocky outcrops. Rare use of near-coastal wetlands. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Calidris tenuirostris* | Great Knot | V | CE, M | - | PMST | Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms. | None. No suitable habitat present. |
| *Callocephalon fimbriatum* | Gang-gang Cockatoo | V | E | 1 | BioNet, PMST | Occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests in winter. In summer this species prefers open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry coastal forests. | Low. No suitable habitat present. |
| *Calyptorhynchus lathami* | Glossy Black-Cockatoo | V | - | 1 | BioNet | Occupy coastal woodlands and drier forest areas, open inland woodlands or timbered watercourses where Casuarina and Allocasuarina species are present. This species is dependent on large hollow-bearing eucalypts for nesting. | Low. No suitable habitat present. |
| *Charadrius leschenaultii* | Greater Sand Plover, Large Sand Plover | V | V | - | PMST | Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Roosts during high tide on sandy beaches and rocky shores; begin foraging activity on wet ground at low tide, usually away from the edge of the water; individuals may forage and roost with other waders. | Low. Preferred habitat not present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Charadrius mongolus* | Lesser Sand Plover, Mongolian Plover | V | E, M | - | PMST | Breeds in central and north eastern Asia. In Australia the species is found around the entire coast but is most common in the Gulf of Carpentaria, and along the east coast of Queensland and northern NSW. Almost entirely coastal in NSW, favouring the beaches of sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats; occasionally occurs on sandy beaches, coral reefs and rock platforms. | None. No suitable habitat present. |
| *Daphoenositta chrysoptera* | Varied Sittella | V | - | 2 | BioNet | Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. | Low. No suitable habitat present. |
| *Dasyornis brachypterus* | Eastern Bristlebird | E | E | - | PMST | Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. | Low. No suitable habitat present. |
| *Epthianura albifrons* | White-fronted Chat | V | - | 230 | BioNet | In NSW, it 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. Two isolated sub-populations are currently known from the Sydney Metropolitan Catchment Management Authority area; one at Newington Nature Reserve on the Parramatta River and one at Towra Point Nature Reserve. Regularly observed in the saltmarsh of Newington Nature Reserve (with occasional sightings from other parts of Sydney Olympic Park and in grassland on the northern bank of the Parramatta River). Usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Erythrotriorchis radiatus* | Red Goshawk | CE | V | - | PMST | Distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia. Very rare in NSW, extending south to about 30°S, with most records north of this. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers. | Low. No suitable habitat present. |
| *Falco hypoleucos* | Grey Falcon | E | V | - | PMST | Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. | Low. No suitable habitat present. |
| *Glossopsitta pusilla* | Little Lorikeet | V | - | 3 | BioNet | Mostly occur in dry, open eucalypt forests and woodlands. They have been recorded from both old-growth and logged forests in the eastern part of their range, and in remnant woodland patches and roadside vegetation on the western slopes. Nest in small hollows (entrance approx. 3 cm) of Eucalyptus spp. between 2 - 15 m above the ground. | Low. No suitable habitat present. |
| *Grantiella picta* | Painted Honeyeater | V | V | - | PMST | Occurs in Eucalyptus woodland and forests, prefereably with an abundance of mistletoe (Amyema spp.). Can also occur along watercourses and in farmland. Nests from spring to autumn in outer canopy of eucalypts, she-oak, paperbark and mistletoe branches. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Haliaeetus leucogaster* | White-bellied Sea-Eagle | V | - | 208 | BioNet | Habitat includes coastlines, estuaries, large rivers and lakes. It has occasionally been recorded over adjacent habitats. Builds a large stick nest in a tall tree and rarely on artificial structures. | Low. No suitable habitat present. May be rarely observed flying over study area. |
| *Hieraaetus morphnoides* | Little Eagle | V | - | 4 | BioNet | Occupies habitats rich in prey (birds, reptiles and mammals) within open eucalypt forest, woodland and open woodland. Requires tall living trees for building a large stick nest. | Low. No suitable habitat present. |
| *Hirundapus caudacutus* | White-throated Needletail | - | V, M | 15 | BioNet, PMST | Migratory and usually seen in eastern Australia from October to April. | Low. Aerial species unlikely to utilise the study area. |
| *Ixobrychus flavicollis* | Black Bittern | V | - | 2 | BioNet | Wide distribution, from southern NSW north to Cape York and along the north coast to the Kimberley region. In NSW, records of the species are scattered along the east coast, with individuals rarely being recorded south of Sydney or inland. Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. | Low. No suitable habitat present. |
| *Lathamus discolor* | Swift Parrot | E | CE | 6 | BioNet, PMST | Migrates to the Australian south-east mainland between February and October. Occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum Red Bloodwood, Forest Red Gum, Mugga Ironbark and White Box. | Low. Insufficient suitable habitat present within study area and nearby. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Limosa lapponica baueri* | Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit | - | V | - | PMST | Recorded in the coastal areas of all Australian states. Occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. | None. No suitable habitat present. |
| *Limosa limosa* | Black-tailed Godwit | V | M | 1 | BioNet | Breeds in northern hemisphere. In NSW, it is most frequently recorded at Kooragang Island, with occasional records elsewhere along the coast, and inland. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. | None. No suitable habitat present. |
| *Ninox connivens* | Barking Owl | V | - | 4 | BioNet | Occurs throughout NSW, where it inhabits dry open sclerophyll forests and woodlands. This species favours dense riparian stands of eucalypts or casuarinas where there are many large trees suitable for roosting or breeding. | Low. No suitable habitat present. |
| *Ninox strenua* | Powerful Owl | V | - | 141 | BioNet | Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Powerful Owls nest in large tree hollows (at least 0.5m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. | Low. No suitable habitat present. |
| *Numenius madagascariensis* | Eastern Curlew | - | CE, M | 21 | BioNet, PMST | Estuaries, tidal mudflats, sandspits, saltmarsh, mangroves | None. No suitable habitat present. |
| *Pandion cristatus* | Eastern Osprey | V | - | 2 | BioNet | Requires clear estuarine and inshore marine waters and coastal rivers for foraging, and nests in tall (usually dead or dead-topped) trees in coastal habitats from open woodland to open forest, within 1-2 km of water.#N/A | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Petroica boodang* | Scarlet Robin | V | - | 1 | BioNet | In NSW, it occurs from the coast to the inland slopes. Lives in dry eucalypt forests and woodlands. Understorey is usually open and grassy with few scattered shrubs. Lives in both mature and regrowth vegetation. Occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Abundant logs and fallen timber are important components of its habitat. | Low. No suitable habitat present. |
