

Warrawong Community Health Centre Redevelopment Flora and Fauna Impact Assessment

Prepared for Savills Australia

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Warrawong Community Health Centre Redevelopment

Flora and Fauna Impact Assessment

Savills Australia

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1 Introduction

Both the Federal and NSW Governments have committed more than \$700 million to deliver new and improved health facilities for the Illawarra Shoalhaven Local Health District, as part of the new Shellharbour Hospital and Integrated Services Project. The project aims to deliver contemporary networked health care facilities and expanded services to the community, reconfigure services and infrastructure and provide more services within the Health District, reducing the need for patients to rely on care, out of the area.

As part of this project, the NSW Government is building a new community health centre on the existing Port Kembla Hospital site. The Warrawong Community Health Centre (WCHC) will provide a range of services including community mental health, drug and alcohol, community nursing and child and family services, all working together to provide services in one purpose-built facility.

Health Infrastructure NSW proposes to develop the WCHC, which will involve the demolition of the existing hospital building in the north-east of the Port Kembla Hospital site, followed by the construction of the WCHC. The demolition works and the construction of the WCHC (hereafter referred to as 'the proposal') will be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) requiring the preparation of a Review of Environmental Factors (REF).

This flora and fauna assessment report assesses the potential impacts of the proposal on threatened biodiversity and has been prepared to inform the REF.

1.1 Background

1.1.1 Site location and description

The Port Kembla Hospital site is located within the Sydney Basin bioregion and Illawarra sub-bioregion, within the City of Wollongong local government area (LGA). The proposal will be located on the eastern section of the Port Kembla Hospital site at 85-91 Cowper Street, Warrawong, within Lot 1 DP129519, and Lots 21 – 42 and 49 – 53 DP23670 (hereafter, the 'subject site').

The subject site comprises approximately 1.76 hectares (ha) of R2 Low Density Residential land (Figure 1.1). Hospitals, community health, and child-care facilities are permitted with consent, under the *Wollongong Local Environmental Plan 2009* (Wollongong LEP 2009). The existing facility, proposed for demolition, currently provides specialist community health services.

Port Kembla Hospital is a public hospital and community health centre, with planted native and exotic vegetation established as part of landscaped gardens and managed lawns on the hospital grounds. No streams are mapped on the Port Kembla Hospital, and none were identified on the subject site.

1.1.2 Proposal description

The proposal will comprise the demolition of the existing hospital building in the north-east of the Port Kembla Hospital site, followed by the construction of the WCHC. The WCHC will provide a range of services including community mental health, drug and alcohol support, community nursing and child and family services in one, purpose-built facility. The existing facility, proposed for demolition and followed by redevelopment, currently provides specialist community health services, similar to the proposed upgraded services.

The proposal will also include:

- upgraded hospital driveway crossover to full dual access width, from Fairfax Road
- internal road widening to allow for a second lane
- expanded carpark for WCHC staff

- electric-vehicle (EV) charging
- demolition and relocation of the garden shed (building H).

The proposed demolition plan and new site plan are shown in Figure 1.2 and Figure 1.3.

1.2 Purpose of this report

The purpose of this report is to determine whether there will be a significant impact on threatened biodiversity with respect to the New South Wales (NSW) *Biodiversity Conservation Act 2016* (BC Act) and the NSW *Fisheries Management Act 1994* (FM Act). This report also aims to determine whether there will be a significant impact on threatened biodiversity comprising a Matter of National Environmental Significance (MNES) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The specific objectives of this report are to:

- describe the flora and fauna values of the subject site
- evaluate the predicted impacts of the proposal on threatened species, threatened ecological communities, or their habitats
- assess whether these impacts are likely to be significant in accordance with Section 7.3 of the BC Act.
- assess whether these impacts are likely to be significant in accordance with the EPBC Act Significant Impact Guidelines for MNES
- assess whether the proposal will have a significant impact on aquatic threatened biodiversity in accordance with Section 220ZZ of the FM Act
- where relevant, recommend measures to avoid, minimise or mitigate impacts on threatened biodiversity.

1.3 Terminology

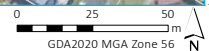
Terminology used in this report is listed in Table 1.1.

Table 1.1 Terminology

Term	Definition
Subject site	The eastern section of the Port Kembla Hospital, comprising the area directly impacted by the proposal, being Lot 1 DP129519, and Lots 21 – 42 and 49 – 53 DP23670.
Study area	The Port Kembla Hospital site, including the subject site.
Locality	Area within 10 km of the Port Kembla Hospital
Proposal	The proposed demolition and construction works described in Section 1.1.2.



Source: EMM (2024); ABS (2021) DCSSS (2023); GA (2009); MetroMap (2024)



KEY

- Subject site
- Study area
- Existing environment
- Cadastral boundary

INSET KEY

- Major road
- NPWS reserve

Site location

New Shellharbour Hospital
Flora and Fauna Assessment
Figure 1.1



Source: EMM (2024); MetroMap (2024)

- KEY**
- Subject site
 - Study area
 - Site feature for demolition

Demolition plan

New Shellharbour Hospital
Flora and Fauna Assessment
Figure 1.2

\\emm.local\drive\2021\F211110 - New Shellharbour Hospital Biodiversity Assessment\GIS\02_Maps\F&F_Assessment\G002_DemolitionPlan_20240216_03.mxd 16/02/2024



Source: EMM (2024); MetroMap (2024), COX (2023)

KEY

- Subject site
- Study area
- Proposed development
- Road widening

Proposed development

New Shellharbour Hospital
Flora and Fauna Assessment
Figure 1.3

2 Legislative context

The proposed works have been assessed against key biodiversity legislation and government policy. A brief outline of the key biodiversity legislation and government policy considered in this assessment is provided below.

2.1 Commonwealth

2.1.1 *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, heritage places and water resources which are defined as MNES under the EPBC Act. These are:

- world heritage properties
- places listed on the National Heritage Register
- Ramsar wetlands of international significance
- threatened flora and fauna species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- water resources, in relation to coal seam gas or large coal mining development.

Under the EPBC Act, an action that may have a significant impact on a MNES is deemed to be a 'controlled action' and can only proceed with the approval of the Commonwealth Minister for the Environment. An action that may potentially have a significant impact on a MNES is to be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for determination as to whether it is a controlled action. If deemed a controlled action the action is assessed under the EPBC Act and a decision made as to whether or not to grant approval.

An assessment of the proposed works against the EPBC Act is provided in Section 5.

2.2 State

2.2.1 *Environmental Planning and Assessment Act 1979 (EP&A Act)*

The EP&A Act was enacted to encourage the consideration and management of impacts of proposal or land-use changes on the environment and the community. The EP&A Act is administered by the NSW Department of Planning and Environment (DPE).

The proposal will be undertaken under Part 5 of the EP&A Act. The proposed works requires the preparation of a REF for submission to, and determination by Health Infrastructure, as the Determining Authority. This report has been prepared to accompany the REF and assess the biodiversity values within the subject site.

The EP&A Act provides the overarching structure for planning in NSW; however, is supported by other statutory environmental planning instruments (EPIs) including State Environmental Planning Policies (SEPPs).

State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) aims to facilitate the effective delivery of infrastructure across NSW and provides for bush fire hazard reduction works; TISEPP therefore applies to the proposed works. Other EPIs relevant to the management of biodiversity are discussed below with respect to the proposed works.

i State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) was ratified on 1 March 2022 and consolidates, transfers and repeals provisions of numerous SEPPs, which includes the former State Environmental Planning Policy (Koala Habitat Protection) 2020 (Koala SEPP 2020) and State Environmental Planning Policy (Koala Habitat Protection) 2021 (Koala SEPP 2021). No policy changes have been made to the Koala SEPPs.

The former Koala SEPP 2020 and 2021 together aimed to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline. In nine metropolitan Sydney local government areas (Blue Mountains, Campbelltown, Hawkesbury, Ku-Ring-Gai, Liverpool, Northern Beaches, Hornsby and Wollondilly) and the Central Coast LGA Koala SEPP 2021 applies to all land use zones. Outside of these areas Koala SEPP 2020 continues to apply to all land zoned RU1, RU2, and RU3.

The proposal does not require a development application or approval from Council, and thus consideration of the Koala Habitat Protection SEPP is not triggered under Part 2 of the SEPP. Nonetheless, consideration has been given to the potential occurrence and impacts upon the Koala as part of this flora and fauna assessment.

ii State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2 (Coastal Management) of the State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) applies to the coastal zone in NSW and aims to manage development and environmental assets on the coast, as well as establish a framework for decision-making in the coastal zone. The coastal zone includes areas mapped as coastal wetlands and littoral rainforests, as well as land mapped as proximity areas to coastal wetlands and littoral rainforests.

The proposal will not be located in areas mapped as coastal wetland or littoral rainforests areas under the Resilience and Hazards SEPP, however the southern tip of the study area is located in a within Proximity Area for Coastal Wetlands boundary (however none of the proposed works are within this Proximity Area).

2.2.2 Biodiversity Conservation Act 2016 (BC Act)

The BC Act is the legislation responsible for the conservation of biodiversity in NSW through the protection of threatened flora and fauna species, populations, and ecological communities. The BC Act, together with the Biodiversity Conservation Regulation 2017 (BC Regulation), established the Biodiversity Offset Scheme (BOS).

The BOS includes establishment of the Biodiversity Assessment Method (BAM, DPIE 2020) for use by accredited persons in biodiversity assessment under the scheme. The purpose of the BAM is to assess the impact of actions on threatened species and threatened ecological communities, and their habitats and determine offset requirements. The BAM sets out the requirements for a repeatable and transparent assessment of terrestrial biodiversity values on land in order to:

- identify the biodiversity values on land subject to proposed development area
- determine the impacts of a proposed development, following all measures to avoid, minimise and mitigate impacts
- quantify and describe the biodiversity credits required to offset the residual impacts of proposed development on biodiversity values.

The proposal is permitted without development consent pursuant to State Environmental Planning Policy (Transport and Infrastructure) 2021 and are being assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). For activities that are assessed under Part 5 of the EP&A Act, an activity is likely to significantly affect threatened species or communities if determined as such in accordance with the 'five-part' test of significance in Section 7.3 of the BC Act, or if it is carried out in a declared area of outstanding biodiversity value.

Under Section 7.8 of the BC Act, if an activity proposed under Part 5 of the EP&A Act is likely to significantly affect threatened species or communities, the preparation of a species impact statement (SIS) is required or, if the proponent elects to do so, a Biodiversity Development Assessment Report (BDAR) can be prepared. That is, where an activity is likely to significantly affect threatened species or communities, entry into the BOS and the preparation of a BDAR is not automatic, unless the proponent elects to prepare a BDAR.

The proposal will not be undertaken in a declared area of outstanding biodiversity value. The remainder of this report provides a description and assessment of the likely impacts of the proposal on threatened species and communities, and their habitats and assesses the significance of the predicted impacts in accordance with the five-part test of significance.

2.2.3 Fisheries Management Act 1994 (FM Act)

The FM Act contains provisions for the conservation of fish stocks, key fish habitat, biodiversity, threatened species, populations and ecological communities. It regulates the conservation of fish, vegetation and some aquatic macroinvertebrates and the development and sharing of the fishery resources of NSW for present and future generations. The FM Act lists threatened species, populations and ecological communities, key threatening processes (KTPs) and declared critical habitat. Assessment guidelines to determine whether a significant impact is expected are detailed in Section 220ZZ and 220ZZA of the FM Act.

Another objective of the FM Act is to conserve key fish habitat (KFH). These are defined as aquatic habitats that are important to the sustainability of recreational and commercial fishing industries, the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. KFH is defined in Section 3.2.1 and 3.2.2 of the *Policy and Guidelines for Fish Conservation and Management* (DPI 2013).

The subject site does not contain mapped watercourses or aquatic habitats and so there is unlikely to be any threatened aquatic values present. For this reason, the remainder of this flora and fauna assessment focuses on the potential impacts of the proposal on terrestrial biodiversity values and no further assessment under the FM Act is required.

2.2.4 Biosecurity Act 2015

The primary objective of the Biosecurity Act is to provide 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.

The Biosecurity Act stipulates management arrangements for weed biosecurity risks in NSW, with the aim to prevent, eliminate and minimise risks. Management arrangements include:

- any land managers and users of land have a responsibility for managing weed biosecurity risks that they know about or could reasonably be expected to know about
- applies to all land within NSW and all waters within the limits of the State
- local strategic weed management plans will provide guidance on the outcomes expected to discharge duty for the weeds in that plan.

One priority weed for the South East Local Land Services (LLS) region was recorded in the subject site. Legal requirements to minimise the potential for the introduction and/or spread of weeds as a result of the proposal are outlined in Section 4.2.

3 Method

3.1 Desktop assessment

A desktop assessment was undertaken of several database resources as well as relevant studies and include a review of the following:

- DCCEEW Protected Matters Search Tool for MNES (DCCEEW 2023a). The Protected Matters report generated for the subject site is provided in Appendix A.
- DPE BioNet Atlas of NSW Wildlife, for items listed under the BC Act and EPBC Act (DPE 2023b)
- Biodiversity values map and threshold tool (DPE 2023e)
- Department of Primary Industry (DPI) Weedwise website for priority weeds for the South East region (DPI 2023)
- Aerial images for the study area and locality (MetroMap 2023)
- NSW State Vegetation Type Map (DPE 2022)
- Arboricultural assessment report for the REF, Warrawong Community Health Centre (Vezgoff 2023).

3.2 Site assessment

The site assessment was undertaken by one EMM ecologist over one day (10 November 2023) and involved a detailed walkover of the study area. The site assessment focused on verifying desktop results and identified terrestrial biodiversity values and habitats, including:

- assessment of vegetation type, structure, and condition
- identification of native plant community types (PCTs) if present
- identification of vegetation conservation significance with reference to threatened ecological communities listed under the BC and EPBC Acts
- identification of flora species, including priority weeds
- incidental fauna observations
- identification of potential habitat for threatened flora and fauna species, to assess the value of habitat resources within the study area, and to assess the potential for threatened species to occur.

A list of plant species recorded in the study area is provided in Appendix B.

3.2.1 Limitations

The field investigation was not designed to detect all species, but to provide an overall assessment of the ecological values of the study area. It is possible that species utilising the study area (permanently, seasonally, or transiently) may not have been detected during the survey. These species may include annual, ephemeral, or cryptic flora species; mobile or transient fauna in general that were not present at the time of survey, as well as resident species that were not detectable at the time.

Although the site survey was limited to a habitat assessment for threatened species and no targeted surveys were undertaken, this was considered suitable given that the Port Kembla Hospital is situated in the highly urbanised area of Warrawong, with modified habitats present comprising of landscaped lawns, gardens, and native trees. A conservative approach to assuming the presence of threatened species that are known to occur in the urban locality, has been taken.

While some species have been assessed as having a low likelihood of occurrence, it is acknowledged that this does not indicate the species will never occur. Rather, it means that based on data collected during field investigations it was considered that the species was unlikely to occur in the study area or rely on habitats in the study area. Such species may utilise the study area on rare occasions.

3.3 Likelihood of occurrence assessment

Matters considered in determining the likelihood of occurrence include:

- known natural distributions including prior records (database searches) and site survey results
- specific habitat requirements (e.g., seasonal nectar and fruit resources, tree hollows etc)
- climatic considerations
- home range size and habitat dependence
- topographical preferences.

The criteria for assessing likelihood of occurrence for threatened species is listed in Table 3.1.

Table 3.1 Likelihood of occurrence criteria

Likelihood	Description	Further assessment conducted?
Negligible	• The potential for the species to occur is considered so low as to not be worth considering.	No
Low	• Based on data collected during field investigations, it was considered that the species was unlikely to occur in the subject site or use habitats in the subject site. A species may utilise the subject site on rare occasions. • Species is considered vagrant in the bioregion and is thus considered unlikely to occur in the subject site.	No
Moderate	• The species is known to occur in the bioregion and the subject site provides some habitat value for the species. Includes species for which optimal habitat is present that have not been recorded in the locality and species that have been recorded in the locality for which habitat on site is considered suboptimal.	Yes
High	• The species is known to occur in the bioregion, the subject site supports optimal habitat features for the species and it has been recorded in the locality.	Yes
Recorded	• The species was recorded during site visit or reliable, recent and spatially accurate records of the species strongly indicate its presence in the subject site.	Yes

4 Results

4.1 Vegetation

The vegetation on the grounds of the Port Kembla Hospital comprises planted native and exotic trees, shrubs and groundcovers as part of landscaped gardens and mown lawns (Figure 4.1). Planted trees include a mix of locally indigenous and non-indigenous native trees and shrubs. The lawn is predominantly Narrow-leaved Carpet Grass (*Axonopus fissifolius*) and other exotic, herbaceous plants. Several weed species occur in areas typical of an urban facility, such as on the edges of lawns, gardens, buildings, footpaths, and roads, as well as drainage swales. Weed species present include Asparagus Fern (*Asparagus aethiopicus*), Fishbone Fern (*Nephrolepis cordifolia*), English Ivy (*Hedera helix*) and Catsear (*Hypochaeris radicata*).

