

Abel Ecology

Prescribed Ecological Actions Report (PEAR)

for

Wyong Hospital

664 Pacific Highway Hamlyn Terrace NSW 2259

Lot 4, DP 1248441

Proposed palliative care unit.

Prepared for:	Health Infrastructure
Report No:	AE24-2647-PEAR -ISS-1
Prepared by:	Abel Ecology
Date:	13 March 2024



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Document History

Report	Version	Prepared by	Technical Review by	Proofread by	Submission	
					Method	Date
Report	Draft A	Emily Barbaro	Nicholas Tong	Janelle Merry	Dropbox	29 Feb 2024
Report	Issue 1	Emily Barbaro	Nicholas Tong	Janelle Merry	Dropbox	13 Mar 2024

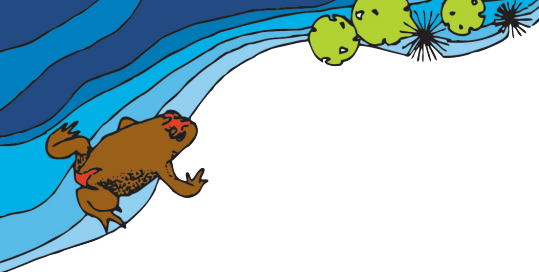


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List of Abbreviations

ALS	Actual Lot Size
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016
BCR	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
d.b.h.	Diameter at breast height (~1.4 metres)
EEC	Endangered Ecological Community
ESD	Ecologically Sustainable Development
LEP	Local Environmental Plan
LGA	Local Government Area
MLS	Minimum Lot size

Note regarding maps in this report:

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With regard to maps provided by the Land Information Centre, Topographic maps used with the permission of © Land and Property Information, NSW.



Executive summary

The proposal is to construct a new 12-bed capacity palliative care unit at Wyong Hospital. The new palliative care unit will be constructed within the existing Education Centre. The proposal is to clear approximately 0.06 hectares of planted vegetation (mixture of natives and exotics) in the garden beds around the Education Centre.

A biodiversity survey was carried out at Wyong Hospital (664 Pacific Highway Hamlyn Terrace) to assess the likely impacts of the proposal on species and ecological communities present on the site, and whether the proposal requires a Species Impact Statement (SIS) and/or a Biodiversity Assessment Development Report (BDAR) because it is a likely trigger to entry into the Biodiversity Offsets Scheme identified in s. 7.4 of the *Biodiversity Conservation Act 2016*.

This report also describes whether there is likely to be any significant effect on any endangered ecological community, endangered population, threatened species or their habitats, as per the listings in the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999) (Commonwealth legislation).

The following three considerations are triggers for entry into the Biodiversity Assessment Method.

Threshold 1: The proposal does not exceed the clearing threshold area as described in clause 7.2 of the BC Regulation 2017 (not relevant to Division 5.1 activities).

Threshold 2: The proposal does not undertake clearing of native vegetation or any prescribed activities (clause 6.1 of the BC Regulation 2017) on land shaded in the Biodiversity Values Land Map (not relevant to Division 5.1 activities).

Threshold 3: The proposal is not likely to significantly affect any threatened species or Endangered or Critically Endangered Species.

There is no impediment to this proposal in the scope of this report. None of the three thresholds for entry into the Biodiversity Offsets Scheme are triggered by the proposal.

A report prepared using the Biodiversity Assessment Method is **not** recommended.

The provisions of the EPBC Act 1999 do not apply to this proposal and it does not require referral to the Commonwealth.

Recommendation:

A Species Impact Statement (SIS) and/or Biodiversity Assessment Development Report (BDAR) is not required.

A consent or approval may be issued with the following conditions:

- Recommendation to install construction fencing at the perimeter of proposed works



Figure 1. Locality map for site name

Source: © Land and property Information NSW. Spatial Information eXchange (SIX) website 2017.



Figure 2. Proposal diagram. Retrieved from CONTEXT Landscape Architecture *Landscape Plan – WCEOLP Wyong – Palliative Care Unit (PCU)*.



Figure 3. Area within site to be affected



Figure 4. Aerial photo of the site and local area

Source: © Land and property Information NSW. Spatial Information eXchange (SIX) website 2021.



Figure 5. Biodiversity values map

Source: <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap>

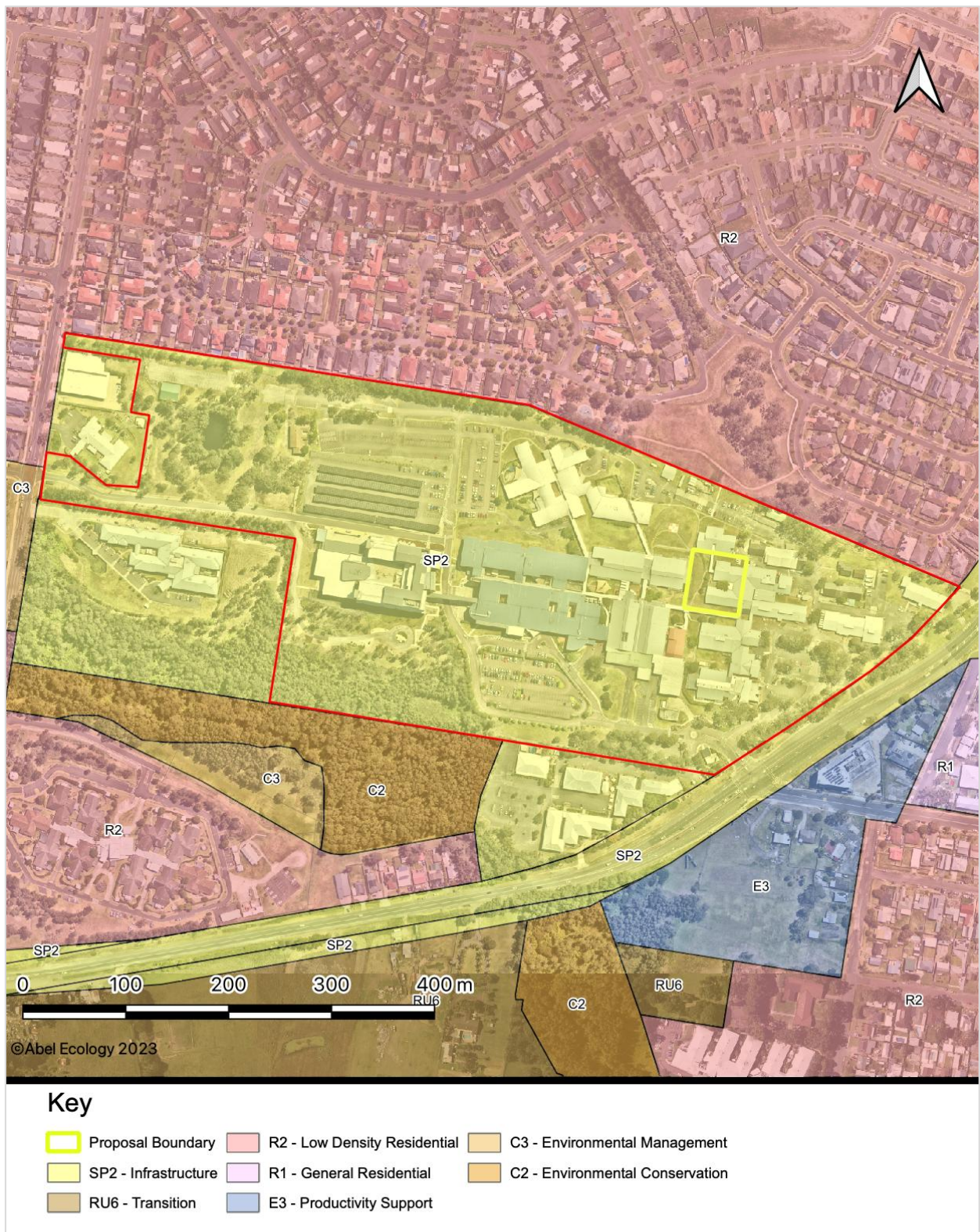


Figure 6. Site LEP zone map

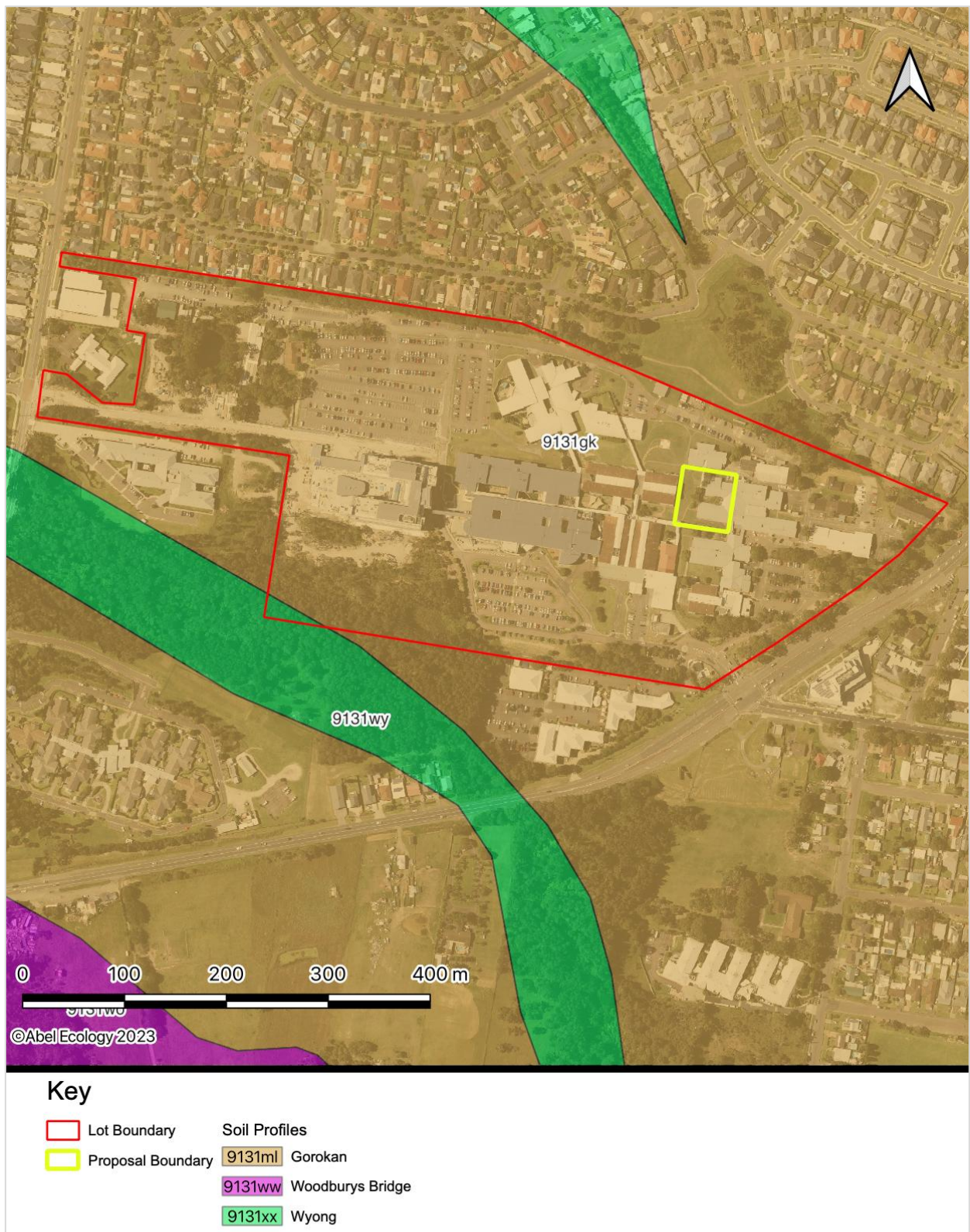


Figure 7. Soil landscapes of site and surrounding area

Source: map extract from the eSpade website: <https://www.environment.nsw.gov.au/eSpade2WebApp>



Figure 8. Vegetation and habitat map for the site

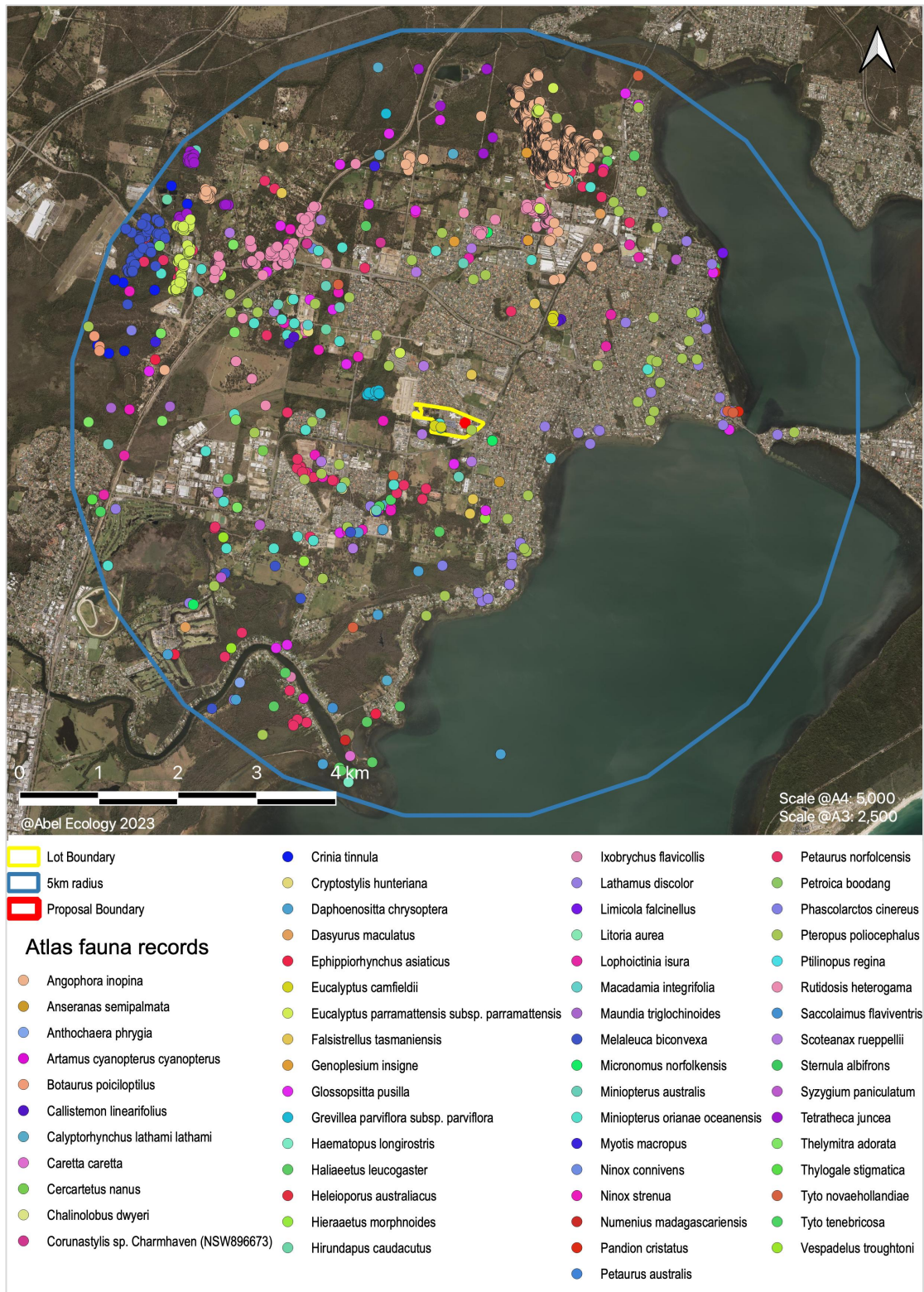


Figure 9. Bionet Atlas Records 5km

Source: map extract from the SEED website:

https://geo.seed.nsw.gov.au/Public_View/index.html?viewer=Public_View&locale=en-AU



Figure 10. Bionet Atlas Records on site

Source: map extract from the SEED website

https://geo.seed.nsw.gov.au/Public_View/index.html?viewer=Public_View&locale=en-AU



Figure 11. State vegetation mapping

Source: map extract from the SEED website:

https://geo.seed.nsw.gov.au/Public_View/index.html?viewer=Public_View&locale=en-AU