| *Petroica phoenicea* | Flame Robin | V | - | 1 | BioNet | Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains). | Low. No suitable habitat present. |
| *Polytelis swainsonii* | Superb Parrot | V | V | 1 | BioNet | Found throughout eastern inland NSW. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. | Low. No suitable habitat present. |
| *Pycnoptilus floccosus* | Pilotbird | - | V | - | PMST | Endemic to south-east Australia. Upland Pilotbirds occur above 600 m. Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong. Habitat critical to survival includes wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth, and dry sclerophyll forests and woodlands occupying dry slopes and ridges. | Low. No suitable habitat present and not known to occur in Sydney. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Rostratula australis* | Australian Painted Snipe | E | E | - | PMST | Inhabits shallow inland wetlands such as freshwater and brackish water bodies. Nests on the ground amongst tall reed-like vegetation near water, and feeds near the water's edge and on mudflats. | Low. No suitable habitat present. |
| *Sternula nereis nereis* | Australian Fairy Tern | - | V | - | PMST | Breeds on sheltered mainland coastlines and close islands, usually on sandy beaches above the high tide line but below where vegetation occurs. It feeds almost entirely on fish mainly by following shoals of feeding predatory fish and is rarely found out of sight of land. | None. No suitable habitat present. |
| *Tyto novaehollandiae* | Masked Owl | V | - | 2 | BioNet | Occurs throughout NSW, roosting and nesting in heavy forest. Hunts over open woodland and farmland, with a home range of 500 - 1000 ha. The main requirements are tall trees with suitable large hollows for nesting and roosting and adjacent areas for foraging. | Low. No suitable habitat present. |
| *Tyto tenebricosa* | Sooty Owl | V | - | 1 | BioNet | Inhabits subtropical and warm temperate rainforest, and moist or dry eucalypt forest with a well-developed mid-storey of trees or shrubs. Roost and nest sites for the species occur in gullies. Breeding pairs utilise large hollows for nesting and prey on other hollow dependent species. Roost in hollows or dense vegetation. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| **Mammals** | | | | | | | |
| *Chalinolobus dwyeri* | Large-eared Pied Bat | V | V | - | PMST | Roosts in disused mine shafts, caves, overhangs and disused Fairy Martin nests for shelter and to raise young. Potentially roost in tree hollows. Occurs in low to mid-elevation dry open forest and woodlands, preferably with extensive cliffs, caves or gullies. This species is largely restricted to the interface of sandstone escarpment (for roost habitat) and relatively fertile valleys (for foraging habitat). | Low. No suitable habitat present. |
| *Dasyurus maculatus* | Spotted-tailed Quoll | V | E | 2 | BioNet, PMST | Utilises a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest. This habitat ranges from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites. | Low. No suitable habitat present. |
| *Falsistrellus tasmaniensis* | Eastern False Pipistrelle | V | - | 7 | BioNet | Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. | Low. No suitable habitat present. |
| *Isoodon obesulus obesulus* | Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) | E | E | - | PMST | Generally only found in heath or open forest with a heathy understorey on sandy or friable soils. Feed on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogeous (underground-fruiting) fungi. Nest during the day in a shallow depression in the ground covered by leaf litter, grass or other plant material. Nests may be located under Grass trees Xanthorrhoea spp., blackberry bushes and other shrubs, or in rabbit burrows. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Micronomus norfolkensis* | Eastern Coastal Free-tailed Bat | V | - | 9 | BioNet | Has a coastal distribution from southern NSW to southern QLD. Habitat includes dry sclerophyll forests, woodlands, swamps and mangrove forests. Roost mainly in tree-hollows but have been recorded roosting under bark and in man-made structures. | **Moderate. Suitable foraging habitat available.** |
| *Miniopterus australis* | Little Bent-winged Bat | V | - | 1 | BioNet | Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. | Low. No suitable habitat present. |
| *Miniopterus orianae oceanensis* | Large Bent-winged Bat | V | - | 63 | BioNet | Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. They form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. This species tends to hunt in forested areas. | **Moderate. Suitable foraging habitat available.** |
| *Myotis macropus* | Southern Myotis | V | - | 31 | BioNet | This species generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. They forage over streams and pools catching insects and small fish by raking their feet across the water surface. | Low. No suitable habitat present. |
| *Petauroides volans* | Greater Glider | - | V | 1 | BioNet, PMST | Occupy relatively small home ranges (1-4 ha) in tall, moist eucalypt forests and woodlands with old trees and abundant hollows. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Petaurus australis australis* | Yellow-bellied Glider (south-eastern) | - | V | - | PMST | Found at altitudes ranging from sea level to 1400 m above sea level and has a widespread but patchy distribution from south-eastern QLD to far south-eastern SA, near the SA-Vic border. In NSW, it predominantly occurs in forests along the eastern coast, from the NSW-Qld border to the NSW-Vic border. Occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests. Shows a preference for large patches of mature old growth forest that provide suitable trees for foraging and shelter. | None. No suitable habitat present. |
| *Petrogale penicillata* | Brush-tailed Rock-wallaby | E | V | - | PMST | This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges, isolated rock stacks and tree limbs. | None. No suitable habitat present. |
| *Phascolarctos cinereus* | Koala | V | V | 2 | BioNet, PMST | Inhabits a range of eucalypt forest and woodland communities. Adequate floristic diversity, availability of feed trees (primarily Eucalyptus tereticornis and E. viminalis) and presence of mature trees very important. Preferred food tree species vary with locality and there are quite distinct regional preferences. They are able to persist in fragmented habitats, and even survive in isolated trees across a predominantly agricultural landscape. | Low. No suitable habitat present. |
| *Pseudomys novaehollandiae* | New Holland Mouse, Pookila | - | V | - | PMST | Inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. Nest in burrows and have a preference for deeper top soils and softer substrates to aid digging. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| *Pteropus poliocephalus* | Grey-headed Flying-fox | V | V | 612 | BioNet, PMST | Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are commonly found in gullies, close to water, in vegetation with a dense canopy. They travel up to 50 km to forage, on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. | **High. Potential foraging habitat close to known roosts.** |
| *Saccolaimus flaviventris* | Yellow-bellied Sheathtail-bat | V | - | 10 | BioNet | Wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows, buildings, and in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. | Low. No suitable habitat present. |
| *Scoteanax rueppellii* | Greater Broad-nosed Bat | V | - | 6 | BioNet | Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. | Low. No suitable habitat present. |