4.1.1 Threatened ecological communities

Many of the native and exotic flora species present were historically planted as part of the Port Kembla Hospital site. Therefore, the vegetation in the study area is not commensurate with any native plant community type (PCT) and therefore, no threatened ecological communities are present within the subject site that could be affected by the proposal.

4.1.2 Planted trees

Vegetation with the highest conservation value in the subject site were mature planted native trees, including Bangalay (*Eucalyptus botryoides*), Spotted Gum (*Corymbia maculata*), and Brush Box (*Lophostemon confertus*), as well as Tallowwood (*Eucalyptus microcorys*) and Hill's Weeping Fig (*Ficus microcarpa* var. *hillii*). Narrow-leaved Black Peppermint (*Eucalyptus nicholii*) was also detected, which is a threatened species listed under both the BC Act and the EPBC Act and is discussed further in Section 4.4. Tree species identified by Vezgoff (2023) and verified during the site assessment are numbered and presented in Table 4.1 below and shown in Figure 4.1.

Table 4.1 Trees within the subject site

Tree No.	Scientific name	Common name	Native (indigenous, non-indigenous); exotic	Proposed for removal or retention
1	<i>Banksia integrifolia</i>	Coastal Banksia	Native	Retain
2	<i>Callistemon viminalis</i>	Weeping Bottle Brush	Native	Remove
3	<i>Corymbia gummifera</i>	Red Bloodwood	Native	Remove
4	<i>Eucalyptus botryoides</i>	Bangalay	Native	Retain
5	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Native	Retain
6	<i>Eucalyptus botryoides</i>	Bangalay	Native	Retain
7	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Native	Remove
8	<i>Eucalyptus botryoides</i>	Bangalay	Native	Retain
9	<i>Corymbia gummifera</i>	Red Bloodwood	Native	Remove
10	<i>Hakea</i> sp.	A Hakea	Native	Remove
11	<i>Melaleuca decora</i>	A Paperbark	Native	Remove
12	<i>Banksia integrifolia</i>	Coastal Banksia	Native	Remove

Table 4.1 **Trees within the subject site**

Tree No.	Scientific name	Common name	Native (indigenous, non-indigenous); exotic	Proposed for removal or retention
13	<i>Melaleuca decora</i>	A Paperbark	Native	Remove
14	<i>Eucalyptus botryoides</i>	Bangalay	Native	Retain
15	<i>Melaleuca decora</i>	A Paperbark	Native	Retain
16	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
17	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
18	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
19	<i>Melaleuca decora</i>	A Paperbark	Native	Retain
20	<i>Corymbia maculata</i>	Spotted Gum	Native	Retain
21	<i>Grevillea robusta</i>	Silky Oak	Native (non-indigenous)	Retain
22	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
23	<i>Ficus microcarpa</i> var. <i>hillii</i>	Hill's Weeping Fig	Native (non-indigenous; cultivar/ornamental)	Retain
24	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
25	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
26	<i>Eucalyptus microcorys</i>	Tallowwood	Native	Retain
27	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
28	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Remove
29	<i>Schinus molle</i> var. <i>areira</i>	Pepper Tree	Exotic	Remove
30	<i>Melaleuca decora</i>	A Paperbark	Native	Remove
31	<i>Liquidambar styraciflua</i>	Liquidambar	Exotic	Remove
32	<i>Eucalyptus robusta</i>	Swamp Mahogany	Native	Remove
33	<i>Eucalyptus robusta</i>	Swamp Mahogany	Native	Remove
34	<i>Schinus terebinthifolia</i>	Pepper Tree	Exotic	Retain
35	<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	Native	Retain
36	<i>Corymbia maculata</i>	Spotted Gum	Native	Retain
37	<i>Corymbia maculata</i>	Spotted Gum	Native	Retain
38	<i>Corymbia maculata</i>	Spotted Gum	Native	Retain
39	<i>Ligustrum lucidum</i>	Large Leaf Privet	Exotic	Remove
40	<i>Corymbia citriodora</i>	Lemon-Scented Gum Tree	Native (non-indigenous)	Remove
41	<i>Callistemon viminalis</i>	Weeping Bottle Brush	Native	Remove
42	<i>Leptospermum petersonii</i>	Lemon-Scented Teatree	Native (non-indigenous)	Remove

Table 4.1 **Trees within the subject site**

Tree No.	Scientific name	Common name	Native (indigenous, non-indigenous); exotic	Proposed for removal or retention
43	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	Native (non-indigenous)	Retain
44	<i>Melaleuca styphelioides</i>	Prickly-Leaved Tea Tree	Native	Retain
45	<i>Melaleuca styphelioides</i>	Prickly-Leaved Tea Tree	Native	Retain
46	<i>Casuarina cunninghamiana</i>	River She Oak	Native	Retain
47	<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	Native	Remove
48	<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	Native	Remove
49	<i>Melaleuca decora</i>	A Paperbark	Native	Remove
50	<i>Melaleuca decora</i>	A Paperbark	Native	Remove
51	<i>Eucalyptus botryoides</i>	Bangalay	Native	Remove
52*	<i>Melaleuca decora</i>	A Paperbark	Native	Retain
53*	<i>Melaleuca decora</i>	A Paperbark	Native	Retain
54*	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain
55*	<i>Lophostemon confertus</i>	Brush Box	Native (non-indigenous)	Retain

Source: Tree IDs and information are from Vezgoff (2023) except for Trees 52, 53, 54, and 55, which are additional trees identified by EMM. These trees are indicated on Figure 4.1 and will be retained.

4.2 Environmental weeds

One priority weed for the South East region was recorded within the subject site. The species identified, and its regional recommended control measures are listed in Table 4.2.

Table 4.2 **Priority weed recorded with the study area**

Scientific name	Common name	Duty
<i>Asparagus aethiopicus</i>	Ground asparagus	General Biosecurity Duty All pest plants are regulated with a general biosecurity duty to prevent, eliminate, or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated, or minimised, so far as is reasonably practicable (DPI 2023) Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale.

4.3 Fauna habitat values

The following fauna habitat values were identified in the study area, comprising:

- nectar- providing trees and shrubs, such as *Eucalyptus*, *Corymbia*, *Lophostemon*, *Melaleuca*, and *Callistemon*, providing foraging resources for nectivorous species
- one hollow-bearing tree (tree 36)
- a large Fig Tree (*Ficus microcarpa* var. *hillii*) along Fairfax Road, providing fruit foraging resources
- planted vegetation on the hospital grounds in landscaped gardens, providing shelter for reptiles found in urban landscapes
- artificial structures in the form of buildings within the subject site, providing potential roosting habitat for microbat species and common bird species.

The study area does not contain any aquatic, wetland or foreshore habitats or habitat values. Furthermore, no internationally important wetlands (RAMSAR) occur within the study area (DCCEEW 2023b).

The fauna habitats are detailed in Table 4.3 below.

Table 4.3 Fauna habitats within the study area

Habitat type	Key features	Associated fauna species
Foraging resources	Foraging resources for nectivorous and seed eating species, from trees and shrubs of the genera: • <i>Eucalyptus</i> • <i>Corymbia</i> • <i>Lophostemon</i> • <i>Melaleuca</i> • <i>Banksia</i>	Nectivorous birds: • Rainbow Lorikeet (<i>Trichoglossus haematodus</i>) • Little Lorikeet (<i>Glossopsitta pusilla</i>) • Swift Parrot (<i>Lathamus discolor</i>) • Galah (<i>Eolophus roseicapilla</i>) • Sulphur-crested Cockatoo (<i>Cacatua galerita</i>) • Red Wattlebird (<i>Anthochaera carunculata</i>) • Little Wattlebird (<i>Anthochaera chrysoptera</i>) Flying foxes: • Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) • Little Red Flying-fox (<i>Pteropus scapulatus</i>) • Black Flying-fox (<i>Pteropus alecto</i>)
Hollow-bearing tree	One medium hollow (20 x 15 cm entrance) on a <i>Corymbia maculata</i> (tree 36).	A family of five Galahs were observed perched on the one hollow-bearing tree in the subject site. The hollow is likely occupied by the Galahs.
Fig Tree	One large fig tree	Fructivorous birds: • Australasian Figbird (<i>Sphecotheres vieilloti</i>) • Rainbow Lorikeet (<i>Trichoglossus haematodus</i>) • Pied Currawong (<i>Strepera graculina</i>) • Eastern Koel (<i>Eudynamys orientalis</i>) Flying foxes: • Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) • Little Red Flying-fox (<i>Pteropus scapulatus</i>) • Black Flying-fox (<i>Pteropus alecto</i>)

Table 4.3 **Fauna habitats within the study area**

Habitat type	Key features	Associated fauna species
Planted landscaped garden vegetation	Shelter for reptiles	Skinks (<i>Scincidae</i> spp.) and lizards (<i>Agamidae</i> spp.).
Artificial structures	Buildings within the subject site	Microchiropteran bats: • Large-eared Pied Bat • Eastern False Pipistrelle • Eastern Coastal Free-tailed Bat • Little Bent-winged Bat • Large Bent-winged Bat • Southern Myotis • Yellow-bellied Sheath-tail-bat • Greater Broad-nosed Bat



Photograph 4.1 Existing buildings (left) proposed for demolition. Bangalays (Tree 6 and 8), *Melaleuca decora* (Tree 15) and Brush Boxes (Trees 16 – 18) to be retained.



Photograph 4.2 Hill's Weeping Fig (Tree 23) and Brush Boxes (Trees 22, 24, and 25) to be retained.



Photograph 4.3 **Narrow-leaved Black Peppermint (Tree 43) to be retained (Vezgoff 2023).**



Photograph 4.4 **A family of Galahs utilising the hollow-bearing tree (Spotted Gum; Tree 36) to be retained.**



Source: EMM (2024); DCSSS (2023); GA (2009); MetroMap (2024)

KEY

Subject site

Study area

Hollow bearing tree

Narrow-leaved black peppermint (*Eucalyptus nicholii*)

Tree status

Remove

Retain

Vegetation mapping

Exotic lawn

Native and exotic urban vegetation

Not vegetated

Vegetation mapping of the site
and survey results

New Shellharbour Hospital
Flora and Fauna Assessment
Figure 4.1

4.4 Threatened species

4.4.1 Flora

A likelihood of occurrence assessment was undertaken in accordance with the methods outlined in Section 3.3, the results of which are presented in Appendix C. Twenty threatened plant species have either been recorded within the locality or are predicted to occur within the locality.

Apart from the planted threatened Narrow-leaved Black Peppermint (*Eucalyptus nicholii*) identified in the study area, no other flora species assessed are likely to occur within the subject site based on considerations of habitat types and conditions present.

i Narrow-leaved Black Peppermint

One threatened flora species was recorded in the study area during the site investigations. This is an individual planted Narrow-leaved Black Peppermint (*Eucalyptus nicholii*) (tree 43), listed as vulnerable under the EPBC Act, and the BC Act. The tree is located in the subject site, north of the existing hospital facilities and is proposed to be retained (Figure 4.1).

According to the species conservation advice, this tree is endemic to the New England Tablelands (DEWHA 2008) and is not indigenous to the Illawarra region. Narrow-leaved Black Peppermint is commonly planted as an urban street tree (DEWHA 2008). This tree was planted on the hospital grounds and is not situated in its natural range of the New England Tablelands. For this reason, Narrow-leaved Black Peppermint does not require further assessment under the BC Act and EPBC Act.

4.4.2 Fauna

No threatened fauna species were opportunistically recorded in the study area during the site investigations.

A likelihood of occurrence assessment was undertaken in accordance with Section 3.3, the results of which are presented in Appendix C. Note that as part of the likelihood of occurrence assessment, marine mammals and reptiles, fish species, pelagic birds, shorebirds and wetland birds were excluded from consideration as no aquatic or marine habitat is present within the subject site.

Fifty-three threatened species, comprising 33 bird species, 17 mammal species, 2 frog species and 1 reptile species have either been recorded within the locality or are predicted to occur within the locality. Of the species assessed, the following are considered likely to occur (Table 4.4). Of these, the Large-eared Pied Bat, Swift Parrot and Grey-headed Flying-fox are also EPBC Act listed.

The microbat species listed in Table 4.4 are likely to only roost during non-breeding season within the artificial structures on the subject site, with breeding unlikely to occur due to the absence of specific habitat requirements for maternity sites. The specialist cave-roosting bat species such as Large-eared Pied Bat, Large Bent-winged Bat and Little Bent-winged Bat have highly specific requirements for maternity sites, including but not limited to sandstone caves and overhangs with domed roofs with indentations, and specific microclimates related to high temperature and humidity to support the development of young (DERM 2011; DELWP 2020; OEH 2022). The artificial structures located within the subject site are unlikely to support such maternity sites due to the size and overall structural character of the buildings.

Whilst the subject site is unlikely to support breeding of threatened microbat species, a conservative assessment has been undertaken with assessments of significance under the BC Act and EPBC Act conducted for the potential roosting of these species within the artificial structures on the subject site (Appendix D and Appendix E).

Table 4.4 **Threatened fauna species known or likely to occur in the subject site**

Scientific name	Common name	BC Act status	EPBC Act status	Habitat and potential habitat in the study area
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Vulnerable	Roosting habitat within artificial structures and foraging habitat below the canopy of planted trees.
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	-	Roosting habitat within artificial structures and foraging habitat above or below the canopy of planted trees.
<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	-	Foraging resources from <i>Eucalyptus</i> , <i>Corymbia</i> , and <i>Melaleuca</i> on the hospital grounds.
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Critically Endangered	Foraging resources from winter flowering Spotted Gum, Swamp Mahogany, and Forest Red Gum trees on the hospital grounds.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	-	Roosting habitat within artificial structures and foraging habitat above or below the canopy of planted trees.
<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	-	Roosting habitat within artificial structures and foraging habitat below the canopy of planted trees.
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	-	Roosting habitat within artificial structures and foraging habitat above the canopy of planted trees.
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	-	Roosting habitat in trees planted on site; however, the only hollow-bearing tree is likely to be occupied by a family of galahs. No foraging resources in the form of water bodies within 200 metres of roosting habitat. However, is known to roost in artificial structures on occasion.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable	Foraging resources from Spotted Gum, Swamp Mahogany, Forest Red Gum, Lemon-scented Gum, and Hill's Weeping Fig trees.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Vulnerable	-	Roosting habitat within artificial structures and foraging habitat above or below the canopy of planted trees.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	-	Roosting habitat within artificial structures.

4.5 Migratory species

Due to the subject site's proximity to the coast, five migratory species have either been recorded within the locality or are predicted to occur within the locality. A likelihood of occurrence assessment was undertaken in accordance with Section 3.3, the results of which are presented in Appendix C.

No migratory species are considered likely to occur within the study area due to the absence of suitable habitat.

5 Impact assessment

5.1 Direct impact

The biodiversity values of the subject site are limited to:

- planted native and exotic trees and shrubs that provide foraging habitat for native fauna
- one hollow-bearing tree that provides nesting habitat for a family of Galahs
- buildings that may provide roosting habitat for microbat species and common birds.

As such the direct impacts of the proposal are expected to be minimal, particularly as the hollow-bearing tree will be retained. These impacts are discussed briefly below.

5.1.1 Tree removal

The proposal will necessitate the clearing of urban vegetation comprising planted native and exotic trees, shrubs and groundcovers as part of landscaped gardens and mown lawns. As none of the vegetation comprises remnant vegetation or conforms to a PCT, the main biodiversity impact is likely to be the loss of established trees that function as foraging or roosting habitat for native fauna.

In total, 20 native trees and 3 exotic trees will be removed, while 31 native trees and 1 exotic tree will be retained. The one hollow bearing tree (tree 36) recorded in the study area is to be retained. Impacts to trees and their species are detailed in Table 4.1 and quantified in Table 5.1.

Table 5.1 Quantified tree impacts

Proposed for retention or removal	Native species	Exotic species
Trees to be retained	31	1
Trees to be removed	20	3

5.1.2 Building demolition

The proposal will involve the demolition of existing buildings that have potential to be used by microbat species for roosting, or by swallows and swifts for nesting. Although the buildings are unlikely to support breeding of threatened microbat species, the demolition activities have potential to directly impact any microbats if they were roosting in the walls or ceiling cavities.

5.2 Indirect impacts

Indirect impacts are likely to be associated with the construction phase of the proposal and potentially could include:

- inadvertent damage to trees that are to be retained
- weed and pathogen introduction and spread
- erosion and sedimentation
- increase in noise and vibration during demolition and construction works
- fauna injury and mortality during demolition works.

As the existing biodiversity values of the subject site are limited to planted vegetation in a very urbanised setting, the effects of construction listed above can be effectively managed through the construction mitigation procedure in line with a Construction Environmental Management Plan (CEMP) approved for the works. Mitigation measures are recommended in Section 6.

5.3 Summary of impacts on threatened biodiversity

5.3.1 Threatened ecological communities

There are no PCTs identified on the subject site and therefore, the proposal will not have a significant impact on any threatened ecological communities listed under either the BC Act or the EPBC Act.

5.3.2 Threatened species

Given the highly modified landscape of the Port Kembla Hospital, offering limited natural habitat, situated in the highly urbanised landscape of Warrawong, 11 species were considered to have a moderate likelihood of occurrence.