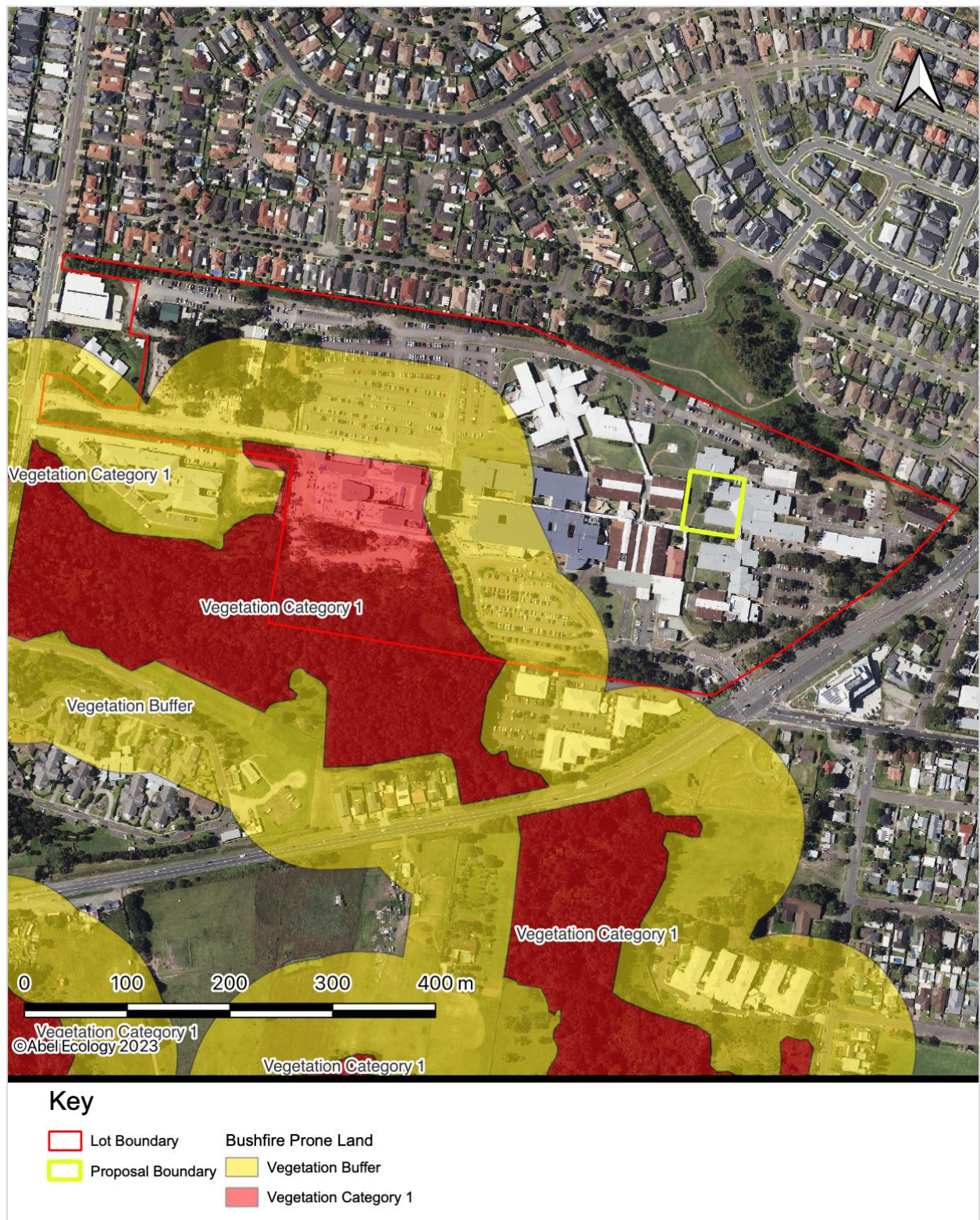


Figure 12 Bushfire prone land

Source: map extract from the SEED website <https://datasets.seed.nsw.gov.au/dataset/bush-fire-prone-land>



1. Introduction

1.1 Legislative context

This Prescribed Ecological Actions Report meets the requirements of the *Biodiversity Conservation Act 2016* to enable a Council or other consent or determining authority to assess a proposed development under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) or an approval under Part 5 of that Act.

The authority must consider the following three Biodiversity Offset Scheme Development Thresholds.

Threshold Trigger 1: Exceeding the clearing threshold on an area of native vegetation (not relevant to Division 5.1 activities).

Threshold Trigger 2: Development or a prescribed activity is carried out on land included in the Biodiversity Values Land Map (not relevant to Division 5.1 activities).

Threshold Trigger 3: A “significant effect” on threatened species or ecological communities

A biodiversity survey of the proposed development site at Wyong Hospital (664 Pacific Highway Hamlyn Terrace) (‘the site’ – Figure 1) was undertaken on Wednesday 24th January 2024. This Prescribed Ecological Actions Report investigates whether the impacts of proposal to construct a new palliative care facility will trigger the threshold to entry into the Biodiversity Offsets Scheme, thereby requiring a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report BDAR.

This assessment addresses both ‘endangered’ and ‘vulnerable’, as required by the Biodiversity Conservation Act 2016 (BCA 2016). Throughout this report ‘threatened’ refers to those species and communities listed as ‘endangered’ or ‘vulnerable’ in Schedules 1 & 2 of the BC Act 2016.

If threshold three is triggered, then a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report (BDAR) is recommended to be prepared by an accredited assessor for the Determining Authority.

1.2 The proposal

The proposal (Figure 2) is to clear planted native vegetation and exotic trees and shrubs and consists of:

- a) Creating new verandahs
- b) Constructing a central garden, which includes a spiritual meeting area, communal meeting area and a staff retreat area.



Table 1. Details of lot size and size of proposed native vegetation clearing

Component of site	Hectares	Proportion of the site %
Whole site	19.76	100
Extent of proposed native vegetation clearing	0.06	0.003%

1.3 Sources of information used in this assessment

Literature reviewed in order to assess possible issues relating to this site include:

Air photo (SIX maps, NearMap)

Landscape Plan (CONTEXT Landscape Architecture)

Schedules to the BC Act 2016

Schedules to the EPBC Act 1999

State Environmental Planning Policy – Central Coast Local Environment Plan 2022

SEPP Biodiversity and Conservation 2021 - Koala habitat protection

OEH Atlas of NSW Wildlife

Other biodiversity survey reports in the local area, including:

- Abel Ecology (2016) *Letter to Jeff Apitz Wyong Hospital: Proposed car park and implications from bushfire.*
- Abel Ecology (2017) *Letter to Kirsty White – Wyong Hospital: Proposed enabling works and the implications from bushfire.*
- Abel Ecology (2017) *Wyong Hospital – Enabling Works.* A flora and fauna survey was carried out at Wyong Hospital to assess the likely impact of clearing of vegetation and found no significant effect on any endangered ecological community, threatened species or their habitats.
- Abel Ecology (2017) *Assessment report on vegetation of the Reserve and adjoining southern watercourse for Wyong Hospital.* Conducted in the Reserve and adjoining southern vegetation adjacent to Wyong Hospital. Report found high quality natural woodland through most of the Reserve, a small population of three (3) threatened plants *Tetratheca jucea*, Swamp Oak Floodplain Forest adjoining the southern Reserve boundary.
- Abel Ecology (2018) *Letter to Jay Hall – Completion of Enabling works, Wyong Hospital Redevelopment.*



2. Biodiversity offsets scheme thresholds 1 and 2

2.1 Threshold One: Biodiversity Conservation Regulation 2017 Development area assessment thresholds

Clearing of native vegetation is declared by clause 7.2(1) to exceed the biodiversity offsets scheme threshold if the area proposed to be cleared is the area set out in Column 2 of the Table to that clause (Table 2 below) opposite the minimum lot size applicable to the land to be cleared in Column 1 of that Table.

Clearing of native vegetation will trigger entry into the offsets scheme if clearing is greater than the assessment threshold. To determine the correct threshold from Table 2 below, the appropriate minimum lot size of land must be selected. As Wyong Hospital does not have a minimum lot size, the entire size of the lot (19.76 hectares) is used for this assessment. The lot size of land can be found on the NSW planning portal <https://www.planningportal.nsw.gov.au/find-a-property/property/>.

Table 2. Areas section 7.2(4) Biodiversity Conservation Regulation 2017

	Land to be considered	Assessment threshold
	Minimum lot size of land	Area of clearing
A	Less than 1 hectare	0.25 hectare or more
B	Less than 40 hectares but not less than 1 hectare	0.5 hectare or more
C	Less than 1,000 hectares but not less than 40 hectares	1 hectare or more
D	1,000 hectares or more	2 hectares or more

The size of the lot is approximately 19.76 hectares, and row B is appropriate for this proposal. The area of clearing is less than the threshold of 0.5 hectares.

Conclusion

This threshold is not relevant to Division 5.1 activities. However, the proposed clearing required for the activity does not exceed the threshold which would have triggered entry into the BC Act offset scheme.



2.2 Threshold Two: Clearing or prescribed activities as listed in the Biodiversity Conservation Regulation 2017 on land included on the Biodiversity Values Map

No part of the site is included on the Biodiversity Values Map (Figure 5). Threshold two is not breached.

Conclusion

This threshold is not relevant to Division 5.1 activities. However, no part of the site included on the Biodiversity Values Map to trigger entry into the BC Act offset scheme.



3. Landscape features of the site and the locality

3.1 Site description

For the purposes of this report, the site (Figure 1) is Wyong Hospital defined by the property boundaries of Lot 4 DP1248441. The entire site of Wyong Hospital is approximately 19.7 ha. However, the area which will be affected by the development at the Education Centre is only 0.06 ha.

The elevation is approximately 27 m above sea level. The site is predominately flat and there are no water bodies or creeks mapped on the site. The site is approximately 1.6 km from Tuggerah Lake. Stormwater management is by engineered structures. The adjacent properties (Figure 1) are residential to the north and west, and to the southeast there are two Plant Community Types – Hunter Estuarine *Melaleuca nodosa* Scrub and Hunter Coast Lowland Apple-Bloodwood Forest. However, these vegetation communities are not present within the affected area for the proposed development at the Education Centre. The vegetation (Figure 9) and fauna habitat are described in detail in Section 5 and 6 below.

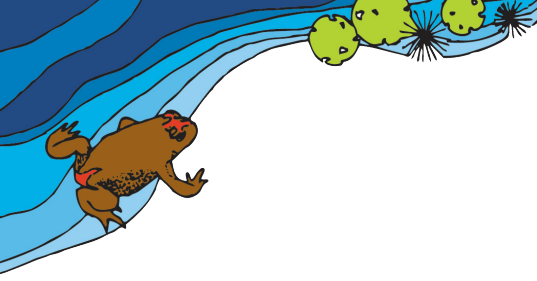
<https://www.planningportal.nsw.gov.au/find-a-property/>

3.2 History of the site

Wyong Hospital was built in 1980 and has been in active use since then. Wyong Hospital, contracted through Health Infrastructure, has conducted many previous reports with Abel Ecology. Previous reports conducted at Wyong Hospital by Abel Ecology include:

- Abel Ecology (2016) *Letter to Jeff Apitz Wyong Hospital: Proposed car park and implications from bushfire.*
- Abel Ecology (2017) *Letter to Kirsty White – Wyong Hospital: Proposed enabling works and the implications from bushfire.*
- Abel Ecology (2017) *Wyong Hospital – Enabling Works.* A flora and fauna survey was carried out at Wyong Hospital to assess the likely impact of clearing of vegetation and found no significant effect on any endangered ecological community, threatened species or their habitats.
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- Abel Ecology (2018) *Letter to Jay Hall – Completion of Enabling works, Wyong Hospital Redevelopment.*

Notably, no previous reports have been completed for the vegetation surrounding the now proposed palliative care unit at the Education Centre.



3.3 Geology & Soils

The soil profiles mapped on Wyong Hospital include Gorokan and Wyong. The location of the proposed developed at the Education Centre is mapped as Gorokan soil type (Figure 7).

Gorokan:

Geology: Narrabeen Group—Clifton Subgroup—Tuggerah Formation: light coloured lithic sandstone, pebbly in part, red brown and grey green claystone and siltstone with rare conglomerate.

Soils: moderately deep (50–150 cm) Soloths (Dy2.41, Dy3.41), Yellow Podzolic Soils (Dy3.11, Dy3.21) on ridges and crests; Soloths (Dy2.41, Dy3.41), Yellow Podzolic Soils (Dy3.11, Dy3.21) and Grey-brown Podzolic Soils (Db1.21, Db2.21) on slopes with Gleyed Podzolic Soils (Dg2.41) along drainage lines.

Wyong:

Geology: Quaternary sediments—sand, silt, gravel and clay.

Soils: deep (>200 cm) Yellow Podzolic Soils (Dy5.11, Dy5.51), Brown Podzolic Soils (Db2.11), Soloths (Dy5.81, Dy5.41) with some Humus Podzols (Uc2.22) around lake edges.

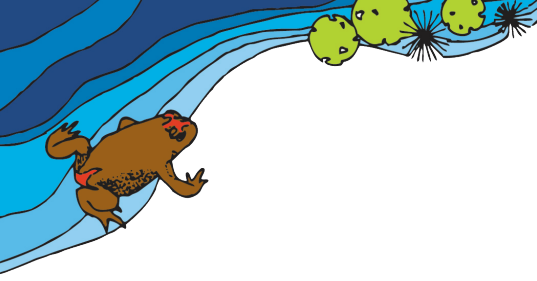
3.4 Landscape features

3.4.1 Site landscape features

The following landscape features are present on the site (Table 3).

Table 3. Site landscape features

Vegetation	The vegetation surrounding the new palliative care centre at the Education Centre contains well-maintained garden beds and lawns with native vegetation consisting of Lemon-scented Teatree (<i>Leptospermum petersoniil</i>) and two Coast Banksia (<i>Banksia integrifolia</i>). Neither of these species form a part of local vegetation communities.
Non-native vegetation	Non-native vegetation on the site consists of planted garden species.
Human structures	Buildings to be demolished have / some/ very little potential as bat roosts.
Wetlands/dams/watercourse	There are no wetlands/dams/watercourse on site.
Karst, caves, crevices and other geological features of significance	There are no karst, caves, crevices and other geological features of significance.
Vehicle traffic and road mortality	There is minimal traffic within hospital vicinity and no road kill was observed onsite.



4. Field survey methods

4.1 BioNet Atlas of NSW Wildlife website search

Records from the BioNet Atlas of NSW Wildlife website were accessed using the following search criteria:

Licensed Report of all Valid Records of Threatened (listed on *BC Act 2016*) or Commonwealth listed Entities for a 10 x 10 km square centred on the site (selected area [North: -33.22 West: 151.43 East: 151.53 South: -33.32]). Records since 01 January 2000 until 11 October 2023 returned a total of 4,476 records of 65 threatened flora and fauna species.

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°). Copyright the State of NSW through the Department of Climate Change, Energy, the Environment and Water.

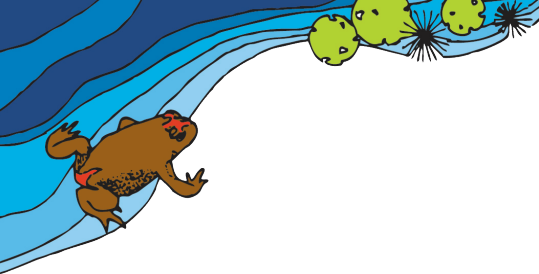
These species (Table 4) were considered in designing field survey targets and methods. Unsuitable candidates were eliminated on the basis of habitat requirements (Appendix 3 and Appendix 4).

Table 4. BioNet threatened flora & fauna species records for a 5 km radius of the site since 1 Jan 2000

Common Name	Scientific Name	NSW status	Comm. status	Suitable Habitat on Site	Included in 5 part Test
Varied Sittella	<i>Daphoenositta chrysoptera</i>	V,P		No	No
Little Bent-winged Bat	<i>Miniopterus australis</i>	V,P		No	No
Barking Owl	<i>Ninox connivens</i>	V,P,3		No	No
Little Lorikeet	<i>Glossopsitta pusilla</i>	V,P		No	No
Squirrel Glider	<i>Petaurus norfolcensis</i>	V,P		No	No
Green and Golden Bell Frog	<i>Litoria aurea</i>	E1,P	V	No	No
Camfield's Stringybark	<i>Eucalyptus camfieldii</i>	V	V	No	No
Pied Oystercatcher	<i>Haematopus longirostris</i>	E1,P		No	No
Powerful Owl	<i>Ninox strenua</i>	V,P,3		No	No
Variable Midge Orchid	<i>Genoplesium insigne</i>	E4A,P,2	CE	No	No
White-throated Needletail	<i>Hirundapus caudacutus</i>	P	V,C,J,K	No	No
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	V,P,2	V	No	No



Common Name	Scientific Name	NSW status	Comm. status	Suitable Habitat on Site	Included in 5 part Test
Swift Parrot	<i>Lathamus discolor</i>	E1,P	CE	No	No
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	V,P	E	No	No
Koala	<i>Phascolarctos cinereus</i>	E1,P	E	No	No
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	V,P	C,J,K	No	No
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	E1	V	No	No
Black-eyed Susan	<i>Tetradlea juncea</i>	V	V	No	No
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V,P		No	No
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V,P		No	No
Red-legged Pademelon	<i>Thylogale stigmatica</i>	V,P		No	No
Heath Wrinklewort	<i>Rutidosia heterogama</i>	V	V	No	No
Biconvex Paperbark	<i>Melaleuca biconvexa</i>	V	V	No	No
Macadamia Nut	<i>Macadamia integrifolia</i>		V	No	No
Little Eagle	<i>Hieraaetus morphnoides</i>	V,P		No	No
Small-flower Grevillea	<i>Grevillea parviflora subsp. parviflora</i>	V	V	No	No
Regent Honeyeater	<i>Anthochaera phrygia</i>	E4A,P,2	CE	No	No
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	V,P		No	No
Wyong Sun Orchid	<i>Thelymitra adorata</i>	E4A,P,2	CE	No	No
Rose-crowned Fruit-Dove	<i>Ptilinopus regina</i>	V,P		No	No
Netted Bottle Brush	<i>Callistemon linearifolius</i>	V,3		No	No
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V,P	V	No	No
Wallum Froglet	<i>Crinia tinnula</i>	V,P		No	No



4.2 Field work effort

Over the one day of fieldwork a total of 0.5 hours were spent undertaking survey work on the site and surrounding habitat areas.