| Scientific Name | Common Name | BC Act | EPBC Act | Records | Source | Habitat requirements | Likelihood of occurrence |
|---|---|---|---|---|---|---|---|
| **Reptiles** | | | | | | | |
| Delma impar | Striped Legless Lizard, Striped Snake-lizard | V | V | - | PMST | Ooccurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. | None. Not known to occur in the Sydney Region. |
| *Hoplocephalus bungaroides* | Broad-headed Snake | E | V | - | PMST | Confined to the Sydney basin within a radius of approximately 200 km of Sydney. Preferred habitat of sandstone outcrops with woodland, open woodland and/or heath vegetation. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges and tree hollows. | Low. No suitable habitat available. |
| **Gastropods** | | | | | | | |
| *Meridolum corneovirens* | Cumberland Plain Land Snail | E | - | 1 | BioNet | Lives in small areas on 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. | Low. No suitable habitat present. |
| *Pommerhelix duralensis* | Dural Land Snail | E | E | 31 | BioNet, PMST | Often associated with ecological communities that occur on the interface region between shale-derived and sandstone derived soils. Usually found in forested habitats that are relatively undisturbed and have a complex coverage of woody debris. Favours sheltering under rocks, leaf litter and bark. | Low. No suitable habitat present. |

## SMEC Parramatta

Level 6, 3 Horwood Place
Parramatta NSW 2150

**Phone:** +61 2 9900 7100

**Email:** parramatta@smec.com


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