No threatened species were considered likely to be significantly impacted by the proposal. Assessments of significance have been undertaken in Appendix D and Appendix E. The results of this assessment are summarised in Table 5.2 below.

Table 5.2 Threatened species impact assessment summary

Scientific name	Common name	EPBC Act	BC Act	Likelihood of occurrence	Significant impact assessment
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Vulnerable	Moderate	EPBC Act: unlikely BC Act: unlikely
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	-	Moderate	BC Act: unlikely
<i>Glossopsitta pusilla</i>	Little Lorikeet	-	Vulnerable	Moderate	BC Act: unlikely
<i>Lathamus discolor</i>	Swift Parrot	Critically Endangered	Endangered	Moderate	EPBC Act: unlikely BC Act: unlikely
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	-	Moderate	BC Act: unlikely
<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	-	Moderate	BC Act: unlikely
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	-	Moderate	BC Act: unlikely
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	-	Moderate	BC Act: unlikely
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable	Moderate	EPBC Act: unlikely BC Act: unlikely
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Vulnerable	-	Moderate	BC Act: unlikely
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	-	Moderate	BC Act: unlikely

5.4 Summary of impacts on MNES

An assessment of the project against the EPBC Act has been undertaken. Matters of National Environmental Significance potentially being affected by the proposal, are outlined in Table 5.3.

Table 5.3 **Assessment of the project against the EPBC Act**

MNES	Project Specific	Likely Significant impact
Threatened species	• Large-eared Pied Bat • Swift Parrot • Grey-headed Flying-fox	Low
Threatened ecological communities	None	Negligible
Migratory species	None	Negligible
Wetlands of international importance	None	Negligible

6 Mitigation measures

The proposal is located within the current developed areas of the subject site and is optimised to avoid the clearing of most native trees that represent habitat for native fauna. Although there are unlikely to be significant impacts on threatened biodiversity, the proposal will include a substantial landscape design plan (Yerrabingin 2024) that will mitigate the loss of trees. In addition, a number of mitigation measures are recommended to manage the potential indirect impacts of construction, including measures to manage risks of fauna injury or unexpected finds during vegetation clearing or building demolition activities. These are discussed below.

6.1 Tree planting

To mitigate the loss of 20 native trees, 265 native trees and shrubs are proposed to be planted within the hospital grounds, according to the draft landscape design plan (Yerrabingin 2024). In addition, native grasses, groundcovers, ferns, rushes, sedges, and vines are proposed to be planted throughout the hospital site, as per the landscape design plan (Yerrabingin 2024). Trees and shrubs proposed within the planting profile would provide fruit and flower foraging resources for fauna in the locality, mitigating the loss of foraging trees. These trees and shrubs include Spotted Gum, Old Man Banksia (*Banksia Serrata*), Paperbarks (*Melaleuca spp.*), Tantoon (*Leptospermum polygalifolium*), and Lilly Pilly (*Acmena smithii*). Trees and shrubs proposed for planting are outlined in Table 6.1.

Table 6.1 Ecological benefits of trees and shrubs to be planted

Scientific name	Common name	Ecological benefits
<i>Acmena smithii</i>	Lilly Pilly	Fruit foraging resources
<i>Corymbia maculata</i>	Spotted Gum	Hollow forming, fruit, and flower foraging resources. Winter flowering, for Swift Parrots and Grey-headed Flying Foxes.
<i>Banksia serrata</i>	Old Man Banksia	Nectar foraging resources.
<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Fruit foraging resources
<i>Leptospermum polygalifolium</i>	Tantoon	Nectar foraging resources.
<i>Melaleuca quinquenervia</i> and <i>Melaleuca styphelioides</i>	A Paperbark	Nectar foraging resources.

6.2 General construction mitigation measures

Mitigation measures during construction are recommended to manage, avoid, and minimise construction impacts. These measures are listed in Table 6.2.

Table 6.2 Recommended construction mitigation measures

Risk	Mitigating measures	Responsibility	Timing
Unintended clearing of native trees and shrubs	No-go areas to be shown on a construction site plan and clearly demarcated using high visibility tape prior to commencement of construction/demolition works.	Construction contractor	Pre-construction
Weed and pathogens	Construction and light vehicles are to park in designated areas and should be regularly cleaned and maintained to limit weed and weed seed, and pathogen transport/ transfer. Weed material is to be cleared and stockpiled separately to all other vegetation, removed from the site, and disposed of at an appropriately licenced disposal facility. When transporting weed waste from the site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Hygiene measures are to be implemented to prevent the introduction or spread of chytrid fungus during the vegetation clearing.	Construction contractor	During construction and post-construction
Erosion, surface run-off and sedimentation	A Sediment and Erosion Control Plan will be incorporated into a Construction Environmental Management Plan (CEMP) and should contain detailed mitigation measures to reduce soil erosion and pollutant run-off during all construction activities. These should include the following: • Erosion and sediment control measures are to be installed prior to any works • Erosion and sediment control measures are to be inspected regularly, particularly following rainfall events, to ensure their ongoing functionality • Stockpile management measures which minimise the potential for erosion and surface water runoff • Construction and maintenance of sediment fences to capture and isolate any surface water runoff • Implementation of measures to manage fuels, chemicals, and liquids required during construction • Disturbed/exposed areas are to be stabilised immediately following construction and revegetated as per the Landscape Plan.	Construction contractor	During construction

Table 6.2 **Recommended construction mitigation measures**

Risk	Mitigating measures	Responsibility	Timing
Removal of potential microbat roosting habitat associated with demolition of buildings	Conduct a pre-clearance inspection to see if any microbats (threatened or otherwise) can be seen roosting prior to demolition of buildings. Pre-clearing inspections are to be undertaken no more than two weeks prior to commencement of demolition activities. If present: • notify the construction environmental manager • do not commence demolition works until cleared to do so • have a suitably qualified and Australian Bat Lyssavirus (ABLV) vaccinated ecologist present to catch and relocate any microbats should they be present during demolition.	Construction contractor	Pre-construction and during construction
Fauna mortality associated with demolition and clearing works	If resident fauna is confirmed, clearing supervision should be conducted by a suitably qualified ecologist or wildlife rescuer to minimise fauna injury or mortality. Fauna handling and release protocols are to be implemented during any clearing works. Contact WIRES (1300 094 737) in the event of injured fauna being discovered.	Construction contractor and qualified wildlife handler/fauna ecologist.	Pre-construction and during construction
Ongoing surface run-off from car park areas into adjacent waterways	The detailed design of the driveway, and internal roads should include gutter/bunding or another appropriate design features that capture and/or minimise run-off from hard surfaces into surrounding drains.	Project engineer/ design team	Detailed design phase

7 Conclusion

The proposed redevelopment of the WCHC is located in the highly urbanised suburb of Warrawong, within the urbanised area of the Wollongong LGA. The 20 native trees and shrubs proposed for removal form part of mown, predominantly exotic lawns, and gardens on the hospital grounds.

This flora and fauna assessment indicates that:

- the subject site does not support occurrences of threatened ecological communities
- one Narrow-leaved Black Peppermint (*Eucalyptus nicholii*) (tree 43), listed as vulnerable under the EPBC Act, and the BC Act, occurs in the subject site north of the existing hospital facility. This species is endemic to the Northern Tablelands of NSW and is not endemic to the Illawarra region. Being a commonly planted urban tree, the individual was historically planted, and any impacts to this tree will not constitute a significant impact to the species.
- Little Lorikeet, Swift Parrot, Grey-headed Flying-fox and several threatened microbat species have a moderate likelihood to occur on site to forage, with threatened microbats having moderate likelihood of roosting in the buildings. The potential for threatened microbats to breed on site is considered to be low.

The proposed demolition of the existing hospital building in the north-east of the Port Kembla Hospital, followed by the new construction of the WCHC, and associated road widenings, necessitating the clearing of 20 native, and 3 exotic trees, is unlikely to constitute a significant impact on threatened species, communities, or their habitats, listed under the EPBC Act, or BC Act.

While the Little Lorikeet, Swift Parrot, and Grey-headed Flying-fox were considered to have a moderate likelihood of occurrence, given the scale of impacts in the broader, highly urbanised landscape, the removal of up to 20 potential foraging trees, is unlikely to result in a significant impact to these species, or their local populations.

To mitigate the loss of 20 native trees, the draft landscape design plan (Yerrabingin 2024) proposes to plant 265 native trees and shrubs, within the footprint of the Port Kembla Hospital. These species would include species which would provide fruit and flowering foraging resources, including Spotted Gums, Old Man Banksia, Tautoon, *Melaleuca decora*, *Melaleuca styphelioides*, Lilly Pilly, and Blueberry Ash. If approved, these species would mitigate the loss of 20 native trees, as well as significantly increase the availability of resources for native fructivorous and nectivorous birds and flying-foxes.

Further mitigation measures to address risks to biodiversity and the environment during the construction period, are recommended, and should be incorporated in a Construction Environmental Management Plan (CEMP). This includes measures to mitigate risks to microbats that have potential to roost in the buildings proposed for demolition.

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Appendix A

Protected matters report



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 09-Nov-2023

[Summary](#)

[Details](#)

[Matters of NES](#)

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Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	47
Listed Migratory Species:	18

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	27
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

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

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area
Illawarra and south coast lowland forest and woodland ecological community	Critically Endangered	Community may occur within area
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
FISH		
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area
FROG		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Isoodon obesulus obesulus		
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat may occur within area
Petauroides volans		
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area
Petaurus australis australis		
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area
Potorous tridactylus trisulcatus		
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat may occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
PLANT		
Caladenia tessellata		
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat likely to occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat likely to occur within area
Prasophyllum affine Jervis Bay Leek Orchid, Culburra Leek-orchid, Kinghorn Point Leek-orchid [2210]	Endangered	Species or species habitat may occur within area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat likely to occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area

REPTILE

Scientific Name	Threatened Category	Presence Text
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species [Resource Information]		
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]	
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sterna striata White-fronted Tern [799]		Migration route may occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area

Extra Information

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	
Lake Illawarra	NSW	

EPBC Act Referrals		[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed
Lake Illawarra entrance works, Stage 2	2004/1696	Not Controlled Action	Completed
Not controlled action (particular manner)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Lake Illawarra Entrance Works (stage 2)	2005/1997	Not Controlled Action (Particular Manner)	Post-Approval
Bioregional Assessments			
SubRegion	BioRegion	Website	
Sydney	Sydney Basin	BA website	

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix B

Flora species recorded on site

B.1 Flora species recorded on site

Table B.1 Flora species recorded in the study area

Family	Scientific name	Common name	Native or exotic	EPBC/ BC status
Anacardiaceae	<i>Schinus molle</i> var. <i>areira</i>	Pepper Tree	Exotic	Not listed
Anacardiaceae	<i>Schinus terebinthifolia</i>	Pepper Tree	Not found	Not listed
Araliaceae	<i>Hedera helix</i>	English Ivy	Exotic	Not listed
Arecaceae	<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	Native	Not listed
Asparagaceae	<i>Asparagus aethiopicus</i>	Asparagus Fern	Exotic	Not listed
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleebane	Not found	Not listed
Asteraceae	<i>Hypochaeris radicata</i>	Catsear	Exotic	Not listed
Casuarinaceae	<i>Casuarina cunninghamiana</i>	River She Oak	Native	Not listed
Crassulaceae	<i>Crassula ovata</i>	Jade Plant	Exotic	Not listed
Davalliaceae	<i>Nephrolepis cordifolia</i>	Fishbone Fern	Exotic	Not listed
Hamamelidaceae	<i>Liquidambar styraciflua</i>	Liquidambar	Exotic	Not listed
Malvaceae	<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	Native	Not listed
Moraceae	<i>Ficus microcarpa</i> var. <i>hillii</i>	Hill's Weeping Fig	Native (Qld)	Not listed
Myrtaceae	<i>Callistemon viminalis</i>	Weeping Bottle Brush	Native	Not listed
Myrtaceae	<i>Corymbia citriodora</i>	Lemon-Scented Gum Tree	Native (NSW North Coast; Qld)	Not listed
Myrtaceae	<i>Corymbia gummifera</i>	Red Bloodwood	Native	Not listed
Myrtaceae	<i>Corymbia maculata</i>	Spotted Gum	Native	Not listed
Myrtaceae	<i>Eucalyptus botryoides</i>	Bangalay	Native	Not listed
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood	Native	Not listed
Myrtaceae	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	Native (NSW New England Tablelands)	BC Act: Vulnerable
Myrtaceae	<i>Eucalyptus robusta</i>	Swamp Mahogany	Native	Not listed
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Native	Not listed
Myrtaceae	<i>Leptospermum petersonii</i>	Lemon-Scented Teatree	Native (NSW North Coast; Qld)	Not listed
Myrtaceae	<i>Lophostemon confertus</i>	Brush Box	Native (north from Hunter Valley)	Not listed
Myrtaceae	<i>Melaleuca decora</i>	A Paperbark	Native	Not listed
Myrtaceae	<i>Melaleuca styphelioides</i>	Prickly-Leaved Tea Tree	Native	Not listed
Ochnaceae	<i>Ochna interregima</i>	Yellow Mai Flower	Exotic	Not listed

Table B.1 **Flora species recorded in the study area**

Family	Scientific name	Common name	Native or exotic	EPBC/ BC status
Oleaceae	<i>Ligustrum lucidum</i>	Large Leaf Privet	Exotic	Not listed
Passifloraceae	<i>Passiflora caerulea</i>	Blue Passionflower	Exotic	Not listed
Poaceae	<i>Axonopus fissifolius</i>	Narrow-Leaved Carpet Grass	Not found	Not listed
Poaceae	<i>Bromus cartharticus</i>	Prairie Grass	Not found	Not listed
Poaceae	<i>Lolium multiflorum</i>	Italian Ryegrass	Exotic	Not listed
Proteaceae	<i>Banksia integrifolia</i>	Coastal Banksia	Native	Not listed
Proteaceae	<i>Grevillea robusta</i>	Silky Oak	Native (NSW North Coast; Qld)	Not listed
Proteaceae	<i>Hakea</i> spp.	A Hakea	Native	Not listed
Scrophulariaceae	<i>Russelia equisetiformis</i>	Firecracker Plant	Exotic	Not listed
Scrophulariaceae	<i>Verbascum thapsus</i>	Blanket Weed	Exotic	Not listed