Table 5. Survey dates and conditions

Date	Time	Temperature (°C)	Task	Hours (hrs x no. people)
24/01/2024	10:00am to 10:30am	25	Vegetation and fauna Survey	1 x 0.5 hours

Survey effort was concentrated within the site boundaries, although adjacent surrounding vegetation was noted (Figure 3).

4.3 Flora survey method, vegetation community and habitat classification

A flora survey was conducted to compile a species list and vegetation descriptions. Targeted surveys were not made for threatened species (See Appendix 4) since the site is entirely disturbed and landscaped.

Vegetation quality is assessed as described below (Section 4.4). The plant community on site were classified according to the NSW VIS.

4.4 Simplified vegetation integrity assessment

On-site vegetation may be described according to a simplified vegetation integrity classification for each vegetation zone / habitat type. The simplified vegetation integrity assessment is based upon a modified version of the vegetation integrity assessment described in the NSW Biodiversity Assessment Method (BAM) 2017. This simplified assessment is based upon a qualitative assessment; no quantitative assessment was undertaken and no vegetation integrity score is calculated. The assessment requires the assessor to compare the observed vegetation with the vegetation type presumed to be present prior to 1750 (high quality native vegetation). Vegetation with good or moderate integrity usually provide higher quality habitat for a diverse range of indigenous species.



Four main qualitative classes of vegetation integrity are recognised. There is variation within each class, and in addition the class boundaries are somewhat fluid where one grades into the other.

Good integrity vegetation

Characteristics: Relatively high indigenous species diversity, diversity of flora species growth form (mix of trees, shrubs and groundcovers etc), diversity of tree size, canopy layer regeneration observed, fallen logs present on the ground, dead vegetative litter (leaves, twigs etc) cover present, weed invasion absent or minimal

Moderate integrity vegetation

Characteristics: Remnants and regenerating areas that have experienced disturbance but appear to retain the capability of recovery. Weed invasion may be moderate.

Poor integrity vegetation

Characteristics: The vegetation is highly disturbed. It typically consists of scattered trees/shrubs or clumps of trees and shrubs. Tree size diversity significantly reduced. The groundcover layer is comprised of a mix of indigenous species and exotic species. Fallen logs rare to absent, ground vegetative litter lacking.

Cleared class

Characteristics: Indigenous canopy species are absent and the indigenous understorey (shrubs/climbers/scramblers/groundcovers) is approximately less than 50%.

Note: some vegetation types naturally lack some of the characteristics. For example, trees are rare to absent in saltmarshes, sedge swamps, alpine herbfields and arid shrublands. However, providing the other characteristics are consistent with a natural undisturbed area of the same vegetation type then these vegetation types are classified as having “good integrity”.

4.5 Fauna survey method

The methods of survey undertaken to detect the various faunal groups or their habitat are outlined below. Targeted surveys were not made for threatened species based on records of sightings from the BioNet Atlas website as there was no suitable habitat on site.

Roads and road verges were searched for road-kill fauna. Surveys for mammals, reptiles and frogs are generally run concurrently.

Dates and temperatures of all fieldwork were recorded and are tabulated in Table 5 above.



4.5.1 Diurnal fauna searches

Searching, opportunistic observations and call recording provides an indication of types of species using a site. These methods are used to identify and record live animals, or record indirect evidence of animal presence on the site. On occasions, specific surveys may be conducted for a targeted group or species, such as searching the margins of a dam for frogs. Generally though, birds, reptiles, frogs and mammals, or evidence of them, may all be present in the same habitat at the time of survey, therefore searching for these faunal groups is generally run concurrently. This involved:

- a. Searching shelter sites, basking sites, opportunistic observation, and assessment of shelter site diversity suitability for reptiles.
- b. Opportunistic observations and identification of calls of species, and search for indirect evidence such as nests, feathers, scratchings and feeding signs for birds.
- c. Searching for indirect evidence, such as diggings, droppings, runways and burrows, and opportunistic observations for mammals.

While rigorous surveys are likely to find more species, high species richness for birds can be recorded in a relatively short amount of time. Bird surveys are used as a simple indicator of other parameters, such as biodiversity and the functioning of the ecosystem.

4.6 Species likely to occur

Species to be listed as 'likely to occur' or 'expected' (see Appendix 3), are common fauna and flora species generally found in the region, which are likely to occur on site if suitable habitat is present.

Native flora may include species local to the area (occurring in local remnants). Structure and species composition will depend upon locally occurring communities.

Expected species are common and, by definition, are not threatened species.

4.7 Limitations of the survey

This survey was conducted in the Summer. This was not suitable for winter migrants.

The weather conditions were approximately 25°C with a north-westerly wind of 6 km/h.

Species that may use the site were not detected during the survey for the following reasons:

- a. The species was present during the survey but was not detected due to dormancy, inactivity or cryptic habits.
- b. The species use the site at other times of the year, but was not present during the survey due to being nomadic or migratory.



4.8 Staff associated with the field work

Table 6. Staff associated with field work and analysis of field work

Staff member	Field work	Analysis of field work
Nick Tong	Vegetation Plots	Emily Barbaro

5. Survey Results: Vegetation and habitat description

5.1 Site vegetation and habitat

The site contains one vegetation zone which is described below. The distribution of the vegetation zones on the site and surrounding areas is shown in Figure 8.

No potential habitat trees were observed on the site. There is not a good supply of fallen logs and dead wood or coarse debris.

Other site habitat characteristics are described below.

Appendix 1 shows the list of flora found on the site.

5.1.1 Vegetation and habitat: Zone 1 – Lawns and garden beds

There are two State Vegetation Types mapped within the vicinity of Wyong Hospital: PCT 4038 Hunter Estuarine *Melaleuca nodosa* Scrub and PCT 3582 Hunter Coast Lowland Apple-Bloodwood Forest (Figure 11). Neither of these vegetation communities are mapped near the proposed development at the Education Centre. The vegetation surrounding the Education Centre does not belong to either of these communities.

The vegetation around the Education Centre occurs as formal garden beds as well as well-maintained lawns. There is a stand of planted native trees, Lemon-scented Teatree (*Leptospermum petersonii*), within the main courtyard. Plus, on the eastern side there is a well-maintained garden bed which includes two native Coast Banksia (*Banksia integrifolia*). Neither *Leptospermum petersonii* nor *Banksia integrifolia* form part of local native vegetation communities. The rest of the vegetation on site includes exotic garden plants.

Important habitat features that have significance for fauna occupation of the site are discussed below (Table 7). These include both site disturbance and natural features.



Table 7. Significant features and observations for Zone 1

Significant features	Observations
Frequency of large trees (approx. > 80 cm DBH)	Absent
Tree regeneration and Tree stem-size diversity	Tree regeneration appears absent
Logs, woody debris and litter cover	Low
Food resources	Perseonia, Eucalyptus, Corymbia and Acacia provide food resources of blossoms and seeds. None of these species were present on site.

The vegetation community is: no vegetation community. The vegetation is planted flora with a mixture of exotics and natives.

The vegetation within this zone qualifies as Cleared class.

5.2 Species and Communities of conservation concern

No critically endangered, vulnerable or regionally significant communities, species or populations were observed on site.

5.3 Weeds

The NSW Noxious Weeds Act 1993 has been repealed and the Biosecurity Act 2015 has replaced it. The Biosecurity Act 2015 requires each landholder and/or occupier to control biosecurity matter (weeds) on their property. The landholder and/or occupier is to develop an effective control strategy and plan to ensure they meet their General Biosecurity Duty.

The General Biosecurity Duty (GBD) is imposed on any person who deals with biosecurity matter (weeds), and who knows (or ought reasonably to know) of the biosecurity risk posed (or likely to be posed). They have a biosecurity duty to ensure that the risk associated with those weeds is prevented, eliminated or minimised - so far as is reasonably practicable. A requirement is that all public and private land owners or managers and all other people who deal with weed species (biosecurity matter) must use the most appropriate approach to prevent, eliminate or minimise the negative impact (biosecurity risk) of those weeds.



Council may issue a Biosecurity Direction when any owner/occupier fails in their biosecurity duty to control weeds on their land. The owner/occupier must comply with this biosecurity direction. A penalty notice or prosecution may follow if the owner/occupier fails to comply with the Biosecurity Direction.

Weeds Of National Significance (WONS) and Priority Weeds (PW) present on the site

Overall, weed coverage is low on the site. The garden beds contained some scattered weed invasion by one Priority Weed Easter Cassia (*Senna pendula* var. *glabrata*).

6. Survey Results: Fauna

6.1 Species of conservation concern

No threatened species were observed on site.

6.2 Fauna results

A total of three (3) species were detected including two (2) birds and one (1) reptile.

No mammals were detected.

Species listed as 'likely to occur' in the area are presented in Appendix 4. Note that the majority of the 'Expected Species' would not occur on the site due to the lack of habitat but do occur in the area. All the species listed as 'likely to occur' are common throughout the locality and the region. It is unlikely that protected species will be affected at a local, regional or state-wide scale by the proposal.

The habitats for threatened species that occur in the area are tabulated in Appendix 5.

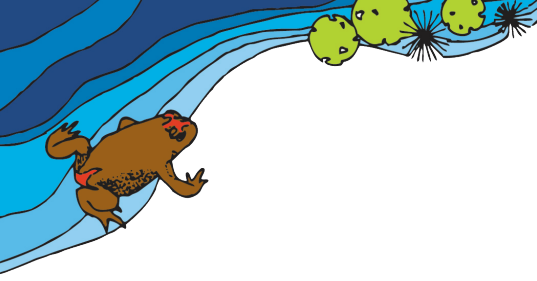


Table 8. List of fauna detected on the site

Common Name	Scientific Name	Conservation Status	Recorded AE
Reptiles			
Eastern Water-skink	<i>Eulamprus quoyii</i>		O
N=	1		

Common Name	Scientific Name	Conservation Status	Recorded AE
Birds			
Australian Magpie	<i>Cracticus tibicen</i>		W
Common Myna*	<i>Sturnus tristis</i>		W
N =	2		

Key

* = Introduced fauna

O = Observed

W = Calls heard



6.3 Fauna Summary

Species from each faunal group which are 'likely to occur' on the site can be seen in Appendix 2.

Mammals

No mammal species were detected on the site.

Species not recorded during the survey but likely to occur on the site include Common Ringtail Possum (*Pseudocheirus peregrinus*), Common Brushtail Possum (*Trichosurus vulpecula*), Fox (*Vulpes vulpes*) and Rabbit (*Oryctolagus cuniculus*).

Reptiles

One (1) reptile species was detected on the site.

A common skink was detected on site which is abundant across eastern Australia.

Species not recorded during the survey but likely to occur on the site include other common skinks of garden areas such as Dark-flecked Garden Sunskink (*Lampropholis delicata*) and Pale-flecked Garden Sunskink (*Lampropholis guichenoti*).

Frogs

No frog species were detected on the site.

Frog species are unlikely to occur on the site due to insufficient habitat.

Birds

Two (2) bird species were detected on the site.

The bird species observed on site are common birds for the area. The Common Myna (*Sturnus tristis*) is likely Australia's most identifiable pest bird species. The Common Myna is often implicated with the reduction of other native fauna in areas it inhabits.

Species not recorded during the survey but likely to occur on the site include Noisy miner (*Manorina melanocephala*) and Willie Wagtail (*Rhipidura leucophrys*).



6.4 Microbats

No ultrasonic surveys were conducted for microbats.

Foraging Habitat

This site provides potentially suitable foraging habitat for seven (7) of the nine (9) possible threatened species. Southern Myotis (*Myotis macropus* [syn. *Myotis adversus*]) has no suitable foraging habitat in the form of open water bodies. Golden-tipped Bat (*Kerivoula papuensis*) is only likely to forage in areas within a few kilometres of rainforest or rainforest gullies.

Roosting Habitat

This site has no tree hollows that provide suitable roosting habitat for Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*), Greater Broad-nosed Bat (*Scoteanax rueppellii*), Southern Myotis (*Myotis Macropus*), Little Bent-winged Bat (*Miniopterus australis*) and Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*). This site has no caves, culverts, or bridges, but does have buildings and other suitable (often human-made) structures that provide potentially suitable roosting habitat for Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern Bentwing-bat (*Miniopterus orianae oceanensis*) or Southern Myotis (*Myotis Macropus*). Golden-tipped Bat (*Kerivoula papuensis*) normally roosts in hanging bird nests or trees in rainforest gullies so is very unlikely to roost in the surveyed site.

6.5 Feral fauna

No feral fauna was observed on site.

Common feral species that may be using the site include Rabbit and Red Fox.



7. Discussion of results

Although Wyong Hospital is 19.7 ha with State Vegetation Communities PCT 4038 Hunter Estuarine *Melaleuca nodosa* Scrub and PCT 3582 Hunter Coast Lowland Apple-Bloodwood Forest (Figure 11) in the south-eastern vicinity, the area to be affected by the proposed development to create a new palliative care facility at the Education Centre is only 0.06 ha and is entirely planted vegetation (mixture of natives and exotics). There was no discernible native vegetation community observed in the vicinity of the proposed development site at the Education Centre.

The vegetation surrounding the proposed development occurs as formal garden beds and well-maintained lawns. The formal garden beds that wrap the Education Centre contain predominately exotic vegetation Oleander (*Nerium oleander*) and Umbrella Plant (*Schefflera sp.*). Planted native species include a small stand of Lemon-scented Teatree (*Leptospermum petersonii*), and two (2) Coast Banksias (*Banksia integrifolia*). Neither *Leptospermum petersonii* nor *Banksia integrifolia* form part of any local native vegetation communities.

There is a marked lack of habitat trees, dense shrub cover and coarse woody debris at the site to provide sufficient habitat for native fauna species. As the site sits within a hospital, there is a low fire regime. Ecological services for the site e.g., bioturbators, pollinators and seed dispersers are likely predominantly absent from the site.

8. Impact on biodiversity: Threshold 3

8.1 Threshold 3: Five-part test summary

Habitat requirements for locally occurring threatened faunal species, and the presence or absence of such habitat on the site, is tabulated in Appendix 3. Threatened plant species, listed in the BC Act and the EPBC Act, are shown in Appendix 4.

Under Section 7.3 of the Biodiversity Conservation Act several factors need to be considered in deciding whether there is likely to be a Significant effect on threatened species, populations or ecological communities, or their habitats. If there is likely to be a significant effect on threatened species etc., the proposal must be accompanied by a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report (BDAR).

There were no threatened ecological communities or threatened species suitable habitat on site. Therefore five-part tests of significance were **not** conducted.

There is no significant effect, so a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report (BDAR) is not recommended.



9. Planning Instruments

9.1 Avoid, minimise and offset under s 6.4(1) of the BC Act

6.4. Biodiversity conservation offsets under scheme

1. For the purposes of the biodiversity offsets scheme, the biodiversity conservation measures to offset or compensate for impacts on biodiversity values **after** any steps taken to avoid or minimise those impacts are as follows—
 - a. the retirement of biodiversity credits,
 - b. other actions that benefit the biodiversity values of the impacted land or other biodiversity values.

The hierarchy of avoid, minimise and offset applies once a project has triggered entry into the Biodiversity Offset Scheme (BOS). However, even though this proposal does not require entry into the BOS, to avoid confusion, the considerations are addressed here.

The objectives of avoid, minimise and offset are addressed in this proposal as follows:

- Avoid – the project has been proposed in an area containing planted vegetation (mixture of natives and exotics) which is not conforming to a known PCT.
- Minimise – Impacts on native vegetation (PCT) have been avoided so minimisation efforts are not required. In an effort to minimise the prescribed impacts (clearing non-native vegetation), two (2) Lemon Scented Tea Trees (*Leptospermum petersonii*) are proposed to be retained.
- Offset: in view of the avoid and minimise considerations above, and that the proposal does not trigger entry into the BOS, no offset is recommended.

Part 5 Activities Decision support tool

<https://www.olg.nsw.gov.au/councils/land-management/biodiversity/biodiversity-assessment-and-approvals-navigator/>

Part 5 Activities

If the activity is likely to significantly affect threatened species a Species Impact Statement or, if the proponent chooses, a Biodiversity Development Assessment Report, must be prepared. Where a Minister is the determining authority under Part 5, the Minister is required to consult the Minister for the Environment if the activity is likely to significantly affect threatened species, unless the Minister has 'opted in' to the Biodiversity Offset Scheme by engaging an accredited assessor to prepare a Biodiversity Development Assessment Report. If the determining authority under Part 5 is not a Minister, the determining authority is not to carry out the activity or grant approval to carry out the activity if it is likely to significantly affect threatened species without obtaining the concurrence



of the Environment Agency Head. However, concurrence from the Environmental Agency Head is not required if a Biodiversity Development Assessment Report has been obtained.

For Part 5 activities, an activity is “likely to significantly affect threatened species” if it is carried out in an area of outstanding biodiversity value or likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3 of the *Biodiversity Conservation Act 2016*. The biodiversity offset scheme threshold trigger does not apply.

Additional planning instruments which could apply at this site include:

Local Environmental Plans of local council; Central Coast Council.

Zone SP2 Infrastructure from Central Coast LEP

https://legislation.nsw.gov.au/view/html/inforce/current/epi-2022-0308#pt-cg1.Zone_SP2

“Zone SP2Infrastructure

1Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To recognise existing railway land, major roads and utility installations and to enable their future development and expansion.

2Permitted without consent

Nil

3Permitted with consent

Aquaculture; Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4Prohibited

Any development not specified in item 2 or 3.”

9.2 LEP and DCP Locally significant species or vegetation communities

No locally significant species or vegetation communities were present at the site.