Appendix C

Likelihood of occurrence table

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Amphibians	Heleioporus australiacus	Giant Burrowing Frog	PMST	Vulnerable	Vulnerable	-	The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly. The home ranges of both sexes appear to be non-overlapping suggesting exclusivity of non-breeding habitat. Home ranges are approximately 0.04 ha in size. Individuals move into the breeding site either immediately before or following heavy rain and occupy these sites for up to 10 days. Most individuals will not attempt to breed every year. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water.	Low	Heath, woodland, open, forest and streams are absent for this species.
Fauna	Amphibians	Litoria aurea	Green and Golden Bell Frog	BioNet	Endangered	Vulnerable	-	Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range, however they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one isolated population). These populations have	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (Typha spp.) or spikerushes (Eleocharis spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (Gambusia holbrooki), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas. The species is active by day and usually breeds in summer when conditions are warm and wet. Males call while floating in water and females produce a raft of eggs that initially float before settling to the bottom, often amongst vegetation. Tadpoles feed on algae and other plant-matter; adults eat mainly insects, but also other frogs. Preyed upon by various wading birds and snakes.	Low	Marshes, dams, streams, or streams containing bullrushes are absent from the study area.
Fauna	Bats	Chalinolobus dwyeri	Large-eared Pied Bat	BioNet	Vulnerable	Vulnerable	-	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), also possibly roosts in the hollows of trees, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. The relatively short, broad wing combined with the low weight per unit area of wing indicates manoeuvrable flight. This species probably forages for small, flying insects below the forest canopy. Likely to hibernate through the coolest months. It is uncertain whether mating occurs early in winter or in spring.	Moderate	Potential foraging habitat occurs within the subject site and potential roosting habitat occurs within buildings on the subject site.
Fauna	Bats	Falsistrellus tasmaniensis	Eastern False Pipistrelle	BioNet	Vulnerable	-	-	The Eastern False Pipistrelle is found on the south east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania.	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. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer.	Moderate	The one hollow present in the subject land is proposed for retention and is occupied by Galah's, however potential roosting habitat occurs within buildings on the subject site and potential foraging habitat occurs within the subject site.
Fauna	Bats	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	BioNet	Vulnerable	-	-	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW.	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	Moderate	Potential foraging habitat occurs within the subject site and potential roosting habitat occurs within buildings on the subject site.
Fauna	Bats	Miniopterus australis	Little Bent-winged Bat	BioNet	Vulnerable	-	-	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW.	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. They often share roosting sites with the Common Bentwing-bat and, in winter, the two species	Moderate	The one hollow present in the subject land is proposed for retention and is occupied by Galah's, however potential roosting habitat occurs within buildings on the subject site and potential foraging habitat occurs within the subject site.
Fauna	Bats	Miniopterus orianae oceanensis	Large Bent-winged Bat	BioNet	Vulnerable	-	-	Eastern Bentwing-bats occur along the east and north-west coasts of Australia.	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Cold caves are used for hibernation in southern Australia. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas, catching moths and other flying insects above the tree tops.	Moderate	Potential foraging habitat occurs within the subject site and potential roosting habitat occurs within buildings on the subject site.
Fauna	Bats	Myotis macropus	Southern Myotis	BioNet	Vulnerable	-	-	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers.	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. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. In NSW females have one young each year usually in November or December.	Moderate	The one hollow present in the subject land is proposed for retention and is occupied by Galah's, however potential roosting habitat occurs within buildings on the subject site. Foraging habitat is absent due to the lack of waterbodies on the subject site.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Bats	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	BioNet	Vulnerable	Vulnerable	-	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations.	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 generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.	Moderate	Eucalypt, Corymbia trees are present in the subject land, and Port Kembla Hospital, which may provide occasional foraging resources. A large fig tree is present on the hospital grounds, however, is proposed to be retained.
Fauna	Bats	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	BioNet	Vulnerable	-	-	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes.	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March, when a single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn.	Moderate	The one hollow present in the subject land is proposed for retention and is occupied by Galah's, however potential roosting habitat occurs within buildings on the subject site and potential foraging habitat occurs within the subject site.
Fauna	Bats	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	BioNet	Vulnerable	-	-	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m.	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. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. 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. Little is known of its reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites located in suitable trees, where they appear to exclude males during the birth and raising of the single young.	Moderate	The one hollow present in the subject land is proposed for retention and is occupied by Galah's, however potential roosting habitat occurs within buildings on the subject site.
Fauna	Birds	<i>Anthochaera phrygia</i>	Regent Honeyeater	BioNet	Critically Endangered	Critically Endangered	-	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury) and in NSW at Dusky woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range.	The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast. Birds are occasionally seen on the south coast. In the last 10 years Regent Honeyeaters have been recorded in urban areas around Albury where woodlands tree species such as Mugga Ironbark and Yellow Box were planted 20 years ago. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key	Low	Dry open forests and woodlands, particularly Box-Ironbark woodland, are absent from the study area.
Fauna	Birds	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	BioNet	Vulnerable	-	-	Dusky woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range.	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Also frequently hovers, sallies and pounces under the canopy, primarily over leaf litter and dead timber. Also occasionally take nectar, fruit and seed. Depending on location and local climatic conditions (primarily temperature and rainfall), the dusky woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species. Nest is an open, cup-shape, made of twigs, grass, fibrous rootlets and occasionally casuarina needles, and may be lined with grass, rootlets or infrequently horsehair, occasionally unlined. Nest sites vary greatly, but generally occur in shrubs or low trees, living or dead, horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post. Nest sites may be exposed or well concealed by foliage.	Low	Open forests and woodlands, shrublands, and heathlands are absent from the study area. The hospital grounds, situated in an urban landscape, has a regularly mown lawn and few native and exotic trees. It is not expected to offer a highly productive environment for invertebrates, for foraging.
Fauna	Birds	<i>Burhinus grallarius</i>	Bush Stone-curlew	BioNet	Endangered	-	-	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range.	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.	Low	Open forests and woodlands, shrublands, and heathlands are absent from the study area. The hospital grounds, situated in an urban landscape, has a regularly mown lawn and few native and exotic trees. It is not expected to offer a highly productive environment for invertebrates, or small vertebrates for foraging.
Fauna	Birds	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	BioNet	Vulnerable	Endangered	-	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee.	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 metres or more above the ground.	Low	Open forests and woodlands are absent for this species. The one hollow present in the subject land is a medium hollow proposed for retention, and is occupied by Galah's. One planted <i>Casuarina cunninghamiana</i> tree is present at the hospital entrance, and is proposed for retention. Abundant foraging habitat, in the form of large stands of <i>Casuarina</i> and <i>Allocasuarina</i> , and abundant hollows are absent from the study area.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Birds	<i>Calyptrorhynchus lathamii</i>	South-eastern Glossy Black-Cockatoo	BioNet	Vulnerable	Vulnerable	-	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia.	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i> , and <i>A. gymnathera</i> . Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (<i>Casuarina cristata</i>). Feeds almost exclusively on the seeds of several species of she-oak (<i>Casuarina</i> and <i>Allocasuarina</i> species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.	Low	Open forests and woodlands are absent for this species. The one hollow present in the subject land is a medium hollow proposed for retention, and is occupied by Galah's. One planted <i>Casuarina cunninghamiana</i> tree is present at the hospital entrance, and is proposed for retention. Abundant foraging habitat, in the form of large stands of <i>Casuarina</i> and <i>Allocasuarina</i> , and abundant hollows are absent from the study area.
Fauna	Birds	<i>Circus assimilis</i>	Spotted Harrier	BioNet	Vulnerable	-	-	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population.	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	Low	Open grassy woodlands, riparian woodlands, mallee, and native grasslands, are absent for this species. No raptor stick nests were observed in the study area. The hospital, situated in a highly urbanised landscape, is not expected to offer optimal habitat.
Fauna	Birds	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	PMST	Vulnerable	Vulnerable	-	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has been greatly reduced over much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares, that have been isolated or fragmented for more than 50 years.	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Sedentary, considered to be resident in many locations throughout its range; present in all seasons or year-round at many sites; territorial year-round, though some birds may disperse locally after breeding. They are terrestrial and arboreal in about equal proportions. Hollows in standing dead or live trees and tree stumps are essential for nesting. The species breeds in pairs or co-operatively in territories which range in size from 1.1 to 10.7 ha (mean = 4.4 ha). Each group is composed of a breeding pair with retained male offspring and, rarely, retained female offspring. Often in pairs or cooperatively breeding groups of two to five birds. Forage on insects, invertebrates, nectar from Mugga Ironbark (<i>Eucalyptus sideroxylon</i>) and paperbarks, and sap from an unidentified eucalypt are also eaten.	Low	Eucalypt woodlands, and forest bordering wetlands, are absent for this species.
Fauna	Birds	<i>Coracina lineata</i>	Barred Cuckoo-shrike	BioNet	Vulnerable	-	-	Coastal eastern Australia from Cape York to the Manning River in NSW. Barred Cuckoo-shrikes are generally uncommon in their range, and are rare in NSW.	Rainforest, eucalypt forests and woodlands, clearings in secondary growth, swamp woodlands and timber along watercourses. They are usually seen in pairs or small flocks foraging among foliage of trees for insects and fruit. They are active birds, frequently moving from tree to tree.	Low	Rainforest, forests, woodlands, swamps, and timber lined watercourses are absent from the study area. The hospital grounds, situated in an urban landscape, has a regularly mown lawn and few native and exotic trees. It is not expected to offer a highly productive environment for invertebrates, or small vertebrates for foraging. The fig tree, which is the most abundantly fruit species in the subject land, is proposed to be retained.
Fauna	Birds	<i>Cuculus optatus</i>	Oriental Cuckoo	PMST	-	-	Mi	The distribution of the Oriental Cuckoo extends across northern Australia down the east coast.	Australia provides non-breeding habitat only: monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodlands. Frequently at edges or ecotones between habitat types. Riparian forest is favoured habitat in the Kimberley region.	Low	Rainforest, wet sclerophyll forest and woodlands dominated by Casuarina, Acacia and Eucalypts are absent for this species.
Fauna	Birds	<i>Dasyornis brachypterus</i>	Eastern Bristlebird	BioNet	Endangered	Endangered	-	The distribution of the Eastern Bristlebird has contracted to three disjunct areas of south-eastern Australia. There are three main populations: Northern - southern Queensland/northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. The estimated population size is less than 2000 individuals occupying a total area of about 120 sq km. There are now only four populations in the southern Queensland/northern NSW area with a total of 35 birds, compared to 15 years ago when 14 populations and 154 birds were recorded. This population once extended as far south as at least Dorrigo and has recently been identified as a separate ultrataxon (<i>monoides</i>) but further research is being undertaken to determine the validity of this. The remaining populations are the nominate ultrataxon (<i>brachypterus</i>) and once extended at least to what is now the Sydney urban area. The central population comprises an estimated 1600 birds, mainly from Barren Grounds Nature Reserve, Budderoo National Park and the Jervis Bay area. The southern population	Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. In northern NSW the habitat occurs in open forest with dense tussocky grass understorey and sparse mid-storey near rainforest ecotone; all of these vegetation types are fire prone. Age of habitat since fires (fire-age) is of paramount importance to this species. The Illawarra and southern populations reach maximum densities in habitat that has not been burnt for at least 15 years; however, habitat in northern NSW requires frequent fires to maintain habitat condition and suitability. The northern fire regimes is between 3-6 years and of variable intensity depending on the habitat condition. Shy and cryptic and rarely flies, although can be seen scampering over the ground; when approached, may move to a lookout perch 1 m or more above the ground, then retreat into dense vegetation. Feeds on a variety of insects, particularly ants. Nests are elliptical domes constructed on or near the ground amongst dense vegetation. Two eggs are laid during August to February; producing more than one clutch a year is rare, and recruitment into the population is low. Males are strongly territorial.	Low	Heath and open woodland with a heathy understorey is absent for this species.

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Fauna	Birds	<i>Epthianura albigfrons</i>	White-fronted Chat	BioNet	Vulnerable	-	-	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. 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. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas.	Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground. Have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation. Nests in the Sydney region have also been seen in low isolated mangroves. Nests are usually built about 23 cm above the ground (but have been found up to 2.5 m above the ground). Two to three eggs are laid in each clutch, and the complete nesting cycle from nest-building to independent young is approximately 50 days. Birds can breed at one year of age and are estimated to live for five years.	Negligible	Wetland habitat is absent for this species.
Fauna	Birds	<i>Falco hypoleucos</i>	Grey Falcon	PMST	Vulnerable	Vulnerable	-	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW.	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.	Low	Open woodlands (near coastal habitat) is absent for this species. No raptor stick nests were observed in the study area. The hospital, situated in a highly urbanised landscape, is not expected to offer optimal habitat.
Fauna	Birds	<i>Glossopsitta pusilla</i>	Little Lorikeet	BioNet	Vulnerable	-	-	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs.	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards. Gregarious, travelling and feeding in small flocks (<10), though often with other lorikeets. Flocks numbering hundreds are still occasionally observed and may have been the norm in past centuries. Roosts in treetops, often distant from feeding areas. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina. Nesting season extends from May to September. In years when flowering is prolific, Little Lorikeet pairs can breed twice, producing 3-4 young per attempt. However, the survival rate of fledglings is unknown.	Moderate	Eucalypt and Corymbia trees are present in the subject land, and Port Kembla Hospital, which may provide occasional foraging resources.
Fauna	Birds	<i>Grantiella picta</i>	Painted Honeyeater	BioNet	Vulnerable	Vulnerable	-	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution.	Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> . Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches.	Low	Myall woodland, Brigallow, and Boxgum woodlands are absent for this species. The last record in the locality was from 1991.
Fauna	Birds	<i>Hieraaetus morphnoides</i>	Little Eagle	BioNet	Vulnerable	-	-	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW.	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Lays two or three eggs during spring, and young fledge in early summer. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.	Low	Open eucalypt forests and woodlands, and Sheok or Acacia woodlands are absent from the study area.
Fauna	Birds	<i>Hirundapus caudacutus</i>	White-throated Needletail	BioNet	-	Vulnerable	Mi	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Peninsula and northern Japan June-August. Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (eg termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed. More common in coastal areas, less so inland.	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland.	Low	The White-throated Needletail is mostly aerial. Limited habitat for foraging or nesting occurs in the study area, situated in an highly urbanised landscape.
Fauna	Birds	<i>Lathamus discolor</i>	Swift Parrot	BioNet	Endangered	Critically Endangered	-	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes.	Migrates to the Australian south-east mainland between February and October. On the mainland they 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 (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia maculata</i>), Red Bloodwood (<i>C. gummifera</i>), Forest Red Gum (>E. tereticornis), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>). Commonly used lerp infested trees include Inland Grey Box (<i>E. microcarpa</i>), Grey Box (<i>E. moluccana</i>), Blackbutt (<i>E. pilularis</i>), and Yellow Box (<i>E. melliodora</i>). Return to some foraging sites on a cyclic basis depending on food availability. Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum (<i>Eucalyptus globulus</i>).	Moderate	Eucalypt and Corymbia trees are present in the subject land, and Port Kembla Hospital, which may provide occasional foraging resources.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Birds	Lophoictinia isura	Square-tailed Kite	BioNet	Vulnerable	-	-	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species 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, including the NSW south coast, arriving in September and leaving by March.	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. Appears to occupy large hunting ranges of more than 100 square km. Breeding is from July to February, with nest sites generally located along or near watercourses, in a fork or on large horizontal limbs.	Low	Woodlands, open forests, and timbered watercourses are absent for this species.
Fauna	Birds	Monarcha melanopsis	Black-faced Monarch	PMST	-	-	Mi	In New South Wales and the Australian Capital Territory, the species occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park, Wombeyan Caves and Canberra. It is rarely recorded farther inland.	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.	Low	Rainforest ecosystems are absent for this species.
Fauna	Birds	Myiagra cyanoleuca	Satin Flycatcher	PMST	-	-	Mi	The Satin Flycatcher is widespread in eastern Australia and vagrant to New Zealand. In NSW, they are widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains.	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. They generally occur in moister, taller forests than the Leaden Flycatcher, Myiagra rebecula, often occurring in gullies. They also occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest.	Low	Heavily vegetated gullies, eucalypt dominated forests and woodlands, and mangroves are absent for this species.
Fauna	Birds	Neophema chrysostoma	Blue-winged Parrot	PMST	Vulnerable	Vulnerable	-	Blue-winged parrots breed on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania. A partial migrant, variable numbers of birds migrate across Bass Strait in winter, apparently making the flight non-stop based on the scarcity of records from the Bass Strait islands. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales, with some birds reaching south-eastern New South Wales and eastern Victoria, particularly on the southern migration.	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones. The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties of blue-winged parrots forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs. Blue-winged parrots breed in Tasmania, coastal south-eastern South Australia and southern Victoria. Before migrating from Tasmania in autumn, many birds congregate on saltmarshes and agricultural land before departing north. While on the mainland, mobile flocks feed in saltmarsh and rough pasture in coastal Victoria. Birds are known to move more than 100 km inland during winter to feed in semi-arid chenopod shrubland and sparse grassland.	Low	Grasslands, grassy woodlands, and near wetland habitat is absent for this species.
Fauna	Birds	Neophema pulchella	Turquoise Parrot	BioNet	Vulnerable	-	-	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range.	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. However, if flushed it will fly to a nearby tree and then return to the ground to browse as soon as the danger has passed. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.	Low	Eucalypt woodland, timbered ridges, and creeks are absent for this species.
Fauna	Birds	Ninox connivens	Barking Owl	BioNet	Vulnerable	-	-	The Barking Owl is found throughout continental Australia except for the central arid regions. Although still common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Many populations crashed as woodland on fertile soils was cleared over the past century, leaving linear riparian strips of remnant trees as the last inhabitable areas. Surveys in 2001 demonstrated that the Pilliga Forest supported the largest population in southern Australia. The owls sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. Extensive wildfires in 2019-20 reduced habitat quality further, burnt many old, hollow-bearing trees needed as refuge by prey species and reduced the viability of some regional owl populations.	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Can catch bats and moths on the wing, but typically hunts by sallying from a tall perch. Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats. Two or three eggs are laid in hollows of large, old trees. Living eucalypts are preferred though dead trees are also used. Nest sites are used repeatedly over years by a pair, but they may switch sites if disturbed by predators (e.g. goannas). Nesting occurs during mid-winter and spring, being variable between pairs and among years. As a rule of thumb, laying occurs during August and fledging in November. The female incubates for 5 weeks, roosts outside the hollow when chicks are 4 weeks old, then fledging occurs 2-3 weeks later. Young are dependent on their parents for several months. Territorial pairs respond strongly to recordings of Barking Owl calls from up to 6 km away, though humans rarely hear this response farther than 1.5 km. Because disturbance reduces the pair's foraging time, and can pull the female off her eggs even on cold nights, recordings should not be broadcast unnecessarily nor during the nesting season.	Low	Woodlands and open forests, timbered watercourses, or fragmented farmland are absent for this species.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Birds	Ninox strenua	Powerful Owl	BioNet	Vulnerable	-	-	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. 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 suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species.	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine (<i>Syncarpia glomulifera</i>), Black She-oak (<i>Allocasuarina littoralis</i>), Blackwood (<i>Acacia melanoxylon</i>), Rough-barked Apple (<i>Angophora floribunda</i>), Cherry Ballart (<i>Exocarpus cupressiformis</i>) and a number of eucalypt species. The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. There may be marked regional differences in the prey taken by Powerful Owls. For example in southern NSW, Ringtail Possum make up the bulk of prey in the lowland or coastal habitat. At higher elevations, such as the tableland forests, the Greater Glider may constitute almost all of the prey for a pair of Powerful Owls. Flying-foxes are important prey in some areas; birds comprise about 10-50% of the diet depending on the availability of preferred mammals. As most prey species require hollows and a shrub layer, these are important habitat components for the owl. Pairs of Powerful Owls demonstrate high fidelity to a large territory, the size of which varies with habitat quality and thus prey densities. In good habitats a mere 400 ha can support a pair when prey are dense. Where hollow trees and prey have been depleted, the owls need up to 4000 ha. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. While the female and young are in the nest hollow the male Powerful Owl roosts nearby (10-200 m) guarding them, often choosing a dense "grove" of trees that provide concealment from other birds that harass him. Powerful Owls are monogamous and mate for life. Nesting occurs from late autumn to mid-winter, but is slightly earlier in north-eastern NSW (late summer - mid autumn). Clutches consist of two dull white eggs and incubation lasts approximately 38 days.	Low	Large tracts of forest or woodland are absent for this species. Although this species can occur in fragmented landscapes, including urban areas, the hospital is not expected to provide habitat opportunities for this species, in the form of large hollows, or prey items.
Fauna	Birds	Pachycephala olivacea	Olive Whistler	BioNet	Vulnerable	-	-	The Olive Whistler inhabits the wet forests on the ranges of the east coast. It has a disjunct distribution in NSW chiefly occupying the beech forests around Barrington Tops and the MacPherson Ranges in the north and wet forests from Illawarra south to Victoria. In the south it is found inland to the Snowy Mountains and the Brindabella Range.	Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects. Make nests of twigs and grass in low forks of shrubs. Lay two or three eggs between September and January.	Low	Wet forests above 500 m elevation, forests, and woodlands are absent.
Fauna	Birds	Pandion cristatus	Eastern Osprey	BioNet	Vulnerable	-	-	The Osprey has a global distribution with four subspecies previously recognised throughout its range. However, recent studies have identified that there are two species of Osprey - the Western Osprey (<i>P. halietus</i>) with three subspecies occurring in Europe, Asia and the Americas and the Eastern Osprey (<i>P. cristatus</i>) occurring between Sulawesi (in Indonesia), Australia and New Caledonia. Eastern Ospreys are found right around the Australian coast line, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas.	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. Incubation of 2-3 eggs, usually by the female, is about 40 days. Female remains with young almost until they fly, usually after about nine weeks in the nest.	Low	Riverine, estuary, and open water habitat is absent for this species.
Fauna	Birds	Petroica boodang	Scarlet Robin	BioNet	Vulnerable	-	-	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter.	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. The Scarlet Robin is a quiet and unobtrusive species which is often quite tame and easily approached. Birds forage from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer. Scarlet Robin pairs defend a breeding territory and mainly breed between the months of July and January; they may raise two or three broods in each season. This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground; nests are often found in a dead branch in a live tree, or in a dead tree or shrub. Eggs are pale greenish-, bluish- or brownish-white, spotted with brown; clutch size ranges from one to four. Birds usually occur singly or in pairs, occasionally in small family parties; pairs stay together year-round. In autumn and winter, the Scarlet Robin joins mixed flocks of other small insectivorous birds which forage through dry forests and woodlands.	Low	Eucalypt forest and woodlands are absent for this species.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Birds	<i>Petroica phoenicea</i>	Flame Robin	BioNet	Vulnerable	-	-	The Flame Robin is endemic to south eastern Australia, and ranges from near the Queensland border to south east South Australia and also in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is 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, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. 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). Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. In winter, occasionally seen in heathland or other shrublands in coastal areas. Birds forage from low perches, from which they sally or pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris. Flying insects are often taken in the air and sometimes gleans for invertebrates from foliage and bark. In their autumn and winter habitats, birds often sally from fence-posts or thistles and other prominent perches in open habitats. Occur singly, in pairs, or in flocks of up to 40 birds or more; in the non-breeding season they will join up with other insectivorous birds in mixed feeding flocks. Breeds in spring to late summer. Nests are often near the ground and are built in sheltered sites, such as shallow cavities in trees, stumps or banks. Builds an open cup nest made of plant materials and spider webs. Eggs are oval in shape and are pale bluish- or greenish-white and marked with brownish blotches; clutch size is three or four eggs.	Low	Tall moist eucalypt forests and woodlands are absent for this species.
Fauna	Birds	<i>Petroica rodinogaster</i>	Pink Robin	BioNet	Vulnerable	-	-	The Pink Robin is found in Tasmania and the uplands of eastern Victoria and far south-eastern NSW, almost as far north as Bombala. On the mainland, the species disperses north and west and into more open habitats in winter, regularly as far north as the ACT area, and sometimes being found as far north as the central coast of NSW.	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies. Catches prey by the perch-and-pounce method, foraging more on the ground than the more flycatcher-like Rose Robin. Insects and spiders are the main dietary items. Breeds between October and January and can produce two clutches in a season. The nest is a deep, spherical cup made of green moss bound with cobweb and adorned with camouflaging lichen, and is lined with fur and plant down. It is situated in an upright or oblique fork, from 30cm to 6m above the ground, in deep undergrowth. Females do most or all of the nest building and incubate unaided, but both adults feed the nestlings. The most common call most closely resembles a snapping twig.	Low	Rainforests, tall open forests, and densely vegetated gullied are absent for this species.
Fauna	Birds	<i>Polytelis swainsonii</i>	Superb Parrot	BioNet	Vulnerable	Vulnerable	-	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. It is estimated that there are less than 5000 breeding pairs left in the wild.	Inhabit Box-Gum, Box-Cypress-pine and Boree woodlands and River Red Gum forest. In the Riverina superb parrots nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum forest or woodland. On the South West Slopes and Southern Tablelands nest trees can be in open Box-Gum woodland or isolated living or dead paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Superb Parrots nest in tree hollows with an entrance diameter of 6 cm or wider, and that are at least 3.5 m above the ground. Nest in small colonies, often with more than one nest in a single tree. Breed between September and January, with nesting typically from October to late December. May forage up to 10 km from nesting sites, primarily in grassy box woodland. Feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain.	Low	Box Gum, Box Cypress, Boree woodlands, and River Red Gum forests are absent for this species.
Fauna	Birds	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	BioNet	Vulnerable	-	-	Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. It is rare south of Coffs Harbour. Three subspecies are recognised, with the most southerly in NSW and south-eastern Queensland. It used to occur in the Illawarra, though there are no recent records.	Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. Feeds on a diverse range of tree and vine fruits and is locally nomadic - following ripening fruit. Thought to be an effective medium to long-distance vector for seed dispersal. Feeds alone, or in loose flocks at any height in the canopy. Despite its plumage, can be remarkably cryptic as it feeds, with the call and falling fruit being an indication of its presence. The nest is a typical pigeon nest - a flimsy platform of sticks on a thin branch or a palm frond, often over water, usually 3 - 10 m above the ground. Breeds in spring and early summer; a single white egg is laid. Most often seen in mature forests, but also found in remnant and regenerating rainforest. Aspects of its behaviour such as social behaviour and structure, movements and breeding biology have not been well-studied.	Low	Rainforest and moist eucalypt forest are absent for this species.
Fauna	Birds	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	BioNet	Vulnerable	-	-	Coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York. Vagrants are occasionally found further south to Victoria.	Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. They are shy pigeons, not easy to see amongst the foliage, and are more often heard than seen. They feed entirely on fruit from vines, shrubs, large trees and palms, and are thought to be locally nomadic as they follow the ripening of fruits. Some populations are migratory in response to food availability - numbers in north-east NSW increase during spring and summer then decline in April or May.	Low	Sub-tropical and dry rainforests are absent for this species.
Fauna	Birds	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	BioNet	Vulnerable	-	-	The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. There are records of vagrants as far south as eastern Victoria and Tasmania.	Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees. Part of the population is migratory or nomadic. There are records of single birds flying into lighted windows and lighthouses, indicating that birds travel at night. At least some of the population, particularly young birds, moves south through Sydney, especially in autumn. Breeding takes place from September to January. The nest is a structure of fine interlocked forked twigs, giving a stronger structure than its flimsy appearance would suggest, and is usually 5-30 metres up in rainforest and rainforest edge tree and shrub species. The male incubates the single egg by day, the female incubates at night.	Low	Rainforests and closed forests are absent for this species.
Fauna	Birds	<i>Pycnoptilus floccosus</i>	Pilotbird	BioNet	-	Vulnerable	-	Pilotbirds are endemic to south-east Australia. Upland Pilotbirds occur above 600 m in the Brindabella Ranges in the Australian Capital Territory, and in the Snowy Mountains in New South Wales and north-east Victoria. Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne (DAWE 2022).	Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter. Flight is described as fairly weak, though, if disturbed, birds can sometimes ascend into shrubs (but no more than 1–2 m from the ground). They are typically seen in pairs or occasionally in family parties, occupying small territories all year round. Breeding takes places between August and January. Adults build a domed nest on or near the ground in which they usually lay two eggs.	Low	Prefered habitat of dense forests with heavy undergrowth, is absent from the subject land.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Birds	Rhipidura rufifrons	Rufous Fantail	PMST	-	-	Mi	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia (Lindsey 1992). Rhipidura rufifrons rufifrons has breeding populations occurring from about the South Australia-Victoria border, through south and central Victoria, on and east of the Great Divide in New South Wales (NSW), and north to about the NSW-Queensland border.	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (Eucalyptus microcorys), Mountain Grey Gum (E. cypellocarpa), Narrow-leaved Peppermint (E. radiata), Mountain Ash (E. regnans), Alpine Ash (E. delegatensis), Blackbutt (E. pilularis) or Red Mahogany (E. resinifera); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests.	Low	Wet sclerophyll forests, rainforests and gullies dominated by eucalypts are absent for this species.
Fauna	Birds	Symposiachrus trivirgatus	Spectacled Monarch	PMST	-	-	Mi	The distribution of the Spectacled Monarch extends from Cape York down the east coast of Australia.	Inhabits dense vegetation, mainly in rainforest but also in moist forest or wet sclerophyll and occasionally in other dense vegetation such as mangroves, drier forest and woodlands.	Low	Rainforest, mangroves and woodlands are absent for this species.
Fauna	Birds	Tyto novaehollandiae	Masked Owl	BioNet	Vulnerable	-	-	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution.	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 1000 hectares or more, depending on prey availability. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	Low	Forest and woodland habitat are absent for this species. The hospital is not expected to provide habitat opportunities for this species, in the form of large hollows, or prey items.
Fauna	Birds	Tyto tenebricosa	Sooty Owl	BioNet	Vulnerable	-	-	Occupies the easternmost one-eighth of NSW, occurring on the coast, coastal escarpment and eastern tablelands. Territories are occupied permanently.	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (Pseudocheirus peregrinus) or Sugar Glider (Petaurus breviceps). Nests in very large tree-hollows.	Low	Ranforests and moist eucalypt forests are absent for this species. The hospital is not expected to provide habitat opportunities for this species, in the form of large hollows, or prey items.
Fauna	Mammals	Cercartetus nanus	Eastern Pygmy-possum	BioNet	Vulnerable	-	-	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes.	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understorey, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable. Also feeds on insects throughout the year; this feed source may be more important in habitats where flowers are less abundant such as wet forests. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum (Pseudocheirus peregrinus) dreys or thickets of vegetation, (e.g. grass-tree skirts); nest-building appears to be restricted to breeding females; tree hollows are favoured but spherical nests have been found under the bark of eucalypts and in shredded bark in tree forks. Appear to be mainly solitary, each individual using several nests, with males having non-exclusive home-ranges of about 0.68 hectares and females about 0.35 hectares. Young can be born whenever food sources are available, however most births occur between late spring and early autumn. Agile climbers, but can be caught on the ground in traps, pitfalls or postholes; generally nocturnal. Frequently spends time in torpor especially in winter, with body curled, ears folded and internal temperature close to the surroundings.	Low	Rainforest, forest, woodland and heath habitat is absent for this species. The study area lacks any connectivity to such habitats.
Fauna	Mammals	Dasyurus maculatus	Spotted-tailed Quoll	BioNet	Vulnerable	Endangered	-	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common.	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Mostly nocturnal, although will hunt during the day; spend most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds. Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. Such sites may be visited by multiple individuals and can be recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals. A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. Are known to traverse their home ranges along densely vegetated creeklines. Average litter size is five; both sexes mature at about one year of age. Life expectancy in the wild is about 3-4 years.	Low	Rainforest, open forest, woodland, coastal heath, and riparian forest habitats are absent for this species. The study area lacks connectivity to any of these habitat types.
Fauna	Mammals	Petauroides volans	Southern Greater Glider	BioNet	Endangered	Endangered	-	The Southern Greater Glider occurs in eastern Australia, in eucalypt forests and woodlands, where it has a broad distribution from around Proserpine in Queensland, south through NSW and the Australian Capital Territory into Victoria.	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha. Give birth to a single young in late autumn or early winter which remains in the pouch for approximately 4 months and is independent at 9 months of age. Usually solitary, though mated pairs and offspring will share a den during the breeding season and until the young are independent. Can glide up to a horizontal distance of 100m including changes of direction of as much as 90 degrees. Very loyal to their territory.	Low	Suitably sized hollows are absent for this species. Forests and woodlands are absent for this species.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Fauna	Mammals	<i>Petaurus australis australis</i>	Yellow-bellied Glider (south-eastern)	PMST	-	Vulnerable	-	The yellow-bellied glider (south-eastern) is found at altitudes ranging from sea level to 1400 m above sea level and has a widespread but patchy distribution from south-eastern Queensland 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. However, the distribution also extends inland to the western slopes of the Great Dividing Range in parts of NSW and Qld. The distribution of the yellow-bellied glider (southeastern) overlaps with the Gondwana Rainforests of Australia World Heritage Area.	The yellow-bellied glider (south-eastern) occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests. The subspecies shows a preference for large patches of mature old growth forest that provide suitable trees for foraging and shelter. There is also a clear preference for forests with a high proportion of winter-flowering and smooth-barked eucalypts. Yellow-bellied gliders (south-eastern) also require some level of floristic diversity to provide a year-round food supply, and they are unlikely to persist in forests dominated by only one or two tree species. Occuy an exclusive home range of approximately 50–65 ha (plausible range 25–85 ha). During the day, the yellow-bellied glider (south-eastern) shelters in hollows found in large, old trees, usually more than one metre in diameter. Hollow-bearing trees are a critical habitat feature for the yellow-bellied glider (south-eastern) due to their usage as dens.	Low	Forest habitat is absent for this species. The site does not have connectivity to tracts of forest.
Fauna	Mammals	<i>Petaurus norfolcensis</i>	Squirrel Glider	BioNet	Vulnerable	-	-	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria.	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	Low	Forest and woodland habitat are absent for this species. The one tree hollow in the subject land is proposed to be retained, however, is occupied by Galahs. Limited foraging habitat in the form of eucalypt sap, flowers, fig tree fruits, and insects occur in the subject land. However, these resources are unlikely to be productive, given their location on the hospital grounds, being a frequently mown lawn. The site lacks connectivity to forests habitat.
Fauna	Mammals	<i>Phascolarctos cinereus</i>	Koala	BioNet	Endangered	Endangered	-	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year.	Low	Eucalypt trees occur in the subject land, however, the Port Kembla Hospital is situated in the highly urbanised suburb of Warrawong. The site lacks connectivity to forests, or farmland areas with eucalypts.
Fauna	Mammals	<i>Potorous tridactylus trisulcatus</i>	Long-nosed Potoroo (southern mainland)	PMST	-	Vulnerable	-	The southern long-nosed potoroo has a broad and fragmented distribution. It occurs between the Great Dividing Range, generally up to 800 m above sea level, and the coastal plains. The subspecies occurs in isolated habitat patches along the coastal plains of southern New South Wales and Victoria and inland to the slopes and foothills of the Great Dividing Range. One island population exists at French Island in Western Port Bay, Victoria.	In general, the long-nosed potoroo occurs in a range of vegetation types from coastal scrub and heathy woodland to wet sclerophyll forest and rainforest. The species is restricted to habitats receiving an annual rainfall greater than 760 mm. The optimum habitat has a dense understorey layer to provide cover, but with sufficient open space beneath the sub-canopy to allow foraging. The subspecies has often been recorded in gullies and near creeks, which may provide refuge during fire and drought.	Low	Forest habitat is absent for this species. The vegetation on the hospital site is frequently mown, with landscaped gardens, and therefore is not expected to be productive for fungi, insects, and other forage items. The site does not have connectivity to forested habitat.
Fauna	Mammals	<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila	PMST	-	Vulnerable	-	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, NSW and Queensland. The species is now largely restricted to the coast of central and northern NSW, with one inland occurrence near Parkes. In NSW, the New Holland Mouse is known from: Royal National Park (NP) and the Kangaroo Valley; Kuringai Chase NP; and Port Stephens to Evans Head near the Queensland border.	The New Holland Mouse has been found from coastal areas and up to 100 km inland on sandstone country. The species has been recorded from sea level up to around 900 m above sea level. Deeper top soils and softer substrates being preferred for digging burrows. Known to inhabit open heathland, open woodland with a heathland understorey, and vegetated sand dunes. Due to the largely granivorous diet of the species, sites where the New Holland Mouse is found are often high in floristic diversity, especially leguminous perennials. On mainland Australia the species has been found to peak in abundance during the early to mid stages of vegetation succession three to five years after fire.	Low	Open heathlands, open woodlands with a heathland understorey and vegetated sand dunes are absent for this species.
Fauna	Reptiles	<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	PMST	Endangered	Vulnerable	-	The Broad-headed Snake is largely confined to Triassic and Permian sandstones, including the Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately 250 km of Sydney.	Nocturnal. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in crevices or hollows in large trees within 500m of escarpments in summer. Feeds mostly on geckos and small skinks; will also eat frogs and small mammals occasionally. Females produce four to 12 live young from January to March, which is a relatively low level of fecundity.	Low	Rocky habitat, sandstone crevices, and escarpments are absent for this species.
Flora	Apocynaceae	<i>Cynanchum elegans</i>	White-flowered Wax Plant	BioNet	Endangered	Endangered	-	Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The species has been recorded as far west as Merriwa in the upper Hunter River valley.	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree (<i>Leptospermum laevigatum</i>) – Coastal Banksia (<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>) coastal scrub; Forest Red Gum (<i>Eucalyptus tereticornis</i>) aligned open forest and woodland; Spotted Gum (<i>Corymbia maculata</i>) aligned open forest and woodland; and Bracelet Honeymyrtle (<i>Melaleuca armillaris</i>) scrub to open scrub. Flowering occurs between August and May, with a peak in November. Flower abundance on individual plants varies from sparse to prolific. The fruit can take up to six months to mature. Seed production is variable and unreliable. Seeds are wind dispersed. It is considered to be unlikely that a soil seed bank for this species exists. Plants are capable of suckering from rootstock in response to occasional slashing or grazing. The fire response of the species is unknown although it has been know to reshoot following fire. Annual burning at one site has been shown to result in population decline.	Low	Dry rainforest and rainforest habitat is absent for this species.
Flora	Fabaceae - Caesalpinioideae	<i>Senna acclinis</i>	Rainforest Cassia	BioNet	Endangered	-	-	Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland.	Grows on the margins of subtropical, littoral and dry rainforests. Often found as a gap phase shrub. Flowering occurs in spring and summer and the fruit is ripe in summer and autumn. Primarily pollinated by a variety of bees	Low	Rainforest habitat is absent for this species.