9.3 SEPP Biodiversity and Conservation 2021 - Koala habitat protection

State Environmental Planning Policy (Biodiversity and Conservation) 2021. ‘Biodiversity and Conservation SEPP’. (Commenced 1 March 2022; supersedes Koala SEPPs 2020, 2021)

From the associated Fact Sheet (March 2022) for the Biodiversity and Conservation SEPP:

“Chapter 4 – Koala habitat protection 2021’ contains the land-use planning and assessment framework from the Koala SEPP 2021 for koala habitat within Metropolitan Sydney and the Central Coast and applies to all zones except RU1, RU2 and RU3 in the short term – it will apply to all zones once the Koala SEPP 2020 is repealed.”

The site is zoned ‘SP2 – Infrastructure’.

The site falls within the Central Coast Koala management area.

Two (2) Koalas have been recorded within 5 km of the site in the last 20 years. However, Koalas, or evidence of Koalas, was not seen on site and it is unlikely that any Koalas use the site. The site is not considered core Koala habitat.

No Koalas are known in the area. The site is not Potential or Core Koala Habitat.

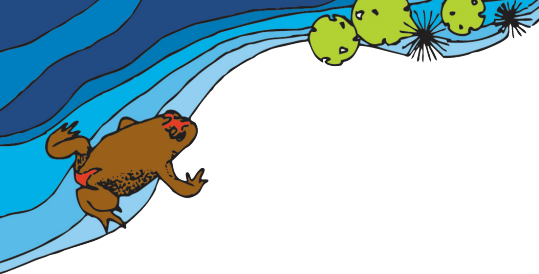
No Scheduled Koala feed trees occur naturally on the site.

The result is **negative**. Less than 15% of the trees within the proposal area and on the site are Scheduled SEPP species (refer to Table 9 below). The site is not potential Koala habitat.

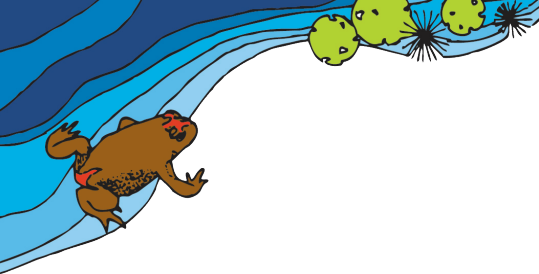
Table 9. Koala tree species for the Central Coast Koala management area

From Newcastle to Sutherland including Blue Mountains, Hawkesbury, Gosford, Sydney Councils

Common name	Species name
Preferred (primary) use	
White box	<i>Eucalyptus albens</i>
Blakely’s red gum	<i>Eucalyptus blakelyi</i>
Coast grey box	<i>Eucalyptus bosistoana</i>
Large-fruited grey box	<i>Eucalyptus canaliculata</i>
Monkey gum	<i>Eucalyptus cypellocarpa</i>
Woollybutt	<i>Eucalyptus longifolia</i>
Yellow box	<i>Eucalyptus melliodora</i>



Common name	Species name
Tallowwood	<i>Eucalyptus microcorys</i>
Grey box	<i>Eucalyptus moluccana</i>
Parramatta red gum	<i>Eucalyptus parramattensis</i>
Small-fruited grey gum	<i>Eucalyptus propinqua</i>
Grey gum	<i>Eucalyptus punctata</i>
Swamp mahogany	<i>Eucalyptus robusta</i>
Forest red gum	<i>Eucalyptus tereticornis</i>
High use	
Beyer's ironbark	<i>Eucalyptus beyeriana</i>
River red gum	<i>Eucalyptus camaldulensis</i>
Mountain blue gum	<i>Eucalyptus deanei</i>
White stringybark	<i>Eucalyptus globoidea</i>
Flooded gum	<i>Eucalyptus grandis</i>
Craven grey box	<i>Eucalyptus largeana</i>
Grey ironbark	<i>Eucalyptus paniculata</i>
White-topped box	<i>Eucalyptus quadrangulata</i>
Significant use	
Forest oak	<i>Allocasuarina torulosa</i>
Smooth-barked apple	<i>Angophora costata</i>
Yellow bloodwood	<i>Corymbia eximia</i>
Red bloodwood	<i>Corymbia gummifera</i>
Bangalay	<i>Eucalyptus botryoides</i>
Narrow-leaved ironbark	<i>Eucalyptus crebra</i>
Broad-leaved red ironbark	<i>Eucalyptus fibrosa</i>
Stringybark	<i>Eucalyptus oblonga</i>
Sydney peppermint	<i>Eucalyptus piperita</i>
Narrow-leaved scribbly gum	<i>Eucalyptus racemosa</i>
Red mahogany	<i>Eucalyptus resinifera</i>
Sydney blue gum	<i>Eucalyptus saligna</i>
Large-fruited red mahogany	<i>Eucalyptus scias</i>
Hard-leaved scribbly gum	<i>Eucalyptus sclerophylla</i>



Common name	Species name
Scribbly gum	<i>Eucalyptus signata</i>
Ribbon gum	<i>Eucalyptus viminalis</i>
Turpentine	<i>Syncarpia glomulifera</i>
Occasional use	
Black she-oak	<i>Allocasuarina littoralis</i>
Narrow-leaved apple	<i>Angophora bakeri</i>
Rough-barked apple	<i>Angophora floribunda</i>
Swamp oak	<i>Casuarina glauca</i>
Spotted gum	<i>Corymbia maculata</i>
White mahogany	<i>Eucalyptus acmenoides</i>
Blue-leaved stringybark	<i>Eucalyptus agglomerata</i>
Cabbage gum	<i>Eucalyptus amplifolia</i>
Camfield's stringybark	<i>Eucalyptus camfieldii</i>
Brown stringybark	<i>Eucalyptus capitellata</i>
Thick-leaved mahogany	<i>Eucalyptus carnea</i>
Yertchuk	<i>Eucalyptus considieniana</i>
Narrow-leaved or Thin-leaved stringybark	<i>Eucalyptus eugenioides</i>
Slaty red gum	<i>Eucalyptus glaucina</i>
Broad-leaved scribbly gum	<i>Eucalyptus haemastoma</i>
Eucalyptus imitans	<i>Eucalyptus imitans</i>
Red stringybark	<i>Eucalyptus macrorhyncha</i>
Brittle gum	<i>Eucalyptus michaeliana</i>
Blackbutt	<i>Eucalyptus pilularis</i>
Grey ironbark	<i>Eucalyptus siderophloia</i>
Mugga ironbark	<i>Eucalyptus sideroxylon</i>
Silvertop ash	<i>Eucalyptus sieberi</i>
Narrow-leaved stringybark	<i>Eucalyptus sparsifolia</i>
Scaly bark	<i>Eucalyptus squamosa</i>
Bastard white mahogany	<i>Eucalyptus umbra</i>
Broad-leaved paperbark	<i>Melaleuca quinquenervia</i>



9.4 Environment Protection and Biodiversity Conservation Act 1999

<https://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>

9.4.1 Protected matters

The Protected Matters Search Tool was used to find relevant Matters of National Environmental Significance (MNES) on or near the site. The outputs are shown in (Appendix 5) and summarised below.

There are **no** World Heritage properties, National Heritage places, Ramsar Wetlands or Commonwealth Marine Areas in the vicinity of the proposal.

There are three (3) Threatened Ecological Communities likely to occur in the area: Coastal Swamp Oak (Community ID 142), River-flat eucalypt forest (Community ID 154) and Coastal Swamp (Community ID 171).

None of these threatened ecological communities were observed on site.

Forty-two (42) Threatened species are known from the vicinity of the proposal: Scrub Turpentine, Brown Malletwood (*Rhodamnia rubescens*), Regent Honeyeater (*Anthochaera phrygia*), Eastern Curlew, Far Eastern Curlew (*Numenius madagascariensis*), Native Guava (*Rhodomyrtus psidioides*), Wyong Sun Orchid (*Thelymitra adorata*), Swift Parrot (*Lathamus discolor*), Wyong Midge Orchid 1, Variable Midge Orchid 1 (*Corunastylis insignis*), Curlew Sandpiper (*Calidris ferruginea*), *Genoplesium branwhiteorum*, Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*), Gang-gang Cockatoo (*Callocephalon fimbriatum*), Spot-tailed Quoll, Tiger Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus* [SE mainland population]), Australian Painted Snipe (*Rostratula australis*), Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (*Phascolarctos cinereus*), Common Greenshank, Greenshank (*Tringa nebularia*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Greater Glider (southern and central) (*Petauroides volans*), Australasian Bittern (*Botaurus poiciloptilus*), Sharp-tailed Sandpiper (*Calidris acuminata*), Newcastle Doubletail (*Diuris praecox*), Long-nosed Potoroo (northern) (*Potorous tridactylus tridactylus*), Diamond Firetail (*Stagonopleura guttata*), Camfield's Stringybark (*Eucalyptus camfieldii*), White-throated Needletail (*Hirundapus caudacutus*), Black-eyed Susan (*Tetradlea juncea*), Stuttering Frog, Southern Barred Frog (in Victoria) (*Mixophyes balbus*), Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*), Bynoe's Wattle, Tiny Wattle (*Acacia bynoeana*), South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*), Latham's Snipe, Japanese Snipe (*Gallinago hardwickii*), New Holland Mouse, Pookila (*Pseudomys novaehollandiae*), Biconvex Paperbark (*Melaleuca biconvexa*), Fairy Prion (southern) (*Pachyptila turtur subantarctica*), Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry (*Syzygium paniculatum*), Heath Wrinklewort (*Rutidosia heterogama*), Leafless Tongue-orchid (*Cryptostylis hunteriana*), Small-flower Grevillea (*Grevillea parviflora* subsp. *parviflora*), Charmhaven Apple (*Angophora inopina*), Brown Treecreeper (south-eastern) (*Climacteris picumnus victoriae*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Red Knot, Knot (*Calidris canutus*), Thick-lipped Spider-orchid, Daddy Long-legs (*Caladenia tessellata*).

None of these threatened species were observed on site.



Fifteen (15) Migratory species are known from the vicinity of the proposal: Sharp-tailed Sandpiper (*Calidris acuminata*), Rufous Fantail (*Rhipidura rufifrons*), Satin Flycatcher (*Myiagra cyanoleuca*), Osprey (*Pandion haliaetus*), White-throated Needletail (*Hirundapus caudacutus*), Bar-tailed Godwit (*Limosa lapponica*), Latham's Snipe, Japanese Snipe (*Gallinago hardwickii*), Eastern Curlew, Far Eastern Curlew (*Numenius madagascariensis*), Common Greenshank, Greenshank (*Tringa nebularia*), Common Sandpiper (*Actitis hypoleucos*), Oriental Cuckoo, Horsfield's Cuckoo (*Cuculus optatus*), Black-faced Monarch (*Monarcha melanopsis*), Pectoral Sandpiper (*Calidris melanotos*), Red Knot, Knot (*Calidris canutus*), Curlew Sandpiper (*Calidris ferruginea*).

None of these migratory bird species were observed on site.

There were no Critically Endangered or Endangered species or communities, or Vulnerable species recorded on the site. The provisions of the EPBC Act do not apply to this proposal.

9.5 Planning for Bushfire Protection

While part of Wyong Hospital is mapped as fire prone land, the proposed development site at the Education Centre is **not** located on fire prone land (Figure 12).



10. Conclusion and Recommendations

The following threshold is not triggered by the proposal:

1. Five Part Tests

Therefore, a Species Impact Statement (SIS) and/or a Biodiversity Development Assessment Report (BDAR) is not recommended.

A consent or approval may be issued with the following conditions:

- Recommend construction fencing installed at the perimeter of proposed works.



11. References

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Appendix 1. Flora species list

The GPS reference for this locality is -33.261, 151.481.

Table 10. Flora species list

Family	Common Name	Scientific Name
Alliaceae	Agapanthus	<i>Agapanthus sp.*</i>
Apocynaceae	Oleander	<i>Nerium oleander*</i>
Araliaceae	Umbrella Tree	<i>Schefflera sp.*</i>
Asteraceae	Seaside daisy	<i>Erigeron glaucus*</i>
Berberidaceae	Nandina	<i>Nandina sp.*</i>
Bignoniaceae	Jacaranda	<i>Jacaranda mimosifolia *</i>
Cupressaceae		<i>Juniper conferta *</i>
Fabaceae	Easter cassia	<i>Senna pendula var glabrata PW</i>
Iridaceae	Iris	<i>Dietes sp.*</i>
Lamiaceae	Coastal rosemary	<i>Westringia fruticosa#</i>
Myrtaceae	Bottle brush	<i>Callistemon spp.#</i>
Myrtaceae	Lemon-scented Teatree	<i>Leptospermum petersonii #</i>
Oleaceae	Velvet Ash	<i>Fraxinus velutina*</i>
Proteaceae	Coast Banksia	<i>Banksia integrifolia #</i>
Proteaceae	Grevillea	<i>Grevillea sp. #</i>
Rhamaceae	Italian buckthorn	<i>Rhamnus sp. *</i>
Rosaceae	Rose	<i>Rosa sp. *</i>
Rutaceae	Murraya	<i>Murraya sp.*</i>
Strelitziaceae	Bird of Paradise	<i>Strelitzia sp.*</i>

Key

* introduced species

native species not endemic to the remnant plant community

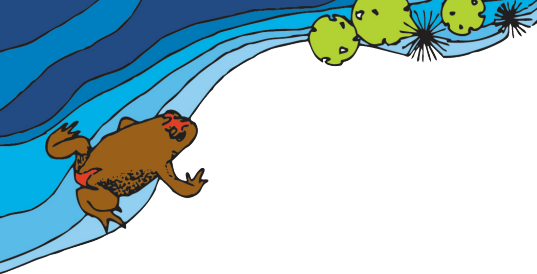
PW – Priority weeds



Appendix 2. Expected fauna species in the Central Coast

Mammals

Common name	Scientific name
White-striped Freetail-bat	<i>Austronomus australis</i>
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>
Chocolate Wattled Bat	<i>Chalinolobus morio</i>
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>
Gould's Long-eared Bat	<i>Nyctophilus gouldi</i>
Bush Rat	<i>Rattus fuscipes</i>
Swamp Rat	<i>Rattus lutreolus</i>
Long-nosed Bandicoot	<i>Perameles nasuta</i>
Brown Antechinus	<i>Antechinus stuartii</i>
Dusky Antechinus	<i>Antechinus swainsonii</i>
Yellow-footed Antechinus	<i>Antechinus flavipes</i>
Common Wombat	<i>Vombatus ursinus</i>
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>
Sugar Glider	<i>Petaurus breviceps</i>
Feathertail Glider	<i>Acrobates pygmaeus</i>
Eastern Grey Kangaroo	<i>Macropus giganteus</i>
Large Forest Bat	<i>Vespadelus darlingtoni</i>
Little Forest Bat	<i>Vespadelus vulturnus</i>
Common Wallaroo	<i>Macropus robustus</i>
Red-necked Wallaby	<i>Macropus rufogriseus</i>
Swamp Wallaby	<i>Wallabia bicolor</i>
Common Brushtail Possum	<i>Trichosurus vulpecula</i>
Greater Glider	<i>Petauroides volans</i>
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>
Fox	<i>Vulpes vulpes</i>
Black Rat	<i>Rattus rattus</i>
Rabbit	<i>Oryctolagus cuniculus</i>

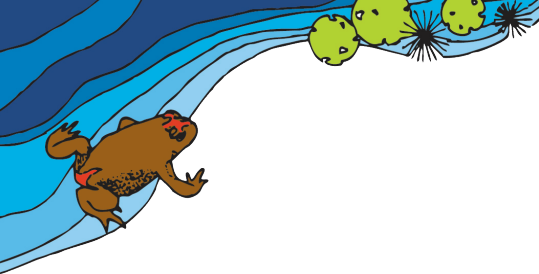


Frogs

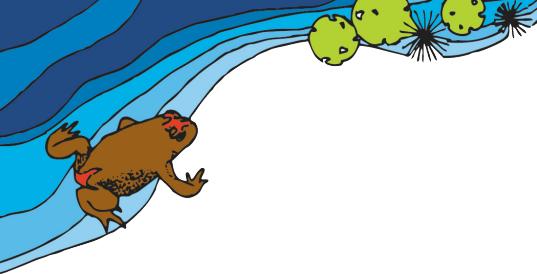
Common Name	Scientific Name
Green Tree Frog	<i>Litoria caerulea</i>
Blue Mountains Tree Frog	<i>Litoria citropa</i>
Bleating Tree Frog	<i>Litoria dentata</i>
Eastern Dwarf Tree Frog	<i>Litoria fallax</i>
Jervis Bay Tree Frog	<i>Litoria jervisiensis</i>
Broad-palmed Frog	<i>Litoria latopalmata</i>
Peron's Tree Frog	<i>Litoria peronii</i>
Leaf-green Tree Frog	<i>Litoria phyllochroa</i>
Tyler's Tree Frog	<i>Litoria tyleri</i>
Verreaux's Frog	<i>Litoria verreauxii</i>
Common Eastern Froglet	<i>Crinia signifera</i>
Eastern Banjo Frog	<i>Limnodynastes dumerilii</i>
Ornate Burrowing Frog	<i>Limnodynastes ornatus</i>
Brown-striped Frog	<i>Limnodynastes peronii</i>
Spotted Grass Frog	<i>Limnodynastes tasmaniensis</i>
Haswell's Froglet	<i>Paracrinia haswelli</i>
Smooth Toadlet	<i>Uperoleia laevisgata</i>
Tyler's Toadlet	<i>Uperoleia tyleri</i>