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Flora	Fabaceae - Faboideae	Chorizema parviflorum - endangered population	Chorizema parviflorum Benth. in the Wollongong and Shellharbour Local Government Areas	BioNet	Endangered Population	-	-	This endangered population has been recorded from between Austinmer and Albion Park in the local government areas of Wollongong and Shellharbour.	All known sites (excluding the site at Austinmer) occupy woodland or forest dominated by Forest Red Gum (Eucalyptus tereticornis) and/or Woollybutt (E. longifolia). At Austinmer, the species is recorded from a coastal headland. Flowering period is August to January, with seeds maturing from November. The species is difficult to locate when not in flower, as it is often tangled amongst (and partially concealed by) a grassy understorey. The response of the species to fire is reportedly variable. Some plants have been observed to reshoot following fire while others have been killed. A soil seedbank for the species exists although the longevity of this seedbank is not known.	Low	Forest and woodland dominated by Forest Red Gum, or Woollybutt, is absent from the the study area.
Flora	Fabaceae - Faboideae	Lespedeza juncea subsp. sericea - endangered population	Lespedeza juncea subsp. sericea in the Wollongong Local Government Area	BioNet	Endangered Population	-	-	Occurs south of Dapto in the Wollongong local government area. The population is disjunct from the other (non-endangered) populations of the species in NSW, which occur in western Sydney, the far South Coast and the Southern Tablelands.	Known from just one roadside population of approximately 200 plants. Located in a small strip of open forest dominated by Eucalyptus tereticornis (Forest Red Gum), E. longifolia (Woollybutt), and Melaleuca decora (White Feather Honeymyrtle), on Budgong Sandstone. Also originally recorded in Pennisetum clandestinum (Kikuyu) grassland directly across the road from this site. This grassland was subsequently cleared and the species has not regenerated. Prefers full sun to light shade. Prefers full sun to light shade. Has a long-lived seed and a soil stored seedbank. It is capable of resprouting in response to fire and flowering the following season. Germination is reportedly triggered by fire. It is suspected that frequent fire will lead to a decline in plant numbers, while infrequent fire may lead to local extinctions.	Low	This poulation is known from just one roadside population of approximately 200 plants. The roadside population is absent from the study area.
Flora	Fabaceae - Faboideae	Pultenaea aristata	Prickly Bush-pea	BioNet	Vulnerable	Vulnerable	-	Prickly Bush-pea is restricted to the Woronora Plateau, a small area between Helensburgh, south of Sydney, and Mt Kiera above Wollongong.	The species occurs in either dry sclerophyll woodland or wet heath on sandstone. Flowering has been recorded in winter and spring.	Low	Dry sclerophyll woodland, or wet heath on sandstone, are absent from the study area.
Flora	Haloragaceae	Haloragis exalata subsp. exalata	Wingless Raspwort, Square Raspwort	PMST	Vulnerable	Vulnerable	-	Square Raspwort occurs in 4 widely scattered localities in eastern NSW. It is disjunctly distributed in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW.	Square Raspwort appears to require protected and shaded damp situations in riparian habitats. Flowering specimens in NSW are recorded from November to January.	Low	Damp, shated, and protected habitat, and riparian habitat is absent for this species.
Flora	Myrtaceae	Gossia acmenoides - endangered population	Gossia acmenoides population in the Sydney Basin Bioregion south of the Georges River	BioNet	Endangered Population	-	-	Known from Shellharbour, Wollongong and Kiama LGAs and encompasses all occurrences south of the Georges River. This population is the southern most occurrence of the species and is approximately 175 km from the nearest population to the north in the Hunter region of NSW.	Found in subtropical and dry rainforest on the ranges and coastal plain of eastern Australia. Estimated less than 100 mature plants, through approximately 30 sites. Occurring often as a single individual or small group. Flowers late spring to early autumn.	Low	Rainforests are absent for this species.
Flora	Myrtaceae	Rhodamnia rubescens	Scrub Turpentine	BioNet	Critically Endangered	Critically Endangered	-	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of R. rubescens typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm.	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	Low	Littoral, warm temperate, rainforest, and wet sclerophyll forest are absent for this species.
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	BioNet	Endangered	Vulnerable	-	The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest.	On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	Low	Riverside gallery rainforest, and littoral rainforest is absent fore this species.
Flora	Orchidaceae	Caladenia tessellata	Thick-lipped Spider-orchid, Daddy Long-legs	PMST	Endangered	Vulnerable	-	The Thick Lip Spider Orchid is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. It was also recorded in the Huskisson area in the 1930s. The species occurs on the coast in Victoria from east of Melbourne to almost the NSW border.	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year. Flowers appear between September and November (but apparently generally late September or early October in extant southern populations).	Low	Woodlands are absent from the subject land. The subject land comprises an urban landscape, with native and exotic trees and shrubs, and mowed, exotic grass.
Flora	Orchidaceae	Cryptostylis hunteriana	Leafless Tongue-orchid	PMST	Vulnerable	Vulnerable	-	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Munmorah State Conservation Area, Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park and Ben Boyd National Park.	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by 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 the Tartan Tongue Orchid (C. erecta). Little is known about the ecology of the species; being leafless it is expected to have limited photosynthetic capability and probably depends upon a fungal associate to meet its nutritional requirements from either living or dead organic material. In addition to reproducing from seed, it is also capable of vegetative reproduction and thus forms colonies which can become more or less permanent at a site. On the Central Coast of NSW, populations have been recorded in woodland dominated by Scribbly Gum (Eucalyptus haemastoma), Brown Stringybark (Eucalyptus capitellata), Red Bloodwood (Corymbia gummifera) and also associated with Large Tongue Orchid (C. subulata) and the Tartan Tongue Orchid (C. erecta).	Low	The hospital grounds are regularly mown and managed as predominately exotic lawns. The soil profile is unlikely to support this orchid species.
Flora	Polygonaceae	Persicaria elatior	Knotweed, Tall Knotweed	PMST	Vulnerable	Vulnerable	-	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland.	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Low	Streams, lakes, and dam habitats are absent for this species.

Kingdom	Type	Scientific Name	Common Name	Source	BC Act	EPBC Act	EPBC Mi	Distribution	Habitat and Ecology	Likelihood of occurrence within subject site	Justification
Flora	Proteaceae	<i>Grevillea raybrownii</i>	<i>Grevillea raybrownii</i>	BioNet	Vulnerable	Vulnerable	-	<i>Grevillea raybrownii</i> is endemic to New South Wales, where 12 populations are currently known to occur in the Wingecarribee and Wollongong local government areas. It is present in Nattai National Park and the Upper Nepean State Conservation Area (TSSC 2019).	All natural remnant sites occur within a habitat that is both characteristic and consistent between sites. Generally occurs on ridgetops and, less often, slopes and benches of Hawkesbury Sandstone and Mittagong Formation. It occurs in Eucalyptus open forest and woodland with a shrubby understorey on sandy, gravelly loam soils derived from sandstone that are low in nutrients. Killed by fire and relies entirely on seed that is stored in the soil for regeneration. Recruitment appears to be promoted by fire or other disturbances.	Low	Ridgetops are absent from the study area.
Flora	Proteaceae	<i>Macadamia integrifolia</i>	Macadamia Nut	BioNet	-	Vulnerable	-	Not known to occur naturally in the wild in NSW.	The Macadamia Nut grows in remnant rainforest, preferring partially open areas such as rainforest edges. The Macadamia Nut prefers to grow in mild frost-free areas with a reasonably high rainfall. Vegetation communities in which the Macadamia Nut is found range from complex notophyll mixed forest, extremely tall closed forest, simple notophyll mixed very tall closed forest to simple microphyll-notophyll mixed mid-high closed forest with Araucaria and Argrodendron emergents.	Low	Not known to occur naturally in the wild in NSW.
Flora	Rutaceae	<i>Zieria granulata</i>	Illawarra Zieria	BioNet	Endangered	Endangered	-	Restricted to the Illawarra region where it is recorded from a number of sites. The species primarily occupies the coastal lowlands between Oak Flats and Toolijooa, in the local government areas of Shellharbour and Kiama. This is a range of approximately 22 kilometres.	The typical habitat is dry ridge tops and rocky outcrops on shallow volcanic soils, usually on Bumbo Latite. Less frequently found on the moist slopes of the Illawarra escarpment and in low-lying areas on Quaternary sediments. Associated vegetation includes Bracelet Honey-myrtle (<i>Melaleuca armillaris</i>) scrub, Forest Red Gum (<i>Eucalyptus tereticornis</i>) woodland and rainforest margins, although the species has been recorded from a number of other vegetation types. Most vegetation types are also listed as Endangered Ecological Communities. Much of the natural habitat for the species has been removed and many sites now occupy road verges and paddock edges. Flowering occurs between early spring and summer. Seed dispersal is initially through forcible ejection from the mature fruit, and it is suspected that secondary dispersal by ants also occurs. Mass germination of seeds has been observed following soil disturbance. Observed to coppice from damaged stems in response to physical disturbance including grazing and slashing, although the age at which the species is capable of this is not known. Response to fire not known.	Low	Dry ridge top and rocky outcrop habitat is absent from the subject land. The subject land comprises an urban landscape, with native and exotic trees and shrubs, and mowed, exotic grass.
Flora	Santalaceae	<i>Thesium australe</i>	Austral Toadflax, Toadflax	PMST	Vulnerable	Vulnerable	-	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region.	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda australis</i>). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Low	Native grassland habitat is absent from the subject land.
Flora	Solanaceae	<i>Solanum celatum</i>	<i>Solanum celatum</i>	BioNet	Endangered	-	-	Restricted to an area from Wollongong to just south of Nowra, and west to Bungonia. Majority of records are prior to 1960 and the majority of populations are likely to have been lost to clearing.	Grows in rainforest clearings, or in wet sclerophyll forests. Flowers August to October and produces fruit December to January. Fire sensitive obligate seeder, with adults plants killed by fire and recruitment occurring from a soil stored seed bank. Normally recorded in disturbed margins and clearings.	Low	Rainforest clearings, and wet sclerophyll forests are absent for this species.
Flora	Tectariaceae	<i>Arthropteris palisotii</i>	Lesser Creeping Fern	BioNet	Endangered	-	-	Located on the Illawarra Escarpment, North-eastern NSW and also in Queensland.	Occurs in rainforest, mainly on tree trunks.	Low	Rainforest habitat is absent for this species.
Flora	Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>	<i>Pimelea curviflora</i> var. <i>curviflora</i>	BioNet	Vulnerable	Vulnerable	-	Confined to the coastal area of the Sydney and Illawarra regions. Populations are known between northern Sydney and Maroota in the north-west. New population discovered at Croom Reserve near Albion Park in Shellharbour LGA in August 2011. Formerly recorded around the Parramatta River and Port Jackson region including Five Dock, Bellevue Hill and Manly.	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain. Flowers October to May. Has an inconspicuous cryptic habit as it is fine and scraggly and often grows amongst dense grasses and sedges. It may not always be visible at a site as it appears to survive for some time without any foliage after fire or grazing, relying on energy reserves in its tuberous roots. Likely to be fire tolerant species capable of resprouting following fire due to the presence of a tap root. Seedlings have been observed following fire.	Low	Ridgetops and the upper slopes amongst woodlands are absent from the study area.
Flora	Thymelaeaceae	<i>Pimelea spicata</i>	Spiked Rice-flower	BioNet	Endangered	Endangered	-	Once widespread on the Cumberland Plain, the Spiked Rice-flower occurs in two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama).	In both the Cumberland Plain and Illawarra environments this species is found on well-structured clay soils. On the Cumberland Plain sites it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark. The co-occurring species in the Cumberland Plain sites are grey box (<i>Eucalyptus moluccana</i>), forest red gum (<i>E. tereticornis</i>) and narrow-leaved ironbark (<i>E. crebra</i>). Blackthorn (<i>Bursaria spinosa</i>) is often present at sites (and may be important in protection from grazing) and kangaroo grass (<i>Themeda australis</i>) is usually present in the groundcover (also indicative of a less intense grazing history). In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. Coastal headlands and hilltops are the favoured sites. The Illawarra populations usually occur in one of two communities - a woodland or a coastal grassland. Woodland sites are dominated by forest red gum (<i>E. tereticornis</i>) and stringybark (<i>E. eugenioides</i>), with a groundcover dominated by kangaroo grass (<i>Themeda australis</i>) and matrush (<i>Lomandra longifolia</i>). The grassland sites are dominated by kangaroo grass (<i>Themeda australis</i>) and matrush (<i>Lomandra longifolia</i>), with blady grass (<i>Imperata cylindrica</i>). A shrubby layer, where present, is dominated by coastal wattle (<i>Acacia sophorae</i>) and coast rosemary (<i>Westringia fruticosa</i>) with coast banksia (<i>Banksia integrifolia</i>). Mature plants spread over short distances through underground rhizomes, and this can assist them to recover from disturbances like fire and irregular grazing. However, the age plants must be, and what proportion recover, is largely unknown. Flowers may be self-pollinating, although fruit production is variable. Fruit are not dispersed well, with most seedlings germinating close to the adult (within 30cm or so according to P. Hogbin). A soil seedbank develops and is maintained in the presence of a suitable disturbance regime.	Low	Coast Banksia open woodland is absent from the study area.

Appendix D

BC Act 2016 Assessment of Significance

D.1 Introduction

Section 1.7 of the EP&A Act provides the criteria that must be considered in the assessment of the significance of potential impacts on all threatened species listed under the BC Act. Test of Significance (known as the 5-part test) is made up of the following five tests:

1. 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,
2. In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—
 - a) 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
 - b) 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,
3. In relation to the habitat of a threatened species or ecological community—
 - a) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
 - b) 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
 - c) 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,
4. 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),
5. 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.

Tests of significance are undertaken in accordance with *Threatened species test of significance guidelines* (OEH 2018).

D.2 Assessment of significance

Species requiring additional assessment (as identified in Appendix C) and which are listed as threatened under the BC Act were assessed using the five-part test. Five-part tests have been prepared in accordance with the criteria presented in Section D.1. The results of tests have been tabulated for ease of reading and are presented in the following sections.

D.2.1 Little Lorikeet (*Glossopsitta pusilla*)

Table D.1 Test of Significance – Little Lorikeet

Criteria	Assessment
(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,	Little Lorikeets feed primarily on nectar and pollen in the tree canopy, particularly on profusely flowering Eucalypts, as well as on a variety of other species including Melaleucas and mistletoes (DPE 2023c; NSW SC 2021). The breeding biology of Little Lorikeets is little known, except for long-term observations (43 years) on the north-western slopes (Courtney and Debus 2006, NSW SC 2021). The research, consistent with anecdotal records from around the country, indicates that nest hollows are located at heights of between 2 m and 15 m, and that hollow entrances are very small, at approximately 3 cm in diameter (Courtney and Debus 2006, NSW SC 2021). The subject site is located at the Port Kembla hospital, in a highly urbanised environment, in the suburb of Warrawong. While the subject site is not expected to provide optimal habitat, the Little Lorikeet may occasionally utilise the locality, given that there are 11 BioNet records within a 10 km radius, with the latest record from 2023. The subject site may provide occasional foraging resources, in the flowers of <i>Eucalyptus</i>, <i>Corymbia</i>, and <i>Melaleuca</i> trees in the study area, and subject site. The proposal would remove 12 trees which could provide foraging resources, however, 17 <i>Eucalyptus</i>, <i>Corymbia</i> and <i>Melaleuca</i> trees would be retained. Given that 17 potential foraging trees will be retained, and that no hollows will be impacted by the proposal, the proposal is unlikely to have an adverse effect on the life cycle of the Little Lorikeet, such that a viable local population of the species is likely to 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,	This test refers to endangered and critically endangered ecological communities, therefore, is not relevant applicable to the assessments for the Little Lorikeet.