Reptiles

Common Name	Scientific Name
Diamond Python	<i>Morelia spilota spilota</i>
Common Death Adder	<i>Acanthophis antarcticus</i>
Yellow-faced Whip Snake	<i>Demansia psammophis</i>
Common Tree Snake	<i>Dendrelaphis punctulatus</i>
Golden-crowned Snake	<i>Cacophis squamulosus</i>
Eastern Small-eyed Snake	<i>Cryptophis nigrescens</i>
Red-naped Snake	<i>Furina diadema</i>
Black-bellied Swamp Snake	<i>Hemiaspis signata</i>



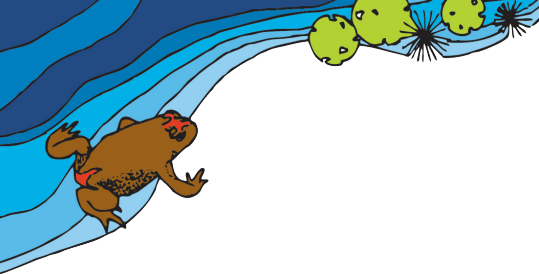
Common Name	Scientific Name
Tiger Snake	<i>Notechis scutatus</i>
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>
Eastern Brown Snake	<i>Pseudonaja textilis</i>
Dwyer's Snake	<i>Parasuta dwyeri</i>
Bandy Bandy	<i>Vermicella annulata</i>
Blackish Blind Snake	<i>Ramphotyphlops nigrescens</i>
Wood Gecko	<i>Diplodactylus vittatus</i>
Lesueur's Velvet Gecko	<i>Oedura lesueurii</i>
Broad-tailed Gecko	<i>Phyllurus platurus</i>
Thick-tailed Gecko	<i>Underwoodisaurus milii</i>
Burton's Snake-lizard	<i>Lialis burtonis</i>
Common Scaly-foot	<i>Pygopus lepidopodus</i>
Jacky Lizard	<i>Amphibolurus muricatus</i>
Bearded Dragon	<i>Pogona barbata</i>
Punctate Worm-skink	<i>Anomalopus swansoni</i>
Eastern Blue-tongue	<i>Tiliqua scincoides</i>
Southern Rainbow-skink	<i>Carlia tetradactyla</i>
Cream-striped Shinning-skink	<i>Cryptoblepharus virgatus</i>
Robust Ctenotus	<i>Ctenotus robustus</i>
Copper-tailed Skink	<i>Ctenotus taeniolatus</i>
Mainland She-oak Skink	<i>Cyclodomorphus michaeli</i>
Pink-tongued Skink	<i>Cyclodomorphus gerrardii</i>
Cunningham's Skink	<i>Egernia cunninghami</i>
Black Rock Skink	<i>Egernia saxatilis</i>
White's Skink	<i>Liopholis whitii</i>
Eastern Water-skink	<i>Eulamprus quoyii</i>
Barred-sided Skink	<i>Eulamprus tenuis</i>
Dark-flecked Garden Sunskink	<i>Lampropholis delicata</i>
Pale-flecked Garden Sunskink	<i>Lampropholis guichenoti</i>
Weasel Skink	<i>Saproscincus mustelinus</i>
Red-throated Skink	<i>Acritoscincus platynota</i>
Three-toed Skink	<i>Saiphos equalis</i>



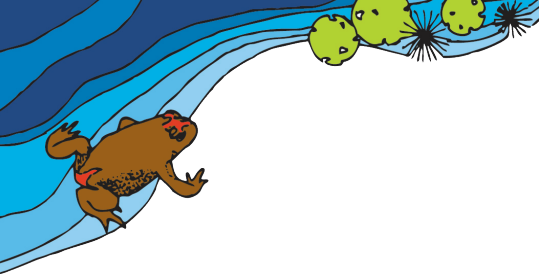
Common Name	Scientific Name
Lace Monitor	<i>Varanus varius</i>
Eastern Snake-necked Turtle	<i>Chelodina longicollis</i>

Birds

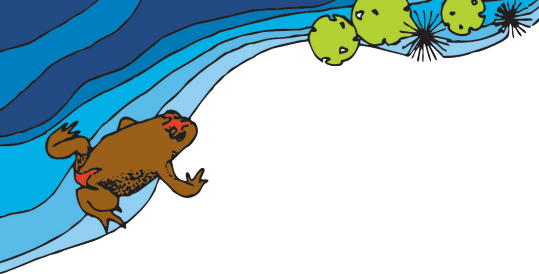
Common Name	Scientific Name
Brown Quail	<i>Coturnix ypsilophora</i>
Black Swan	<i>Cygnus atratus</i>
Australian Wood Duck	<i>Chenonetta jubata</i>
Mallard	<i>Anas platyrhynchos</i>
Pacific Black Duck	<i>Anas superciliosa</i>
Grey Teal	<i>Anas gracilis</i>
Chestnut Teal	<i>Anas castanea</i>
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>
Great Crested Grebe	<i>Podiceps cristatus</i>
Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>
Great Cormorant	<i>Phalacrocorax carbo</i>
Australian Pelican	<i>Pelecanus conspicillatus</i>
White-faced Heron	<i>Egretta novaehollandiae</i>
Little Egret	<i>Egretta garzetta</i>
White-necked Heron	<i>Ardea pacifica</i>
Great Egret	<i>Ardea alba</i>
Cattle Egret	<i>Ardea ibis</i>
Intermediate Egret	<i>Ardea intermedia</i>
Australian White Ibis	<i>Threskiornis molucca</i>
Straw-necked Ibis	<i>Threskiornis spinicollis</i>
Royal Spoonbill	<i>Platalea regia</i>
Black-shouldered Kite	<i>Elanus axillaris</i>
Whistling Kite	<i>Haliastur sphenurus</i>



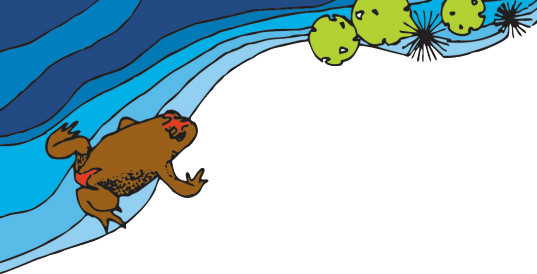
Common Name	Scientific Name
Wedge-tailed Eagle	<i>Aquila audax</i>
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>
Swamp Harrier	<i>Circus approximans</i>
Brown Goshawk	<i>Accipiter fasciatus</i>
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>
Brown Falcon	<i>Falco berigora</i>
Australian Hobby	<i>Falco longipennis</i>
Nankeen Kestrel	<i>Falco cenchroides</i>
Buff-banded Rail	<i>Gallirallus philippensis</i>
Purple Swampphen	<i>Porphyrio porphyrio</i>
Dusky Moorhen	<i>Gallinula tenebrosa</i>
Eurasian Coot	<i>Fulica atra</i>
Latham's Snipe	<i>Gallinago hardwickii</i>
Black-winged Stilt	<i>Himantopus himantopus</i>
Black-fronted Dotterel	<i>Elseyaornis melanops</i>
Masked Lapwing	<i>Vanellus miles</i>
Silver Gull	<i>Chroicocephalus novaehollandiae</i>
Rock Dove	<i>Columba livia</i>
White-headed Pigeon	<i>Columba leucomela</i>
Spotted Turtle-dove	<i>Streptopelia chinensis</i>
Brown Cuckoo-dove	<i>Macropygia amboinensis</i>
Emerald Dove	<i>Chalcophaps indica</i>
Common Bronzewing	<i>Phaps chalcoptera</i>
Crested Pigeon	<i>Ocyphaps lophotes</i>
Bar-shouldered Dove	<i>Geopelia humeralis</i>
Wonga Pigeon	<i>Leucosarcia picata</i>
Topknot Pigeon	<i>Lopholaimus antarcticus</i>
Yellow-tailed Black-cockatoo	<i>Calyptorhynchus funereus</i>
Galah	<i>Eolophus roseicapilla</i>
Long-billed Corella	<i>Cacatua tenuirostris</i>
Little Corella	<i>Cacatua sanguinea</i>
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>



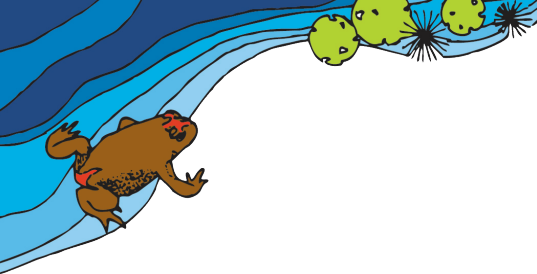
Common Name	Scientific Name
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>
Musk Lorikeet	<i>Glossopsitta concinna</i>
Australian King-parrot	<i>Alisterus scapularis</i>
Crimson Rosella	<i>Platycercus elegans</i>
Eastern Rosella	<i>Platycercus eximius</i>
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>
Horsfield's Bronze-cuckoo	<i>Chalcites basalis</i>
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>
Asian Koel	<i>Eudynamys scolopaceus</i>
Southern Boobook	<i>Ninox novaeseelandiae</i>
Barn Owl	<i>Tyto alba</i>
Tawny Frogmouth	<i>Podargus strigoides</i>
White-throated Nightjar	<i>Eurostopodus mystacalis</i>
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>
White-throated Needletail	<i>Hirundapus caudacutus</i>
Laughing Kookaburra	<i>Dacelo novaeguineae</i>
Sacred Kingfisher	<i>Todiramphus sanctus</i>
Rainbow Bee-eater	<i>Merops ornatus</i>
Dollarbird	<i>Eurystomus orientalis</i>
Superb Lyrebird	<i>Menura novaehollandiae</i>
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>
Superb Fairy-wren	<i>Malurus cyaneus</i>
Variegated Fairy-wren	<i>Malurus lamberti</i>
Spotted Pardalote	<i>Pardalotus punctatus</i>
White-browed Scrubwren	<i>Sericornis frontalis</i>
Large-billed Scrubwren	<i>Sericornis magnirostra</i>
Brown Gerygone	<i>Gerygone mouki</i>
White-throated Gerygone	<i>Gerygone albogularis</i>
White-throated Treecreeper	<i>Cormobates leucophaea</i>
Brown Thornbill	<i>Acanthiza pusilla</i>
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>



Common Name	Scientific Name
Yellow Thornbill	<i>Acanthiza nana</i>
Striated Thornbill	<i>Acanthiza lineata</i>
Buff-rumped Thornbill	<i>Acanthiza reguloides</i>
Red Wattlebird	<i>Anthochaera carunculata</i>
Little Wattlebird	<i>Anthochaera chrysoptera</i>
Noisy Friarbird	<i>Philemon corniculatus</i>
Bell Miner	<i>Manorina melanophrys</i>
Noisy Miner	<i>Manorina melanocephala</i>
Lewin's Honeyeater	<i>Meliphaga lewinii</i>
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>
Brown-headed Honeyeater	<i>Melithreptus brevirostris</i>
White-naped Honeyeater	<i>Melithreptus lunatus</i>
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>
Jacky Winter	<i>Microeca fascinans</i>
Rose Robin	<i>Petroica rosea</i>
Eastern Yellow Robin	<i>Eopsaltria australis</i>
Eastern Whipbird	<i>Psophodes olivaceus</i>
Crested Shrike-tit	<i>Falcunculus frontatus</i>
Golden Whistler	<i>Pachycephala pectoralis</i>
Rufous Whistler	<i>Pachycephala rufiventris</i>
Grey Shrike-thrush	<i>Colluricincla harmonica</i>
Black-faced Monarch	<i>Monarcha melanopsis</i>
Leaden Flycatcher	<i>Myiagra rubecula</i>
Restless Flycatcher	<i>Myiagra inquieta</i>
Magpie-lark	<i>Grallina cyanoleuca</i>
Rufous Fantail	<i>Rhipidura rufifrons</i>
New Zealand Fantail	<i>Rhipidura fuliginosa</i>
Willie Wagtail	<i>Rhipidura leucophrys</i>
Spangled Drongo	<i>Dicrurus bracteatus</i>



Common Name	Scientific Name
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>
Olive-backed Oriole	<i>Oriolus sagittatus</i>
Dusky Woodswallow	<i>Artamus cyanopterus</i>
Grey Butcherbird	<i>Cracticus torquatus</i>
Australian Magpie	<i>Cracticus tibicen</i>
Pied Currawong	<i>Strepera graculina</i>
Australian Raven	<i>Corvus coronoides</i>
White-winged Chough	<i>Corcorax melanorhamphos</i>
Apostlebird	<i>Struthidea cinerea</i>
Eurasian Skylark	<i>Alauda arvensis</i>
Australasian Pipit	<i>Anthus novaeseelandiae rogersi</i>
House Sparrow	<i>Passer domesticus</i>
Red-browed Finch	<i>Neochmia temporalis</i>
Double-barred Finch	<i>Taeniopygia bichenovii</i>
Mistletoebird	<i>Dicaeum hirundinaceum</i>
Welcome Swallow	<i>Hirundo neoxena</i>
Tree Martin	<i>Petrochelidon nigricans</i>
Fairy Martin	<i>Petrochelidon ariel</i>
Cicadabird	<i>Coracina tenuirostris</i>
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>
Australian Reed-warbler	<i>Acrocephalus australis</i>
Little Grassbird	<i>Megalurus gramineus</i>
Golden-headed Cisticola	<i>Cisticola exilis</i>
Silvereye	<i>Zosterops lateralis</i>
Eurasian Blackbird	<i>Turdus merula</i>
Common Starling	<i>Sturnus vulgaris</i>
Common Myna	<i>Sturnus tristis</i>



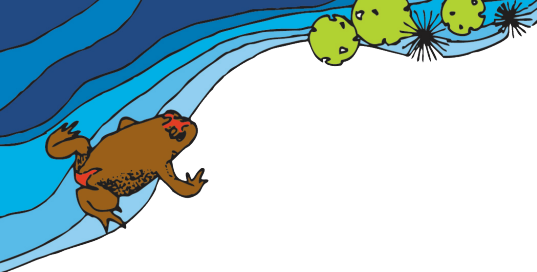
Appendix 3. Habitat requirements for locally-occurring threatened fauna species

Birds

Common name Scientific name Schedule listing	Preferred habitat	Comment
Australasian Bittern <i>Botaurus poiciloptilus</i> BC Act, Sch. 2, Vul.	Inhabits wetlands that generally have permanent fresh water and dense vegetation of sedges, rushes and reeds.	No suitable natural habitat occurs on the site.
Spotted Harrier <i>Circus assimilis</i> BC Act Sch. 2, Vul.	Occurs in grassy open woodland including acacia and mallee remnants, inland riparian woodland, grassland. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	No suitable natural habitat occurs on the site.
Little Eagle <i>Hieraaetus morphnoides</i> BC Act Sch. 2, Vul.	Occupies open Eucalypt forest, woodland or open woodland. She-oak or acacia woodlands and riparian woodlands are also used. Builds a stick nests in winter in tall living trees within remnant patches.	No suitable natural habitat occurs on the site.
Square-tailed Kite <i>Lophoictinia isura</i> BC Act, Sch. 2, Vul.	Inhabits coastal forest and woodlands. Most commonly associated with ridge and gully forests dominated by Woollybutt, Spotted Gum or Peppermint Gum.	No suitable natural habitat occurs on the site.
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i> BC Act, Sch. 2, Vul.	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands – also in urban areas including parks and gardens. Requires tree hollows for nesting.	No suitable natural habitat occurs on the site.
Glossy Black-cockatoo <i>Calyptorhynchus lathami</i> BC Act, Sch. 2, Vul.	Found in open forests with Allocasuarina species and hollows for nesting.	No suitable natural habitat occurs on the site.
Little Lorikeet <i>Glossopsitta pusilla</i> BC Act, Sch. 2, Vul.	Inhabits the open forests and dead timber alongside watercourses. Also occurs in eucalypt forest in mountainous regions.	Suitable foraging habitat occurs on the site.



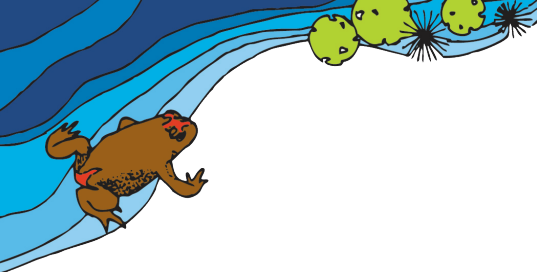
Common name <i>Scientific name</i> Schedule listing	Preferred habitat	Comment
Swift Parrot <i>Lathamus discolor</i> BC Act, Sch. 2, Vul. EPBC Act, End.	Occurs in a variety of Eucalypt forests. Migrates from Tasmania to the mainland during the winter/autumn months to feed mostly on winter flowering Eucalypts.	Suitable foraging habitat occurs on the site.
Barking Owl <i>Ninox connivens</i> BC Act, Sch. 2, Vul.	Found in open forests, woodlands, dense scrubs, river red gums and other large trees near watercourses.	No suitable natural habitat occurs on the site.
Powerful Owl <i>Ninox strenua</i> BC Act, Sch. 2, Vul.	Pairs occupy permanent territories in mountain forests, gullies and forest margins, sparser hilly woodlands, coastal forests, woodlands and scrubs.	No suitable natural habitat occurs on the site.
Masked Owl <i>Tyto novaehollandiae</i> BC Act, Sch. 2, Vul.	Forests, open woodlands and farms with large trees, e.g. river red gums adjacent to cleared country.	No suitable natural habitat occurs on the site.
Sooty Owl <i>Tyto tenebricosa</i> BC Act, Sch. 2, Vul.	Tall, wet forests in sheltered mountain gullies, usually with an east and Southeast aspect.	No suitable natural habitat occurs on the site.
Speckled Warbler <i>Pyrrholaemus sagittatus</i> BC Act Sch. 2, Vul.	Inhabits Eucalypt dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy.	No suitable natural habitat occurs on the site.
Varied Sittella <i>Daphoenositta chrysoptera</i> BC Act Sch. 2, Vul.	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	No suitable natural habitat occurs on the site.
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i> BC Act Sch. 2, Vul.	Often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests, very occasionally in moist forests or rainforests.	No suitable natural habitat occurs on the site.



Common name <i>Scientific name</i> Schedule listing	Preferred habitat	Comment
Flame Robin <i>Petroica phoenicea</i> BC Act Sch. 2, Vul.	In NSW it breeds in upland moist eucalypt forests and woodlands, often on ridges and slopes, in areas of open understorey. It migrates in winter to more open lowland habitats such as grassland with scattered trees and open woodland on the inland slopes and plains.	No suitable natural habitat occurs on the site.
Diamond Firetail <i>Stagonopleura guttata</i> BC Act Sch. 2, Vul	Mostly inhabits grassy eucalypt woodlands, also occurring in open forest and riparian areas within these. Feeds exclusively on the ground, occurring in flocks between five to 40+ birds	No suitable natural habitat occurs on the site.

Mammals

Common name <i>Scientific name</i> Schedule listing	Preferred habitat	Comment
Spotted-tailed Quoll <i>Dasyurus maculatus</i> BC Act, Sch. 2, Vul. EPBC Act, End.	Occurs mostly in sclerophyll forest and woodlands as well as coastal heath lands and rainforests. Requires suitable den sites such as hollows or caves and large areas of intact vegetation.	No suitable natural habitat occurs on the site.
Koala <i>Phascolarctos cinereus</i> BC Act, Sch. 2, Vul.	Eucalypt forests rich in Swamp Mahogany (E. robusta), Forest Red Gum (E. tereticornis), and Grey Gum (E. punctata).	No suitable natural habitat occurs on the site.
Yellow-bellied Glider <i>Petaurus australis</i> BC Act, Sch. 2, Vul.	Restricted to tall, mature sclerophyll forests in regions of high rainfall. Requires nesting hollows and a year-round supply of flowering trees.	No suitable natural habitat occurs on the site.
Squirrel Glider <i>Petaurus norfolcensis</i> BC Act, Sch. 2, Vul.	Inhabits dry sclerophyll forest and woodland. Requires abundant hollow-bearing trees and a mix of Eucalypts, acacias and Banksias. At least one floral species should flower heavily in the winter and one or more species of Eucalypts need to be smooth-barked.	No suitable natural habitat occurs on the site.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i> BC Act, Sch. 2, Vul. EPBC Act, Vul.	Found in rainforest, wet and dry sclerophyll forest and mangroves. Camps are usually in gullies, close to water and in vegetation with a dense canopy. Feeds on a wide variety of flowering and fruiting plants.	Suitable foraging habitat occurs on the site.
Eastern Coastal Free-tail Bat <i>Micronomus norfolkensis</i> BC Act, Sch. 2, Vul.	Dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures.	Suitable foraging habitat occurs on the site.



Common name <i>Scientific name</i> Schedule listing	Preferred habitat	Comment
Large-eared Pied Bat <i>Chalinolobus dwyeri</i> BC Act, Sch. 2, Vul.	Found in well-timbered areas containing gullies.	Suitable foraging habitat occurs on the site.
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i> BC Act, Sch. 2, Vul.	Little known of habitat. Has been found roosting in stem holes of living Eucalypts.	Suitable foraging habitat occurs on the site.
Large Bent-winged Bat <i>Miniopterus orianae oceanensis</i> BC Act, Sch. 2, Vul.	Well-timbered valleys. Roosts in caves and storm-water channels and similar structures. Does not roost in tree hollows.	Suitable foraging habitat occurs on the site.
Southern Myotis <i>Myotis macropus</i> BC Act, Sch. 2, Vul.	Requires open areas of water over which it hunts. Roosts in caves, under bridges and buildings and sometimes in dense foliage in rainforests. May roost in tree hollows.	No suitable natural habitat occurs on the site.
Greater Broad-nosed Bat <i>Scoteanax rueppellii</i> BC Act, Sch. 2, Vul. EPBC Act, Lower risk (near threatened)	Found in woodlands, moist and dry sclerophyll forests and rainforests. Prefers gullies. Roosts in tree hollows only.	Suitable foraging habitat occurs on the site.

Invertebrates

Common name <i>Scientific name</i> Schedule listing	Preferred habitat	Comment
Cumberland Plain Land Snail <i>Meridolum corneovirens</i> BC Act, Sch. 1, End. EPBC Act, Vul.	Found amongst logs and debris in Cumberland Plain and Castlereagh woodlands.	No suitable natural habitat occurs on the site.
Dural Woodland Snail <i>Pommerhelix duralensis</i> EPBC Act, End.	Forested habitats that have good native cover and woody debris. Under rocks or inside curled-up bark. It does not burrow nor climb.	No suitable natural habitat occurs on the site.



11.1 Likelihood of Occurrence

Factors determining the likelihood of occurrence for a particular species include:

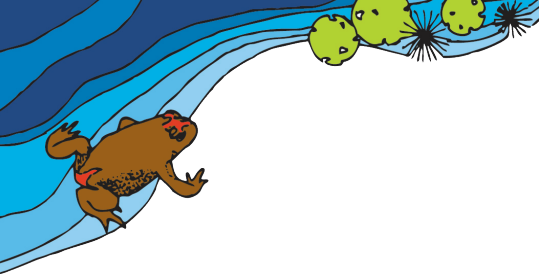
- Specific habitat requirements (e.g. aquatic, seasonal, tree hollows, rock outcrop, woody debris, etc),
- Geological / edaphic (soil) characteristics,
- Known distribution (records),
- Climate.

Probability	Description
Unlikely (none)	No suitable habitat or connectivity to suitable habitat offsite. Not known from local area. Not detected on site.
Low	Low value suitable habitat (e.g. highly disturbed conditions; Small habitat/forage areas; High-level weed-invasion; Cleared with fragmented regrowth). Not known from local area. Not detected on site.
Moderate	Moderate value suitable habitat (e.g. Disturbed, weed-invaded; Foraging/roosting habitat present; Habitat corridor). Not detected on site.
High	High value suitable habitat (e.g. breeding/foraging/roosting habitat present; Low or nil weed presence; Habitat corridor). Not detected on site.
Known	Species known to occur within the site (e.g. breeding and foraging habitat; foraging habitat; Habitat corridor). Detected on or adjacent to the site.

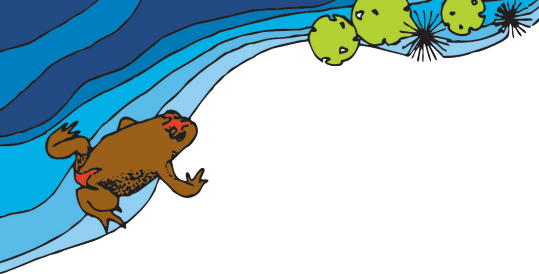


Appendix 4. Habitat requirements for locally-occurring threatened plant species

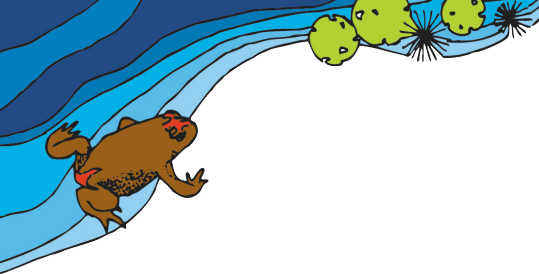
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Acacia asparagoides</i> ROTAP, 2R	Grows in dry sclerophyll forest or occasionally heath on sandstone.	No
<i>Acacia baueri</i> subsp. <i>aspera</i> ROTAP, 2RC – BC Act, Sch. 2, Vul.	Grows in low heath, often on exposed sandstone ridges.	No
<i>Acacia bynoeana</i> ROTAP, 3VC – BC Act, Sch. 1, End. EPBC Act, Vul.	Grows mainly in heath and dry sclerophyll forest, in sandy soils.	No
<i>Acacia clunies-rossiae</i> ROTAP, 2RC - t BC Act, Sch. 2, Vul.	Grows in dry sclerophyll forest, in valleys, on slopes and ridges, and along creeks.	No
<i>Acacia flocktoniae</i> ROTAP, 2VC – BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in dry sclerophyll forest on sandstone.	No
<i>Acacia gordonii</i> ROTAP, 2K BC Act, Sch. 1, End. EPBC Act, End.	Grows in dry sclerophyll forest and heath on sandstone outcrops.	No
<i>Acacia pubescens</i> ROTAP, 3VCa BC Act, Sch. 2, Vul. EPBC Act, Vul.	Usually grows in dry sclerophyll forest and woodland in clay soils. Often in roadside and railside bushland remnants.	No
<i>Acacia terminalis</i> subsp. <i>terminalis</i> ROTAP, 2RCi BC Act, Sch. 1, End. EPBC Act, End.	Scattered or locally common in scrub and open eucalypt woodland or forest, usually in sandy soil on creek banks, hillslopes or in shallow soil in rock crevices and sandstone platforms on cliffs.	No
<i>Acrophyllum australe</i> ROTAP, 2VCi BC Act, – Sch. 2, Vul. EPBC Act, Vul.	Grows in damp crevices in sandstone, usually near waterfalls. Restricted to the Blue Mtns, near Springwood, Linden, Woodford and Lawson.	No
<i>Allocasuarina glareicola</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, End.	Grows in open forest on lateritic soil; restricted to a few small populations in or near Castlereagh S.F., NE of Penrith.	No



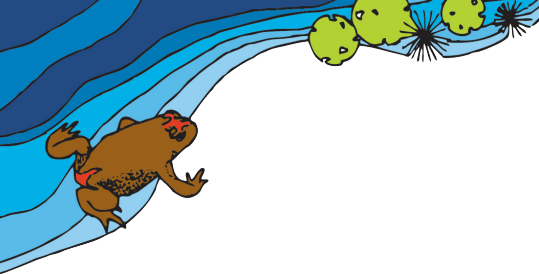
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Almaleea incurvata</i> ROTAP, 2RC – t	Grows in swamps dominated by sedges and/or shrubs, on sandstone; restricted to the Blue Mtns.	No
<i>Amperea xiphioclada</i> var. <i>papillata</i> ROTAP, 3KC	Grows with other native sedges and rushes in swamps on sandstone at altitudes of greater than 600 m.	No
<i>Ancistrachne maidenii</i> ROTAP, 2KC - BC Act, Sch. 2, Vul.	Grows on sandstone soils; north of Sydney.	No
<i>Angophora crassifolia</i> ROTAP, 2RCa	Locally frequent but restricted to the Ku-ring-gai Plateau region.	No
<i>Asterolasia elegans</i> ROTAP, 2ECa BC Act, Sch. 1, End. EPBC Act, End.	Grows in wet sclerophyll forest on moist hillsides, known from only one locality, north of Maroota.	No
<i>Atkinsonia ligustrina</i> ROTAP, 2RCa	Occurs in woodland and heath in exposed sites, a single plant often parasitic on the roots of many nearby plants; confined to a small area in the Blue Mtns.	No
<i>Banksia conferta</i> var. <i>penicillata</i> BC Act, Sch. 1, End.	Grows in dry sclerophyll forest or woodland, restricted to small populations in the Blue Mtns on sandstone cliffs or steep slopes and around rocky outcrops.	No
<i>Blandfordia cunninghamii</i> ROTAP, 3RCi	Grows in damp shallow sandy and peaty soils, often on sandstone cliff edges; chiefly in the Blue Mtns and Illawarra areas.	No
<i>Blechnum gregsonii</i> ROTAP, 2RCa	Pendent clumps found in cool rainforest, often in damp places near waterfalls, sometimes epiphytic; chiefly in the Blue Mtns and Illawarra coastal ranges.	No
<i>Boronia fraseri</i> ROTAP, 2RCa (UBBS 97 Recommend)	Grows mainly in wet sclerophyll forest and in rainforest in gullies on sandstone, chiefly in the Sydney region.	No
<i>Boronia serrulata</i> ROTAP, 2RC -	Grows in moist heath in sandy situations, chiefly in a coastal band in the Sydney district; record for the SWS in Jacobs & Pickard (1981) not substantiated.	No
<i>Brasenia schreberi</i> ROTAP, 3RC- +	Widespread but rarely common, found in shallow freshwater lagoons or backwaters.	No
<i>Callistemon linearifolius</i> ROTAP, 2RCi BC Act, Sch. 2, Vul.	Grows in dry sclerophyll forest on the coast and adjacent ranges, chiefly from Georges R. to the Hawkesbury R.	No
<i>Callistemon shiressii</i> ROTAP, 3RC -	Grows on shale ridges, in moist eucalypt forest and rainforest gullies, occasionally along riverbanks; chiefly from Colo R. to Gosford district, also Howes Valley to Bulga district.	No
<i>Carex klaphakei</i> BC Act, Sch. 1, End.	Known only from a few localities on Central Tablelands near Blackheath, Mt Werong and Penrose at 600–1200 m alt.	No
<i>Chamaesyce psammogeton</i> BC Act, Sch. 1, End.	Grows on dunes and sea strandlines.	No



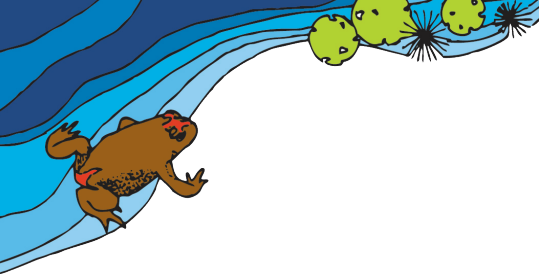
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Cryptostylis hunteriana</i> BC Act, Sch. 2, Vul. EPBC Act, Vul.	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland.	No
<i>Cynanchum elegans</i> ROTAP, 3ECi BC Act, Sch. 1, End. EPBC Act, End.	Rare, recorded from rainforest gullies scrub and scree slopes; from the Gloucester district to the Wollongong area and inland to Mt Dangar.	No
<i>Cyphanthera scabrella</i> ROTAP, 2RC -	Grows in dry or wet sclerophyll forest in sandstone-derived soil; restricted to Bilpin-Mt Wilson area in Blue Mtns.	No
<i>Darwinia biflora</i> ROTAP, 2VCa BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath on sandstone or in the understorey of woodland on shale-capped ridges; Cheltenham to Hawkesbury R., rare.	No
<i>Darwinia diminuta</i> ROTAP, 2RCi	Grows in heath or dry sclerophyll forest in poorly drained sandy soil; Manly to Ingleside and Loftus to Helensburgh, rare.	No
<i>Darwinia fascicularis subsp. oligantha</i> BC Act, Sch. 1, End. Pop. (Baulkham Hills)	Grows in heath or shallow soils; higher parts of the Blue Mtns.	No
<i>Darwinia grandiflora</i> ROTAP, 2RCi	Grows in dry sclerophyll forest and woodland on poorly drained sandy soil; Woronora Plateau and Illawarra region, rare.	No
<i>Darwinia peduncularis</i> ROTAP, 3RCi BC Act, Sch. 2, Vul.	Grows in dry sclerophyll forest on sandstone hillsides and ridges; Hornsby to Hawkesbury R. and west to Glen Davis, rare.	No
<i>Deyeuxia appressa</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, End.	Grows on wet ground; in the Hornsby area.	No
<i>Deyeuxia microseta</i> ROTAP, 3KC -	Grows in montane sclerophyll forest, especially wetter areas.	No
<i>Dillwynia tenuifolia</i> ROTAP, 2RCa BC Act, Sch. 2, Vul.	Grows in dry sclerophyll woodland on sandstone, shale or laterite; from Cumberland Plain, Blue Mtns to Howes Valley area.	No
<i>Discaria pubescens</i> ROTAP, 3RCa	In woodland and forest, often in rocky situations; widespread, but considered endangered.	No
<i>Diuris aequalis</i> ROTAP, 3VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows among grass in sclerophyll forest, mainly in the ranges and tablelands; chiefly from Braidwood to Kanangra and Liverpool.	No
<i>Epacris hamiltonii</i> ROTAP, 2ECi BC Act, Sch. 1, End. EPBC Act, End.	Grows in skeletal sandy soils in sheltered damp rock situations on sandstone in the Blackheath area.	No