Table D.1 **Test of Significance – Little Lorikeet**

Criteria	Assessment
(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 (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 (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,	(i) The proposal would remove 12 trees which could provide foraging resources, however, 17 <i>Eucalyptus</i>, <i>Corymbia</i> and <i>Melaleuca</i> trees would be retained. (ii) The subject site is located at the Port Kembla hospital, in the highly urbanised suburb of Warrawong. The locality is highly fragmented, comprising the urban areas of the Wollongong and Shellharbour LGAs. The only area of true, high quality habitat connectivity within 10 km, is the Illawarra Escarpment State Conservation Area (SCA), 7 km north-west of the study area. The proposal is therefore unlikely to further fragment or isolate an area of habitat, from other areas of habitat. (iii) The 12 trees to be removed, which may provide foraging resources for the Little Lorikeet, are located in the Port Kembla Hospital, in the highly urbanised suburb of Warrawong. Comparable foraging resources are likely to occur as urban street trees, and in parks and gardens. Greater connected habitat occurs along the Illawarra escarpment, to the west. The trees at the hospital are unlikely to be important to the long-term survival of the species 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),	No areas of outstanding biodiversity values are present within, or adjacent to, the study area (DPE 2023a), therefore, the proposal would not have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposal will contribute to the following key threatening process: • Clearing of native vegetation The impact of vegetation clearing on the loss and degradation of habitat are discussed under the responses to parts a and c.
Conclusion	The proposed redevelopment of the WCHC is unlikely to have a significant impact on the Little Lorikeet, as: • The 12 <i>Eucalyptus</i>, <i>Corymbia</i>, and <i>Melaleuca</i> trees proposed to be removed are located at Port Kembla Hospital, in the highly urbanised suburb of Warrawong, and are unlikely to provide important foraging habitat for the local population • Seventeen <i>Eucalyptus</i>, <i>Corymbia</i>, and <i>Melaleuca</i> trees are proposed to be retained in the subject site, retaining potential foraging opportunities • There is likely to be substantial foraging resources available in the wider locality in the form of both remnant and planted native trees and shrubs, in urban gardens and parks, and planted as street trees, as well as the Illawarra escarpment to the west. In conclusion, the proposal is unlikely to result in a significant impact on the Little Lorikeet, as this species and their local population are highly likely to persist in the locality.

D.2.2 Swift Parrot (*Lathamus discolor*)

Table D.2 Test of Significance – Swift Parrot

Criteria	Assessment
(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,	Swift Parrots exist as a single panmictic, migratory population in Australia (Olah et al. 2020). Recent genetic research on the species suggests that the minimum potential contemporary population size is below 300 individual Swift Parrots (Olah et al. 2020). Swift Parrots breed in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia, from Victoria and the eastern parts of South Australia to south-east Queensland (DPE 2023d). In NSW, Swift Parrots mostly occur in the coast and south-western slopes. On the mainland, Swift Parrots inhabit areas where eucalypts flower profusely, or where there are abundant lerp (from sap-sucking bugs) infestations (DPE 2023d). Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Forest Red Gum, Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>) (DPE 2023d). Commonly foraged lerp infested trees include Inland Grey Box (<i>E. macrocarpa</i>), Grey Box (<i>E. moluccana</i>), Blackbutt (<i>E. pilularis</i>), and Yellow Box (<i>E. melliodora</i>) (DPE 2023d). The subject site is located at the Port Kembla hospital, in a highly urbanised environment, in the suburb of Warrawong. While the subject site is not expected to provide optimal habitat, Swift Parrots have been recorded in the locality. There are 31 BioNet records within 10 km of the study area, with the latest records being from 2020. However, 28 of these records are dated by over 20 years, while only 3 records are from 2014 to 2020. The subject site may provide potential foraging resources from winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees (Swamp Mahogany, Forest Red Gum, Spotted Gum, and Red Bloodwood). Of these winter flowering trees, only three are proposed to be removed (one Forest Red Gum and two Swamp Mahogany), while five are proposed to be retained (one Forest Red Gum, and four Spotted Gums). Given that five winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees are proposed to be retained, with only three proposed to be removed, the proposal is unlikely to have an adverse effect on the life cycle of the Swift Parrot, such that a viable population of the species would be likely to 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,	This test refers to endangered and critically endangered ecological communities, therefore, is not relevant applicable to the assessments for the Swift Parrot.

Table D.2 Test of Significance – Swift Parrot

Criteria	Assessment
(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 (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 (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,	(i) The proposal would remove three winter flowering species (one Forest Red Gum and two Swamp Mahogany), while five are proposed to be retained (one Forest Red Gum, and four Spotted Gums). (ii) The subject site is located at the Port Kembla hospital, in the highly urbanised suburb of Warrawong. The locality is highly fragmented, comprising the urban areas of the Wollongong and Shellharbour LGAs. The only area of true, high quality habitat connectivity within 10 km, is the Illawarra Escarpment State Conservation Area (SCA), 7 km north-west of the study area. The proposal is therefore unlikely to further fragment or isolate an area of habitat, from other areas of habitat. (iii) A total of eight trees were identified which may provide foraging resources for the Swift Parrot. Of these, three are proposed for removal, while five are proposed for retention. The trees are located in the Port Kembla Hospital in the highly urbanised suburb of Warrawong. The trees at the hospital are unlikely to be important to the long-term survival of the species, when passing through the locality during migration. Six winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees are proposed to be retained.
(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 values or Swift Parrot Important Areas are present within, or adjacent to, the study area (DPE 2023a). Therefore, the proposal would not have an adverse effect on any declared area of outstanding biodiversity value, or Swift Parrot Important Areas (either directly or indirectly).
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposal will contribute to the following key threatening process: • Clearing of native vegetation The impact of vegetation clearing on the loss and degradation of habitat are discussed under the responses to parts a and c.
Conclusion	The proposed redevelopment of the WCHC is unlikely to have a significant impact on the Swift Parrot, as: • Three winter flowering <i>Eucalyptus</i> trees proposed to be removed are located at Port Kembla Hospital, in the highly urbanised suburb of Warrawong, which are unlikely to provide important foraging habitat for the migratory population • Five <i>Eucalyptus</i> and <i>Corymbia</i> trees are proposed to be retained in the subject site, retaining potential foraging opportunities, whilst Swift Parrots pass through the locality. In conclusion, the proposal is unlikely to result in a significant impact on the Swift Parrot, as this species and their local population are highly likely to persist in the locality.

D.2.3 Grey-headed Flying-fox (*Pteropus poliocephalus*)

Table D.3 Test of Significance – Grey-headed Flying-Fox

Criteria	Assessment
(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 Grey-headed Flying-fox is considered to comprise a single, mobile population with the population distributed across the east coast, most of Victoria, to Adelaide (DAWE 2021). Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. This species is known to forage up to 50 km from their camp, before returning to their roost in the same night (DAWE 2021). No permanent or temporary Grey-headed Flying-fox breeding camps were detected in the subject site, nor are any mapped on the <i>National Flying-fox monitoring viewer</i> (DCCEEW 2023c). In total, there are 23 Grey-headed Flying Fox camps located within 50 km of the subject site, hence the subject site may provide foraging resources for the species in the locality (DCCEEW 2023c). The nearest Grey-headed Flying Fox camp is located 7.9 km west of the subject site, in riparian vegetation in West Dapto. Population counts indicate numbers from 500 to 2,500 individuals to a maximum of 10,000 individuals in one year. A total of 20 suitable foraging trees for this species were identified in the subject site, being Forest Red Gum, Spotted Gum, Swamp Mahogany, Red Bloodwood, Lemon-scented Gum, <i>Melaleuca decora</i>, and Hill's Weeping Fig. The proposal would remove 10 potential foraging trees, while 10 would be retained. These include Spotted Gums, a Forest Red Gum, <i>Melaleuca decora</i>, and Hills' Weeping Fig (DAWE 2021; Eby and Law 2008). Spotted Gums have been identified as being offering one of the highest ranked food resources for the Grey-headed Flying Fox (Eby and Law 2008). Fig trees are also a valuable foraging resource for Grey-headed Flying-foxes. The fig tree to be retained is a tall, mature tree which would provide abundant fruit resources. Given that only 10 potential foraging trees are proposed to be removed, while 10 would be retained, including one mature Hill's Weeping Fig tree, and that no roosting camps will be impacted by the proposal, the proposal is unlikely to have an adverse effect on the life cycle of the Grey-headed Flying-fox, such that a viable local population of the species would 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,	This test refers to endangered and critically endangered ecological communities, therefore, is not relevant applicable to the assessments for the Grey-headed Flying-fox.

Table D.3 Test of Significance – Grey-headed Flying-Fox

Criteria	Assessment
(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 (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 (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,	(i) Of the 20 suitable foraging trees identified within the subject site, 10 are proposed for removal while 10 are proposed for retention. (ii) The subject site is located at the Port Kembla hospital, in the highly urbanised suburb of Warrawong. The locality is highly fragmented, comprising the urban areas of the Wollongong and Shellharbour LGAs. The potential foraging trees are situated in a highly urbanised environment. The Grey-headed Flying-Fox is a highly mobile species, which are known to forage up to 50 km from their camp. A total of 23 listed Grey-headed Flying-Fox camps are located within 50 km of the subject site, from Nowra, to Bowral, to the Royal National Park. The removal of 10 suitable foraging trees, in a highly fragmented urban landscape, while foraging resources will be retained on the hospital grounds, is unlikely to reduce the area of occupancy for the important Grey-headed Flying-Fox population. (iii) Ten suitable foraging trees would be removed, while 10 would be retained, including 4 Spotted Gums, 1 Forest Red Gum, 4 <i>Melaleuca decoras</i>, and 1 Hill's Weeping Fig. No roosting camps would be impacted by the proposal. The 10 suitable foraging trees to be removed are unlikely to be important to the long-term survival of the species.
(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 values are present within, or adjacent to, the study area (DPE 2023a), therefore, the proposal would not have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposal will contribute to the following key threatening process: • Clearing of native vegetation The impact of vegetation clearing on the loss and degradation of habitat are discussed under the responses to parts a and c.
Conclusion	The proposed redevelopment of the WCHC is unlikely to have a significant impact on the Grey-headed Flying-Fox, as: • Ten suitable foraging trees are proposed for removal, which are situated at Port Kembla Hospital, in the highly urbanised suburb of Warrawong. The trees are unlikely to constitute important foraging habitat. • Ten suitable foraging trees would be retained, including 4 Spotted Gums, 1 Forest Red Gum, 4 <i>Melaleuca decora</i>, and 1 Hill's Weeping Fig, which are commonly foraged species (DAWE 2021; Eby and Law 2008) retaining potential foraging opportunities In conclusion, the proposal is unlikely to result in a significant impact on the Grey-headed Flying-Fox, as this species and their local population are highly likely to persist in the locality.

- D.2.4 Microbats: Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*), Little Bent-winged Bat (*Miniopterus australis*), Large Bent-winged Bat (*Miniopterus orianae oceanensis*), Southern Myotis (*Myotis macropus*), Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*) and Greater Broad-nosed Bat (*Scoteanax rueppellii*)

Table D.4 Test of Significance – Microbats

Criteria	Assessment
(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,	Bats can forage widely, however, the breeding and roosting habitats are more species-specific and typically comprise: • caves (Large-eared Pied Bat, Little Bent-winged Bat) • tree-hollows (Eastern False Pipistrelle, Southern Myotis [primarily within 200 m of water]) • caves and man-made structures such as culverts, bridges and buildings (Large Bent-winged Bat, Southern Myotis) • tree-hollows, animal burrows, cracks in dry clay, hanging from buildings and under slabs of rock (Eastern Coastal Free-tailed Bat and Yellow-bellied Sheath-tail-bat). These microbat species have the potential to occur within the buildings within the subject site. Proposed mitigation measures such as pre-clearance surveys and having an ecologist present will reduce the likelihood that the activity will adversely affect the lifecycle of these microbat species.
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—	This test refers to endangered and critically endangered ecological communities, therefore, is not relevant nor applicable to the assessments for the microbat species.
(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,	

Table D.4 Test of Significance – Microbats

Criteria	Assessment
(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 (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 (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,	(i) The proposal will remove buildings which may be suitable roosting habitat for these microbat species. Pre-clearance surveys and having an ecologist present during demolition works will mitigate impact to any bats that may be roosting in the buildings at the time of demolition. Due to similar structures being located within the locality, the extent to which the proposal is removing habitat is negligible. (ii) The proposal will cause a negligible increase on the fragmentation and isolation of the locally available habitat for these microbats. Due to similar structures being located within the locality, the extent to which the proposal will remove habitat is negligible. (iii) A summary of important habitat for these microbat species is included below. - Large-eared Pied Bat – Caves with domed roofs and sandstone cliffs in close proximity to fertile wooded valleys (DPIE 2022a). - Eastern False Pipistrelle – No important habitat is defined for this species; however, the species is known to roost in tree hollows and buildings (DPIE 2022b). This species prefers habitats with trees taller than 20m (DPIE 2022b). - Eastern Coastal Free-tailed Bat – No important habitat is defined for this species. The species roosts mainly in tree hollows (DPIE 2022c). - Little Bent-winged Bat - – No important habitat is defined for this species. This species roosts mainly in caves but is also known to roost in tunnels, tree hollows, bridges and sometimes buildings (DPIE 2022d). - Large Bent-winged Bat – No important habitat is defined for this species. This species roosts mainly in caves but is also known to roost in derelict mines, storm-water tunnels, tree hollows and other man-made structures (DPIE 2022e). - Southern Myotis – No important habitat is defined for this species. This species roosts close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage (DPIE 2022f). - Yellow-bellied Sheathtail-bat – No important habitat is defined for this species. This species roosts mainly in tree hollows and buildings. In treeless areas they are known to utilise mammal burrows (DPIE 2022h). - Greater Broad-nosed Bat – No important habitat is defined for this species. This species roosts mainly in tree hollows (DPIE 2022i). The subject site is unlikely to constitute important habitat for these microbats as buildings do not meet the definition of important habitat for any of these species and no tree hollows will be removed as part of the proposal. Some species may utilise buildings for diurnal roosts. Additionally, substantial areas of more suitable habitat occur within the region. Mitigation measures will be implemented to reduce the risk of impacts to bats during construction.
(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 values are present within, or adjacent to, the study area (DPE 2023a), therefore, the proposal would not have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

Table D.4 Test of Significance – Microbats

Criteria	Assessment
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The proposal will contribute to the following key threatening process: • Clearing of native vegetation The impact of vegetation clearing on the loss and degradation of habitat are discussed under the responses to parts a and c, however, this vegetation is not considered important habitat for the species given the remaining local habitat outside the study area.
Conclusion	The proposal is unlikely to result in a significant impact to the Large-eared Pied Bat, Eastern Coastal Free-tailed Bat, Little Bent-winged Bat, Large Bent-winged Bat, Southern Myotis, Yellow-bellied Sheath-tail-bat and Greater Broad-nosed Bat as: • the proposal will have negligible effects on the long-term survival of these species as no important habitat occurs within the study area • the proposal is unlikely to further exacerbate fragmentation to these species as the study area is already subject to high levels of fragmentation • key threatening processes will be minor (clearing of vegetation) and will be mitigated to reduce impact where possible, including pre-clearance surveys, during the proposal. In conclusion, the proposal is unlikely to result in a significant impact on these microbat species, as this species and their local population are highly likely to persist in the locality.

Appendix E

EPBC Act 1999 Assessment of Significance

E.1 Assessment of Significance

E.1.1 Large-eared Pied Bat

Table E.1 Assessment of Significance – Large-eared Pied Bat

Criteria	Assessment
lead to a long-term decrease in the size of an important population	The proposal is unlikely to lead to a long-term decrease in the size of an important population of the Large-eared Pied Bat, as the site does not contain important breeding habitat for the species (caves). The species has the potential to utilise the habitat in the subject site as foraging habitat. However, it is unlikely to utilise the site for breeding or roosting, given the species' tendencies to reside in caves and cliff crevices. The proposal will not directly impact on a known important population of Large-eared Pied Bat or lead to a long-term decrease in an important population.
reduce the area of occupancy of an important population	No important populations or breeding habitat occur within the subject site. Therefore, the proposal will not reduce the area for an important population of Large-eared Pied Bat.
fragment an existing important population into two or more populations	No important populations or breeding habitat occur within the subject site. Furthermore, the proposal will not result in the fragmentation or isolation of other remnants, as it does not act as an intermediary patch between two (or more) areas of habitat. The vegetation in the study area occurs in an already fragmented landscape.
adversely affect habitat critical to the survival of a species	Habitat critical to the survival of the species has been defined by the National Recovery Plan (DERM 2011) as roosting habitat comprising disused mine shafts, caves, overhangs, and abandoned fairy martin (<i>Hirundo ariel</i>) nests. Sandstone cliffs and fertile wooded valley habitat within close proximity of each other are also considered habitat critical to the species. As the subject site does not contain any of these structures, the proposal is not considered to have an adverse effect on habitat critical to the survival of the species.
disrupt the breeding cycle of an important population	No breeding populations or preferred breeding habitat were recorded within the subject site. Therefore, the proposal is unlikely to disrupt the breeding cycle of a population.
modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The removal of the buildings within the subject site is considered unlikely to lead to the species' decline as it is unlikely to utilise the site for breeding or roosting, given the species' tendencies to reside in caves and cliff crevices. Therefore, the species is not likely to experience a decline from modification, destruction, removal, isolation or decrease in the availability or quality of habitat.
result in invasive species that are harmful to vulnerable species becoming established in the vulnerable species' habitat	The proposal may result in the spread of exotic species. However, this will be mitigated by weed and soil hygiene protocols. Therefore, the proposal is unlikely to result in an increase in invasive species into the adjacent remnant vegetation.
introduce disease that may cause the species to decline, or	The recovery plan for the species does not identify any diseases associated with the species.
interfere substantially with the recovery of the species.	Recovery actions for the Large-eared Pied Bat are to review existing information, develop habitat models, identify priority colonies and sites, identify unsurveyed roost structures, undertake targeted surveys, revise the distribution, manage threats, educate the community, conduct research on the species, and determine meta-population dynamics (DERM 2011). The proposal will not interfere with the recovery actions specified, and therefore, is unlikely to interfere with the recovery of the species.

Table E.1 **Assessment of Significance – Large-eared Pied Bat**

Criteria	Assessment
Conclusion	The proposal is unlikely to have a significant impact on Large-eared Pied Bat as: • the subject site does not represent habitat critical to the survival of the species and the proposal will not interfere with recovery • the subject site does not contain preferred breeding habitat for this species. In conclusion, the proposal is unlikely to result in a significant impact on the Large-eared Pied Bat.

Table E.2 Assessment of Significance – Swift Parrot

Criteria	Assessment
lead to a long-term decrease in the size of a population	Swift Parrots exist as a single panmictic, migratory population in Australia (Olah et al. 2020). Recent genetic research on the species suggests that the minimum potential contemporary population size is below 300 individual Swift Parrots (Olah et al. 2020). Swift Parrots breed in Tasmania during spring and summer, migrating in the autumn and winter months to southern-eastern Australia, from Victoria and the eastern parts of South Australia to south-east Queensland (DPE 2023d). In NSW, Swift Parrots mostly occur in the coast and south-western slopes. On the mainland, Swift Parrots inhabit areas where eucalypts flower profusely, or where there are abundant lerp (from sap-sucking bugs) infestations (DPE 2023d). Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Forest Red Gum, Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>) (DPE 2023d). Commonly foraged lerp infested trees include Inland Grey Box (<i>E. macrocarpa</i>), Grey Box (<i>E. moluccana</i>), Blackbutt (<i>E. pilularis</i>), and Yellow Box (<i>E. melliodora</i>) (DPE 2023d). The subject site is located at the Port Kembla hospital, in a highly urbanised environment, in the suburb of Warrawong. While the subject site is not expected to provide optimal habitat, Swift Parrots have been recorded in the locality. There are 31 BioNet records within 10 km of the study area, with the latest records being from 2020. However, 28 of these records are dated by over 20 years, while only 3 records are from 2014 to 2020. The subject site may provide potential foraging resources from winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees (Swamp Mahogany, Forest Red Gum, and Spotted Gum). Of these winter flowering trees, only three are proposed to be removed (one Forest Red Gum and two Swamp Mahogany), while five are proposed to be retained (one Forest Red Gum and four Spotted Gums). Given that five winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees are proposed to be retained, the proposal is unlikely to lead to a long-term decrease in the size of the Swift Parrot population of this highly mobile species that typically forages across the eastern states in a wide ranging area.
reduce the area of occupancy of the species	The proposal would remove three winter flowering species (one Forest Red Gum and two Swamp Mahogany), while five are proposed to be retained (one Forest Red Gum and four Spotted Gums). The removal of three winter flowering trees is considered unlikely to reduce the occupancy of this highly mobile species.
fragment an existing population into two or more populations	Swift Parrots exist as a single panmictic, migratory population in Australia (Olah et al. 2020). The removal of three winter flowering feed trees is highly unlikely to fragment the existing population into two or more populations, given their highly mobile and migratory nature.
adversely affect habitat critical to the survival of a species	According to the <i>National Recovery Plan for the Swift Parrot (Lathamus discolor)</i> (Saunders and Tzaros 2011), habitat critical to the survival of the Swift Parrot are considered: • those areas of priority habitat for which the Swift Parrot has a level of site fidelity, or • possess phenological characteristics likely to be of importance to the Swift Parrot, or • are otherwise identified by the recovery team (Saunders and Tzaros 2011). The study area is not considered habitat critical to the survival of the species. The Port Kembla Hospital is not mapped as a Swift Parrot Important Area nor is the study area adjacent to these areas. Therefore, the proposal is unlikely to adversely affect habitat critical to the survival of the Swift Parrot.
disrupt the breeding cycle of a population	The Swift Parrot breeds in Tasmania during summer, and the entire population migrates north to mainland south-east Australia for winter (Saunders and Tzaros 2011). As breeding does not occur on mainland Australia, the removal of two potential foraging trees in the subject land is unlikely to disrupt the breeding of the Swift Parrot population.

Table E.2 **Assessment of Significance – Swift Parrot**

Criteria	Assessment
modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Given that five winter flowering <i>Eucalyptus</i> and <i>Corymbia</i> trees are proposed to be retained, the proposal is unlikely to adversely affect the availability or quality of habitat to the extent that the species is likely to decline, especially given their wide-ranging and highly mobile nature.
result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	The WCHC is expected to continue to be managed as landscaped lawns and gardens. Invasive species are unlikely to become established in the subject site, as a result of the proposal, such that they would be harmful to this species' habitat.
introduce disease that may cause the species to decline, or	Psittacine Beak and Feather Disease (PBFD) is a common and potentially deadly disease of parrots caused by a circovirus (Saunders and Tzaros 2011). The disease is widespread and continuously present in wild populations of many Australian parrots (Saunders and Tzaros 2011). A major risk factor for PBFD is a decline in hollows, which may lead to high competition for hollows, and greater contact between parrots, increasing the risk of disease. The hollow identified in the subject site is proposed to be retained. The proposal will therefore not increase hollow competition and is considered unlikely to introduce or exacerbate PBFD.
interfere with the recovery of the species.	The <i>National Recovery Plan for the Swift Parrot (Lathamus discolor)</i> (Saunders and Tzaros 2011), outlines recovery actions for the Swift Parrot. A recovery action relevant to this proposal is outlined below: • <i>Revegetating areas and connecting remnant habitats by planting feed and nest tree species, fencing them off and managing them, where natural regeneration is not possible</i> (Saunders and Tzaros 2011). While the proposal will remove three potential winter flowering foraging trees, five would be retained. These are located in a highly urbanised landscape in the Wollongong LGA. The removal of these three trees are not expected to interfere with the recovery of the species, given their wide-ranging and highly mobile nature.
Conclusion	The proposed redevelopment of the WCHC is unlikely to have a significant impact on the Swift Parrot, as the removal of three potential foraging trees, while five are proposed to be retained: • is unlikely to a long-term decrease in the size of the important population of the species. • is unlikely to reduce the area of occupancy for the Swift Parrot population. • Is unlikely to fragment the existing important population into two or more populations • Is unlikely to adversely affect habitat critical to the survival of the species • Would not disrupt the breeding cycle of the important population • Is unlikely to adversely affect the availability or quality of habitat to the extent that the species is likely to decline. • Is unlikely to result in invasive species becoming established in the subject site • Would not interfere with the recovery of the species. In conclusion, the proposal is unlikely to result in a significant impact on the Swift Parrot.

E.1.3 Grey-headed Flying-fox (*Pteropus poliocephalus*)

Table E.3 Assessment of Significance – Grey-headed Flying-Fox

Criteria	Assessment
lead to a long-term decrease in the size of an important population of a species	An ‘important population’ is a population that is necessary for a species’ long-term survival and recovery (DOE 2013). This may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range (DOE 2013). The Grey-headed Flying-fox is considered to comprise a single, mobile population with the population distributed across the east coast, and most of Victoria, to Adelaide (DAWE 2021). Therefore, the national Grey-headed Flying-fox populations is considered an ‘important population’. No permanent or temporary Grey-headed Flying-fox breeding camps were detected in the subject site, nor are any mapped on the National Flying-fox monitoring viewer (DCCEEW 2023c). Breeding habitat is absent in the subject site. In total, there are 23 Grey-headed Flying Fox camps located within 50 km of the subject site, hence the subject site may provide foraging resources for the species in the locality (DCCEEW 2023c). The nearest Grey-headed Flying Fox camp is located 7.9 km west of the subject site, in riparian vegetation in West Dapto. Population counts indicate numbers from 500 to 2,500 individuals to a maximum of 10,000 individuals in one year. A total of 20 suitable foraging trees for this species were identified in the subject site, being Forest Red Gum, Spotted Gum, Swamp Mahogany, Red Bloodwood, Lemon-scented Gum, <i>Melaleuca decora</i>, and Hill’s Weeping Fig. The proposal would remove 10 potential foraging trees, while 10 would be retained. These include Spotted Gums, a Forest Red Gum, <i>Melaleuca decora</i>, and Hills’ Weeping Fig (DAWE 2021; Eby and Law 2008). Spotted Gums have been identified as being offering one of the highest ranked food resources for the Grey-headed Flying Fox (Eby and Law 2008). Fig trees are also a valuable foraging resource for Grey-headed Flying-foxes. The fig tree to be retained is a tall, mature tree which would provide abundance fruit resources. Given that only 10 potential foraging trees are proposed to be removed, while 10 would be retained, including one mature Hill’s Weeping Fig tree, and that no roosting camps will be impacted by the proposal, the proposal is unlikely to a long-term decrease in the size of the important population of the species.
reduce the area of occupancy of an important population	The subject site is located at the Port Kembla hospital, in the highly urbanised suburb of Warrawong. The locality is highly fragmented, comprising the urban areas of the Wollongong and Shellharbour LGAs. The potential foraging trees are situated in a highly urbanised environment. The Grey-headed Flying-Fox is a highly mobile species, which are known to forage up to 50 km from their camp. A total of 23 listed Grey-headed Flying-Fox camps are located within 50 km of the subject site, from Nowra, to Bowral, to the Royal National Park. The removal of 10 suitable foraging trees, in a highly fragmented urban landscape, while foraging resources will be retained on the hospital grounds, is unlikely to reduce the area of occupancy for the important Grey-headed Flying-Fox population.
fragment an existing important population into two or more populations	The Grey-headed Flying-fox is considered to comprise a single, mobile population across its range (DAWE 2021). The species is known to forage up to 50 km from their camps, before returning to their roost in the same night (DAWE 2021). The removal of 10 potential foraging trees, while 10 are proposed to be retained, is highly unlikely to fragment the existing important population of this highly mobile species, into two or more populations.

Table E.3 Assessment of Significance – Grey-headed Flying-Fox

Criteria	Assessment
adversely affect habitat critical to the survival of a species	Habitat critical to the survival of the Grey-headed Flying-fox is defined vegetation communities that contain: ‘<i>Eucalyptus tereticornis</i>, <i>E. albens</i>, <i>E. crebra</i>, <i>E. fibrosa</i>, <i>E. melliodora</i>, <i>E. paniculata</i>, <i>E. pilularis</i>, <i>E. robusta</i>, <i>E. seeana</i>, <i>E. sideroxylon</i>, <i>E. siderophloia</i>, <i>Banksia integrifolia</i>, <i>Castanospermum australe</i>, <i>Corymbia citriodora</i>, <i>C. eximia</i>, <i>C. maculata</i>, <i>Grevillea robusta</i>, <i>Melaleuca quinquenervia</i> or <i>Syncarpia glomulifera</i>’ (DAWE 2021, Eby and Law 2008; Eby 2016; Eby et al., 2019). Habitat critical to the survival of the Grey-headed Flying-fox may also be vegetation communities not containing the above tree species, but which: • ‘contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May) • contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department’s interactive flying-fox web viewer, or • contain native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp as identified on the Department’s interactive flying-fox web viewer’ (DAWE 2021). The vegetation in the subject site comprises of mixed native urban and exotic vegetation, managed as landscaped lawns and gardens at the Port Kembla Hospital. The vegetation does not conform to any native vegetation community. However, important foraging tree species are present in the subject site, including: • Forest Red Gum • Swamp Mahogany • Lemon-scented Gum • Spotted Gum • Red Bloodwood • <i>Melaleuca decora</i> • Hill’s Weeping Fig In total, 10 suitable foraging trees are proposed for removal, and 10 are proposed for retention. The vegetation in the subject site does not conform to a vegetation community. Hence, the 10 potential foraging trees to be removed do not constitute habitat critical to the survival of this species. However, 10 foraging tree species are proposed to be retained, which would retain foraging habitat in the subject site. Therefore, the proposal is unlikely to adversely affect habitat critical to the survival of the Grey-headed Flying-Fox.
disrupt the breeding cycle of an important population	No permanent or temporary Grey-headed Flying-fox breeding camps were detected in the subject site, nor are any mapped on the <i>National Flying-fox monitoring viewer</i> (DCCEEW 2023c). Breeding habitat is absent from the subject site. The proposal will not impact on any breeding camps, and it will only remove a relatively small area of foraging resources, therefore, is unlikely to disrupt the breeding cycle of an important population.
modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Ten potential foraging trees are proposed to be removed, while 10 are proposed to be retained. Spotted Gums have been identified as offering one of the highest ranked food resources for the Grey-headed Flying Fox (Eby and Law 2008). Fig trees are also a valuable foraging resource for Grey-headed Flying-foxes. The fig tree to be retained is a tall, mature tree which would provide abundance fruit resources. Breeding habitat is absent from the subject site. Therefore, the proposal is unlikely to adversely affect the availability or quality of habitat to the extent that the species is likely to decline.
result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species’ habitat	The WCHC is expected to continue to be managed as landscaped lawns and gardens. Native trees and shrubs are recommended to be planted. Invasive species are unlikely to become established in the subject site, as a result of the proposal, such that they would be harmful to this species’ habitat.

Table E.3 Assessment of Significance – Grey-headed Flying-Fox

Criteria	Assessment
introduce disease that may cause the species to decline, or	The National Recovery Plan for the Grey-headed Flying-fox does not identify any diseases likely to impact the health of the species (DAWE 2021). Any discussion about diseases in the recovery plan concerns the risk of disease transmission from bats to humans. The proposal is unlikely to introduce disease that may cause the species to decline.
interfere substantially with the recovery of the species.	The National Recovery Plan for the Grey-headed Flying-fox provides several actions to improve the national population trend (DAWE 2021). The following is a subset of these actions, targeting actions relevant to the proposal: • Action 1.4: <i>Increase the extent and viability of foraging habitat for the Grey-headed Flying-fox that is productive during winter and spring by planting appropriate tree species in the appropriate soil and landscape position (Eby 2016)</i> • Action 9.1: <i>Work with the electrical utilities to ensure a move towards increasing minimum spacing on new powerlines and converting old systems during maintenance or upgrades through installing underground powerlines or aerial bundling of lines.</i> Ten potential foraging trees would be retained. These include four Spotted Gums, one Forest Red Gum, four <i>Melaleuca decoras</i>, and one Hill's Weeping Fig tree (DAWE 2021; Eby and Law 2008). Spotted Gums have been identified as being one of the highest ranked food resources for the Grey-headed Flying Fox (Eby and Law 2008). Fig trees are also a valuable foraging resource for Grey-headed Flying-foxes. The fig tree to be retained is a tall, mature tree which would provide abundant fruit resources.
Conclusion	The proposed redevelopment of the WCHC is unlikely to have a significant impact on the Grey-headed Flying-Fox, as the removal of 10 potential foraging trees, while 10 foraging trees are proposed to be retained: • is unlikely to a long-term decrease in the size of the important population of the species. • is unlikely to reduce the area of occupancy for the important Grey-headed Flying-Fox population. • Would not impact roost/ breeding camps • Is unlikely to fragment the existing important population into two or more populations • Is unlikely to adversely affect habitat critical to the survival of the species • Would not disrupt the breeding cycle of the important population • Is unlikely to adversely affect the availability or quality of habitat to the extent that the species is likely to decline. • Is unlikely to result in invasive species becoming established in the subject site • Would not interfere substantially with the recovery of the species. In conclusion, the proposal is unlikely to result in a significant impact on the Grey-headed Flying-Fox, as this species and their important population is highly likely to persist in the locality.

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