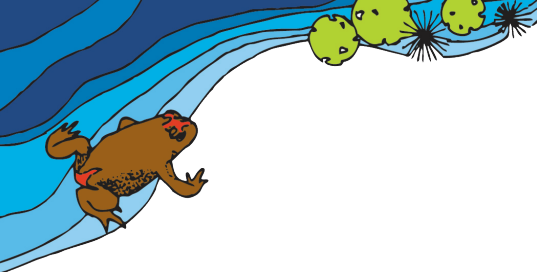
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Epacris muelleri</i> ROTAP, – 3RC -	Grows on skeletal soils on damp rock faces on sandstone in the Blue Mtns and Wollemi N.P.	No
<i>Epacris purpurascens</i> var. <i>purpurascens</i> BC Act, Sch. 2, Vul.	Grows in sclerophyll forest, scrubs and swamps on sandstone from Gosford and Sydney districts.	No
<i>Epacris sparsa</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in sandy soil among rocks beside Grose R.	No
<i>Epacris sparsa</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Rare and localized, in mallee shrubland on skeletal sandy soil on sandstone; sporadic occurrences between Linden and Berrima.	No
<i>Eucalyptus baeuerlenii</i> ROTAP, 3RCa	Locally frequent but restricted, in wet forest or woodland in sheltered often sloping sites; from Wentworth Falls to Budawang Ra.	No
<i>Eucalyptus benthamii</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Restricted but locally abundant, in wet forest on sandy alluvial soils along valley floors; confined to the lower Nepean R. area.	No
<i>Eucalyptus burgessiana</i> ROTAP, 2RCa	Locally frequent but restricted, in mallee shrubland on skeletal sand on sandstone; restricted to lower Blue Mtns.	No
<i>Eucalyptus camfieldii</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Rare and localized, in coastal shrub heath on sandy soils on sandstone, often of restricted drainage; from Gosford to Royal N.P.	No
<i>Eucalyptus cannonii</i> ROTAP, 2VCi BC Act, Sch. 2, Vul.	Locally frequent but restricted, in sclerophyll woodland on shallow soil on rises; Rylstone to upper Wolgan Valley.	No
<i>Eucalyptus copulans</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, End.	Locally frequent but restricted, in sclerophyll woodland on shallow soil on rises; Rylstone to upper Wolgan Valley.	No
<i>Eucalyptus cunninghamii</i> ROTAP, 2RCa	Restricted but locally frequent, in mallee heath skeletal sandy soil on sandstone; confined to central Blue Mtns.	No
<i>Eucalyptus</i> sp. ‘ <i>Cattai</i> ’ BC Act, Sch. 1, End.	Grows as isolated trees or small groups of trees in scrub, heath and low woodland, in sandstone-derived soils.	No
<i>Eucalyptus leuhmanniana</i> ROTAP, 2RCa	Locally abundant but restricted, in mallee heath on shallow infertile sandy soils of poor drainage on sandstone; confined to coastal plateau between the Hawkesbury R. and Bulli.	No



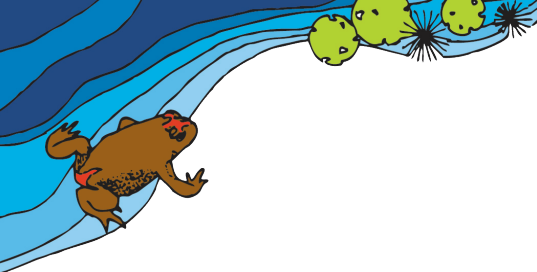
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Euphrasia bowdeniae</i> ROTAP, 2VCit BC Act Sch. 2, Vul. EPBC Act, Vul.	Grows on sandstone cliffs in shallow soil on ledges or sometimes trailing over rock, in higher parts of Blue Mtns.	No
<i>Genoplesium baueri</i> BC Act, Sch. 1, End.	Prefers sandy dry Eucalyptus habitats.	No
<i>Grammitis stenophylla</i> BC Act, Sch. 1, End.	Prefers moist shaded gullies, typically grows on rocks near moss.	No
<i>Grevillea caleyi</i> BC Act, Sch. 1, End. EPBC Act, End.	Grows on sandy soil with lateritic influences, typically on ridges.	No
<i>Microtis angusii</i> BC Act, Sch. 1, End. EPBC Act, End.	Difficult to determine, growing among weeds and on a disturbed soil. Possibly prefers sandy soils with lateritic influences.	No
<i>Gonocarpus longifolius</i> ROTAP, 3RC -	Grows in shrub communities on sandstone; mainly on the ranges from Armidale to the Blue Mtns, east of Rylstone.	No
<i>Goodenia rostrivalvis</i> ROTAP, 2RCa	Grows on damp south-facing sandstone cliffs in Blue Mtns, in the Wentworth Falls area, rare.	No
<i>Grevillea juniperina subsp. juniperina</i> BC Act, Sch. 2, Vul.	Grows in open dry sclerophyll (eucalypt-dominated) forest or woodland, at altitudes of less than about 50 m, in sandy to clay-loam soils and red pseudolateritic gravels.	No
<i>Grevillea longifolia</i> ROTAP, 2RC -	Grows in moist areas of sclerophyll forest, often near creeks, on Hawkesbury sandstone; chiefly the southern half of Sydney Basin, and Woronora Plateau; possibly also in Lawson area.	No
<i>Grevillea obtusiflora</i> BC Act, Sch. 1, End. EPBC Act, End.	Grows in sandy loam soils in open low scrub beneath dry sclerophyll forest in the Kandos area.	No
<i>Grevillea parviflora subsp. parviflora</i> BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heathy associations or shrubby woodland, in sandy or light clay soils usually over shale substrates.	No
<i>Gyrostemon thesioides</i> ROTAP, 2KC - BC Act Sch. 1, End.	Grows on hillsides and riverbanks, only from sites near Georges (30 yrs ago) and Nepean Rivers (90 yrs ago). May already be extinct.	No
<i>Hakea constablei</i> ROTAP, 2RCa	In dry sclerophyll forest on rocky outcrops, scattered in the Blue Mtns between 500–1100 m alt., from Bell to Mt Wilson, rare.	No
<i>Haloragodendron lucasii</i> BC Act, Sch. 1, End. EPBC Act, End.	Grows in dry sclerophyll open forest on sheltered slopes near creeks on sandstone; confined to Sydney area, rare.	No
<i>Hibbertia hermanniifolia</i> ROTAP, 3RCa	Open forest on sandstone; confined to Bents Basin (Nepean R), Yarrowitch district and the coastal ranges south from Wadbilliga N.P.; rare.	No



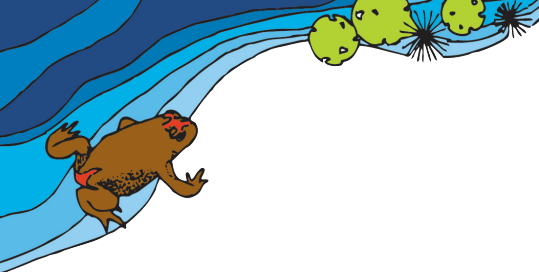
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Hibbertia nitida</i> ROTAP, 2RC -	Widespread on sandstone in the Sydney district.	No
<i>Hibbertia superans</i> BC Act, Sch. 1, End.	Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides.	No
<i>Hymenophyllum lyallii</i> (was <i>Sphaerocionium lyallii</i>) ROTAP, 3RC - +	Grows on rocks or trees in moist rainforest in the Blue Mtns and ranges of the south coast.	No
<i>Hymenophyllum pumilum</i> ROTAP, 3RC -	Epiphytic in cooler rainforest of the Blue Mtns and adjacent ranges; uncommon.	No
<i>Isopogon fletcheri</i> ROTAP, 2VCa BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in dry sclerophyll forest and heath on sandstone; confined to sheltered moist positions on the escarpment in the Blackheath district of the Blue Mtns, rare.	No
<i>Isotoma sessiliflora</i> (was <i>Hypsela sessiliflora</i>) ROTAP, 2X BC Act, Sch. 1, End.	Grows in damp places, on the Cumberland Plain, very rare.	No
<i>Keraudrenia corollata</i> var. <i>denticulata</i> ROTAP, 3RC -	Mostly on sandstone. Rare; recorded from near Grafton and west of Sydney.	No
<i>Kunzea cambagei</i> ROTAP, 2VCa BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath; known mainly from near Mt Werong and Berrima.	No
<i>Kunzea rupestris</i> ROTAP, 2VCa BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath on rock platforms; known only from between Lower Portland and Ku-ring-gai Chase N.P.	No
<i>Lasioptalum joyceae</i> ROTAP, 2RC - BC ACT, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath on sandstone; Hornsby Plateau.	No
<i>Leionema lachnaeoides</i> ROTAP, 2ECi BC Act, Sch. 1, End. EPBC Act, End.	Rare, from higher Blue Mtns, on barren rocky situations.	No
<i>Lepidosperma evansianum</i> BC Act, Sch. 2, Vul.	Grows on wet sandstone cliff faces.	No
<i>Lepidosperma evansianum</i> BC Act, Sch. 2, Vul. <i>Leptospermum rupicola</i> ROTAP, -3RC -	Grows in shrubby communities and heath on sandstone cliffs and escarpments.	No



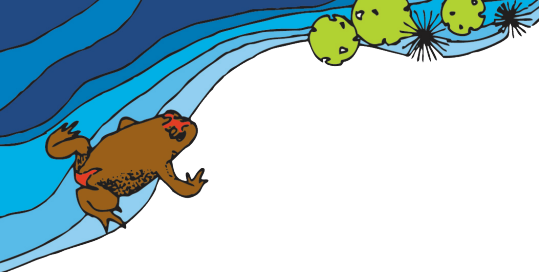
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Leucopogon exolasius</i> ROTAP, 2VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in woodland on sandstone, restricted to the Woronora and Grose Rivers and Stokes Creek, Royal N.P.	No
<i>Leucopogon fletcheri</i> subsp. <i>fletcheri</i> ROTAP, 2RC - BC Act, Sch. 1, End.	Grows in woodland on lateritic soils; rare, in the Springwood area.	No
<i>Lissanthe sapida</i> ROTAP, 3RCa	Grows in open woodland and dry sclerophyll forest, on rocky sandstone ridges and hillsides on sandy soil; occasional, from Bargo to Coloul Ra. and Blackheath.	No
<i>Lomandra brevis</i> ROTAP, 2RC -	Grows in dry sclerophyll forest on sandstone-derived soils in the Sydney region; not common.	No
<i>Lomandra fluviatilis</i> ROTAP, 3RCa	Grows in creek beds on sandy soils; in the Royal N.P. to Colo R.	No
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> BC Act, Sch. 1, End. Pop.	Grows in woodland and scrub; north from the Razorback Ra. (Bankstn, Blacktn, Camden, Campbelltn, Fairfield, Holroyd, Liverpool & Penrith LGAs).	No
<i>Melaleuca deanei</i> ROTAP, 3RC- BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in wet heath on sandstone; uncommon, in coastal districts from Berowra to Nowra.	No
<i>Micromyrtus blakelyi</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath in depressions on sandstone rock platforms; restricted to areas near the Hawkesbury R.	No
<i>Micromyrtus minutiflora</i> ROTAP, 2V BC Act, Sch. 1, End. EPBC Act, Vul.	Grows in dry sclerophyll forest in western part of the Cumberland Plain; rare.	No
<i>Monotoca ledifolia</i> ROTAP, 3RC - <i>Notochloe microdon</i> ROTAP, 2RC -	Grows in exposed sites in dry sclerophyll forest and shrubland on sandstone in the Woronora Plateau and Blue Mtns area.	No
<i>Notochloe microdon</i> ROTAP, 2RC -	Grows in moist shady areas of the Blue Mtns district.	No
<i>Olearia cordata</i> ROTAP, 2VCi BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in dry sclerophyll forest and open shrubland, on sandstone; chiefly from Wisemans Ferry to Wollombi.	No
<i>Olearia quercifolia</i> ROTAP, 3RC -	Grows in swampy or moist terrain; confined to the Blue Mtns.	No



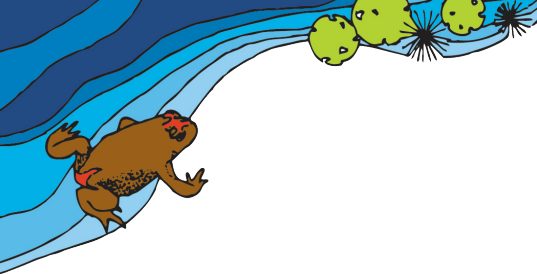
Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Ozothamnus adnatus</i> ROTAP, 3KC-	Grows in sclerophyll forest and woodland, usually on sandy soil; rare, south from Guyra district.	No
<i>Persoonia acerosa</i> ROTAP, 2VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath or dry sclerophyll forest on sandstone; central Blue Mtns south to Hill Top.	No
<i>Persoonia bargoensis</i> ROTAP, 2V BC Act, Sch. 1, End. EPBC Act, Vul.	Grows in woodland to dry sclerophyll forest, on sandstone and laterite; restricted to the Bargo area.	No
<i>Persoonia hirsuta/revoluta</i> ROTAP, 3KCi BC Act, Sch. 1, End. EPBC Act, End.	Grows in woodland to dry sclerophyll forest on sandstone; both subspecies occurring as isolated individuals or very small populations.	No
<i>Persoonia laxa</i> BC Act, Sch. 1, Ext. EPBC Act, Ext.	Considered extinct. Probably prefers heath or sclerophyll forest with sandy soils.	No
<i>Persoonia mollis subsp. maxima</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, End.	Grows in dry to wet sclerophyll forest on Hawkesbury sandstone, Cowan–Hornsby area.	No
<i>Persoonia nutans</i> ROTAP, 2ECi BC Act, Sch. 1, End. EPBC Act, End.	Grows in woodland to dry sclerophyll forest on laterite and alluvial sand; confined to the Cumberland Plain.	No
<i>Pherosphaera fitzgeraldii</i> (was <i>Microstrobos fitzgeraldii</i>) ROTAP, 2ECi BC Act, Sch. 1, End.	Usually grows on wet rocks within the spray of waterfalls or on ledges or in caves near waterfalls; restricted to southerly aspects on sandstone near waterfalls in the Katoomba to Wentworth Falls area of the Blue Mtns.	No
<i>Philothea obovalis</i> (was <i>Eriostemon obovalis</i>) ROTAP, 3RCa	Grows in heath and dry sclerophyll forest on sandstone; chiefly in the Blue Mountains, also recorded for Kydra Mountain.	No
<i>Pilularia novae-hollandiae</i> BC Act, Sch. 1, End.	Widespread but not common in seasonally dry depressions and margins of marshes; may grow submerged.	No
<i>Pimelea curviflora</i> var. <i>curviflora</i> BC Act, Sch. 2, Vul. EPBC Act, Vul.	Confined to coastal areas around Sydney on sandstone.	No



Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Pimelea spicata</i> ROTAP, 3ECi BC Act, Sch. 1, End. EPBC Act, End.	Grows on the coast from Lansdowne to Shellharbour and inland to Penrith; rare.	No
<i>Platysace clelandii</i> ROTAP, 2RCa	Grows among sandstone boulders in dry sclerophyll forest, from Glen Davis to Berowra.	No
<i>Pomaderris brunnea</i> ROTAP, 2VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	In open forest, confined to the Colo R. and upper Nepean R.	No
<i>Prostanthera cryptandroides</i> BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows chiefly in the Lithgow to Sandy Hollow districts.	No
<i>Prostanthera marifolia</i> BC Act, Sch. 4, Ext A. EPBC Act, CE.	Occurs in sandy soils with clay-loam and ironstone on ridge tops.	No
<i>Pseudanthus divaricatissimus</i> ROTAP, 3RCa	Mostly from Muswellbrook to Bega, with outlying populations near Urbenville and Dubbo (Goonoo State Forest).	No
<i>Pterostylis gibbosa</i> ROTAP, 2E (X-WSyd) BC Act, Sch. 1, End. EPBC Act, End.	Grows among grass in sclerophyll forest; rare, chiefly in the southern parts of the central coast, with a disjunct population in the Hunter Valley.	No
<i>Pterostylis saxicola</i> ROTAP, (2E) BC Act, Sch. 1, End. EPBC Act, End.	Grows in shallow soil over sandstone sheets, often near streams; rare, from Picnic Point to Picton area.	No
<i>Pultenaea</i> sp. 'Genowlan Point' (NSW 417813) BC Act, Sch. 1, Crit. End. EPBC Act, Crit. End.	It is endemic to New South Wales and is only found at Genowlan Point in the Capertee Valley. At Genowlan Point, <i>Pultenaea</i> sp. 'Genowlan Point' (Allen s.n., 29 Nov. 1997) is restricted to well drained stoney soils.	No
<i>Pultenaea glabra</i> EPBC Act, Vul.	Grows in dry sclerophyll forest on sandstone; higher Blue Mtns and Glen Davis area.	No
<i>Pultenaea parviflora</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, Vul.	Grows in dry sclerophyll forest on Wianamatta Shale, laterite or alluvium, Cumberland Plain.	No
<i>Pultenaea pedunculata</i> BC Act, Sch. 1, End.	Grows in dry sclerophyll forest and disturbed sites on a variety of soils on the South Coast and edge of the Southern Tableland, but with disjunct restricted populations on Wianamatta Shale on the Cumberland Plain in N.S.W.	No



Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Pultenaea villifera</i> var. <i>villifera</i> ROTAP, 3RC - BC Act, Sch. 1, End. Pop. (Lower Blue Mountains)	Grows in dry sclerophyll forest on sandy soil; lower Blue Mtns to Eden district.	No
<i>Rhizanthella slateri</i> ROTAP, 3KC - BC Act, Sch. 2, Vul. EPBC Act, End.	Grows in sclerophyll forest in shallow to deep loams. Collections tend to be accidental, and it is not possible to determine distribution accurately; recorded for the Blue Mtns, also Bulahdelah south to Dharug N.P.	No
<i>Rupicola apiculata</i> ROTAP, 2RCa	Grows in skeletal sandy soils in damp situations on sandstone rock ledges between 700–1100 m alt.; restricted to the Blue Mtns.	No
<i>Rupicola ciliata</i> ROTAP, 2RC – t	Grows in skeletal sandy soils in rock crevices, on rock ledges and beneath cliff overhangs in Kurrajong Heights, Bilpin to lower Yarramun Creek areas in the Blue Mtns.	No
<i>Rupicola sprengelioides</i> ROTAP, 2RC – t	Restricted to skeletal sandy soils on sandstone ledges, cliff faces and rocky ground, in the Burragorang Valley.	No
<i>Sprengelia monticola</i> ROTAP, 2RC – t	Grows on wet rock faces and ledges or cliff bases on sandstone in the Blue Mtns.	No
<i>Syzygium paniculatum</i> BC Act, Sch. 1, End. EPBC Act, Vul.	Rainforest and open forest near riparian zones.	No
<i>Tetratheca glandulosa</i> ROTAP, – 2VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in sandy or rocky heath or scrub, from Mangrove Mtn to the Blue Mtns and Sydney.	No
<i>Tetratheca neglecta</i> ROTAP, 3RC -	Grows in sandy heath and dry sclerophyll forest; chiefly in the Sydney district, south to Robertson.	No
<i>Thesium australe</i> ROTAP, 3VCi BC Act, -Sch. 2, Vul. EPBC Act, Vul.	Grows in grassland or woodland, often in damp sites; widespread but rare and possibly endangered.	No
<i>Tylophora woollsii</i> ROTAP, 2E BC Act, Sch. 1, End. EPBC Act, End.	Grows in wet sclerophyll forest and rainforest in the Clouds Creek area near Nymboida and in sclerophyll forest near Parramatta; rare.	No
<i>Velleia perfoliata</i> ROTAP, 2VC - BC Act, Sch. 2, Vul. EPBC Act, Vul.	Grows in heath on shallow sandy soil over sandstone; confined to the Hawkesbury district to the upper Hunter Valley.	No
<i>Veronica lithophila</i> (was <i>Parahebe lithophila</i>) ROTAP, 2RC -	Grows on cliffs or rock exposures, in pockets of soil over sandstone or quartzite; Blue Mtns-Colong region at 650–870 m alt., uncommon.	No



Botanical name Conservation status	Habitat description	Suitable habitat on site
<i>Wilsonia backhousei</i> BC Act, Sch. 2, Vul.	Grows in coastal saltmarshes; chiefly in the Sydney district, also common at Jervis Bay.	No
<i>Zieria covenyi</i> BC Act, Sch. 1, End. EPBC Act, End.	Grows in eucalypt woodland on sandy soils; known only from Narrow Neck Peninsular in the Blue Mtns N.P.	No
<i>Zieria involucrata</i> ROTAP, 2VCa BC Act, Sch. 1, End. EPBC Act, Vul.	Grows in wet sclerophyll forest, chiefly in the Lower Blue Mtns; rare.	No
<i>Zieria murphyi</i> ROTAP, 2VC-	Grows in dry sclerophyll forest in sandy soils; on the ranges from Mt Tomah to Penrose district.	No
<i>Zieria prostrata</i> BC Act, Sch. 1, End. EPBC Act, End.	Restricted to low coastal heaths, near Coffs Harbour; rare.	No

Key

BC Act 2016:

Sch1 = Schedule 1: Endangered species
 Part 1: endangered species
 Part 2: endangered populations
 Part 3: endangered ecological communities
 Part 4: species presumed extinct
 Sch2 = Schedule 2: Vulnerable species

EPBC Act 1999:

CE = Critically Endangered
 E = Endangered
 V = Vulnerable
 EP = Endangered Population

ROTAP Codes

1 Known by one collection only
 2 Geographic range in Australia < 100Km
 3 Geographic range in Australia > 100Km
 E Endangered
 V Vulnerable
 R Rare
 X Extinct
 K Poorly known
 C Reserved
 a > or = 1000 plants reserved
 i < 1000 plants reserved
 t Total known population reserved
 - Reserved population size unknown
 + Overseas occurrence



Appendix 5. Matters of National Environmental Significance



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: 15-Feb-2024

[Summary](#)

[Details](#)

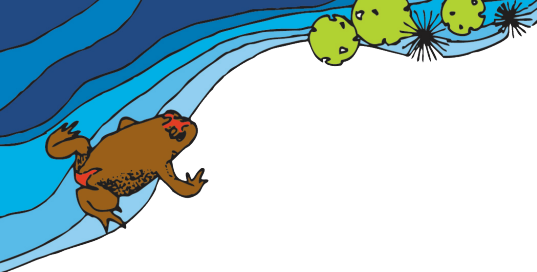
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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:	109
Listed Migratory Species:	76

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>

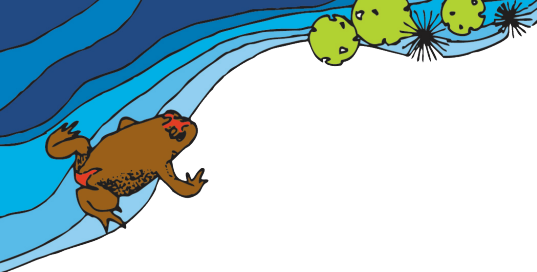
A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	17
Commonwealth Heritage Places:	None
Listed Marine Species:	100
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	5
Regional Forest Agreements:	1
Nationally Important Wetlands:	4
EPBC Act Referrals:	27
Key Ecological Features (Marine):	None
Biologically Important Areas:	6
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	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In buffer area only
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

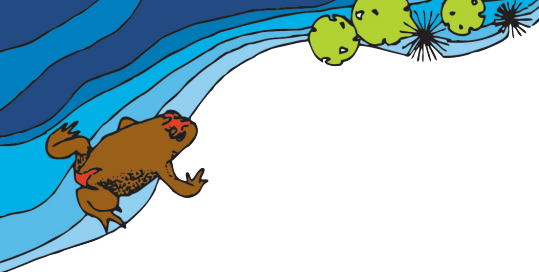
Listed Threatened Species

[Resource Information]

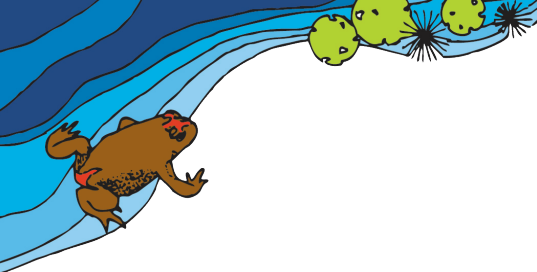
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

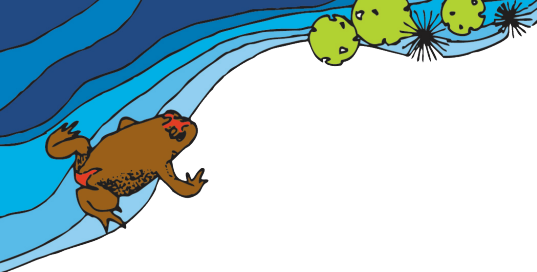
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only



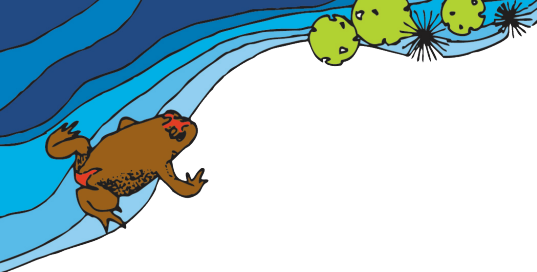
Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area	In buffer area only
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only



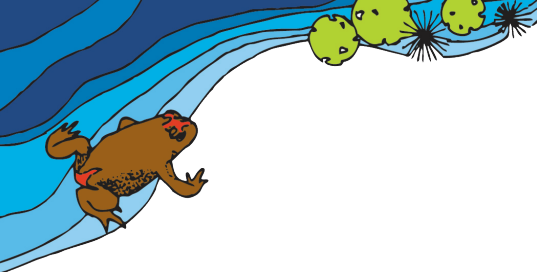
Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needle-tail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area



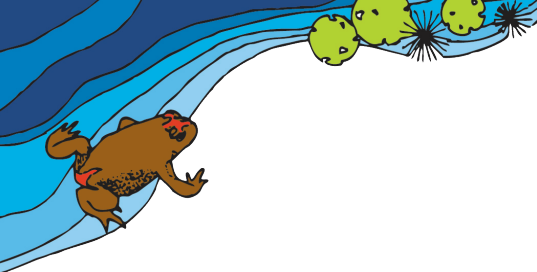
Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only



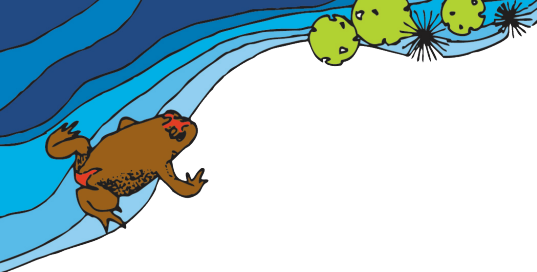
Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only



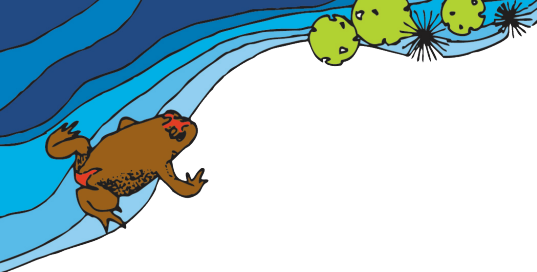
Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only
FISH			
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Seriola lalandi Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only



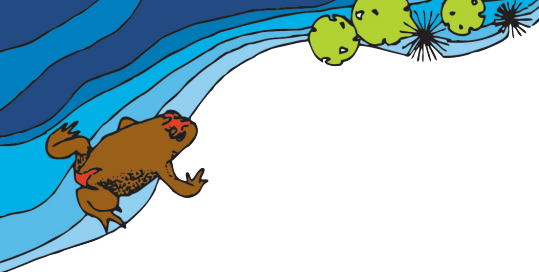
Scientific Name	Threatened Category	Presence Text	Buffer Status
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat known to occur within area	In feature area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Uperoleia mahonyi Mahony's Toadlet [89189]	Endangered	Species or species habitat known to occur within area	In buffer area only
MAMMAL			
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area



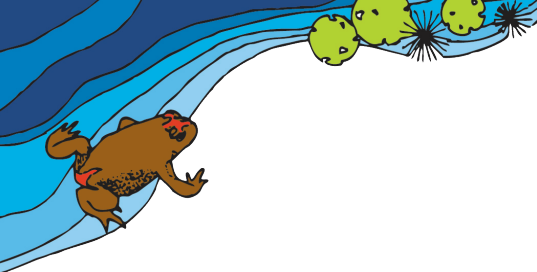
Scientific Name	Threatened Category	Presence Text	Buffer Status
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area	In feature area
Angophora inopina Charmhaven Apple [64832]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat known to occur within area	In feature area
Corunastylis insignis Wyong Midge Orchid 1, Variable Midge Orchid 1 [84692]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat known to occur within area	In feature area



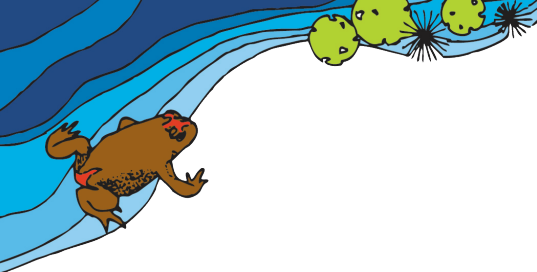
Scientific Name	Threatened Category	Presence Text	Buffer Status
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat may occur within area	In buffer area only
Genoplesium branwhiteorum listed as Corunastylis sp. Charmhaven (NSW 896673) [93200]	Critically Endangered (listed as Corunastylis sp. Charmhaven)	Species or species habitat known to occur within area	In feature area
Grevillea parviflora subsp. parviflora Small-flower Grevillea [64910]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Prostanthera askania Tranquillity Mintbush, Tranquillity Mintbush [64958]	Endangered	Species or species habitat known to occur within area	In buffer area only



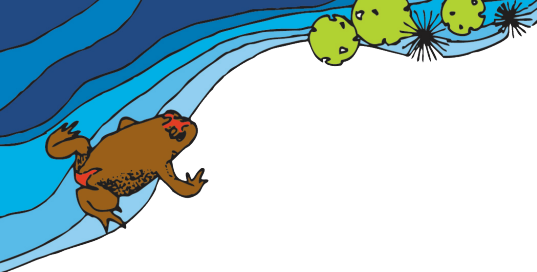
Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rutidosia heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat known to occur within area	In feature area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tetratheca juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat known to occur within area	In feature area
Thelymitra adorata Wyong Sun Orchid [84724]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only



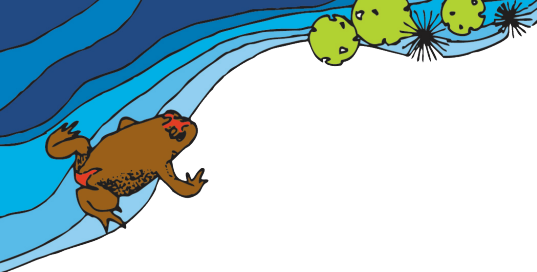
Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Hoplocephalus bungaroides Broad-headed Snake [1182]	Endangered	Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
SHARK			
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only
Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			



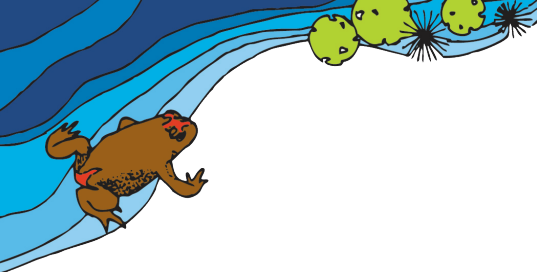
Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only



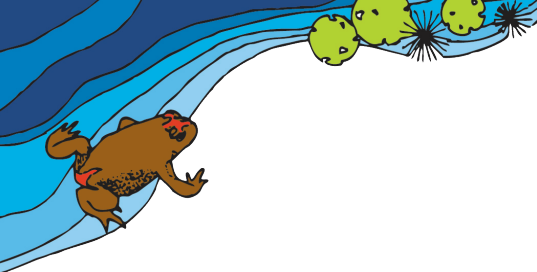
Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Breeding known to occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black- browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only



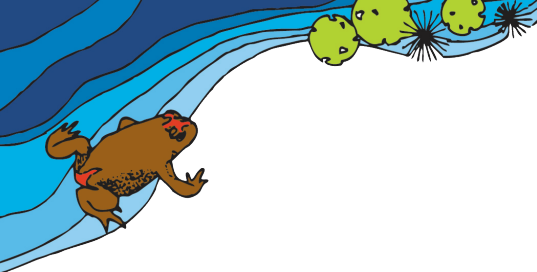
Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In buffer area only



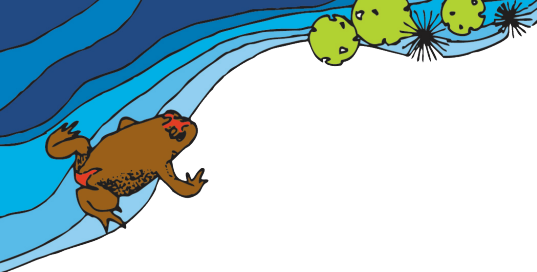
Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

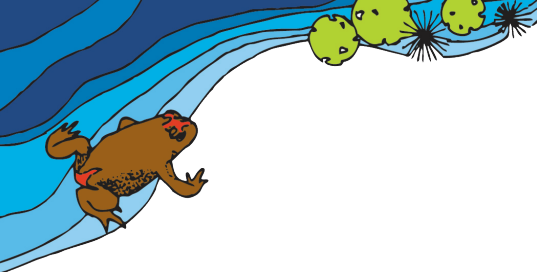
Commonwealth Lands		[Resource Information]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11748]	NSW	In buffer area only



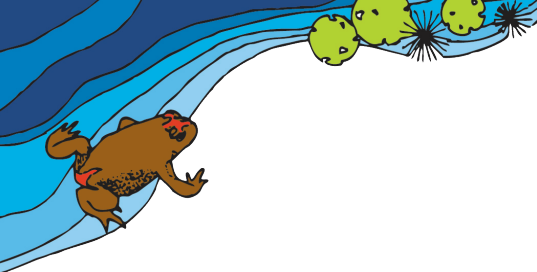
Commonwealth Land Name	State	Buffer Status	
Commonwealth Land - Australian Postal Commission [11747]	NSW	In buffer area only	
Commonwealth Land - Australian Postal Commission [16105]	NSW	In buffer area only	
Communications, Information Technology and the Arts - Telstra Corporation Limited			
Commonwealth Land - Australian Telecommunications Commission [11757]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11754]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [16063]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [12246]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11746]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11719]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11717]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11753]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11752]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11749]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11750]	NSW	In buffer area only	
Commonwealth Land - Australian Telecommunications Commission [11751]	NSW	In buffer area only	
Defence - Defence Housing Authority			
Commonwealth Land - Director of War Service Homes [11712]	NSW	In buffer area only	
Commonwealth Land - Director of War Service Homes [11745]	NSW	In buffer area only	
Listed Marine Species [Resource Information]			
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area



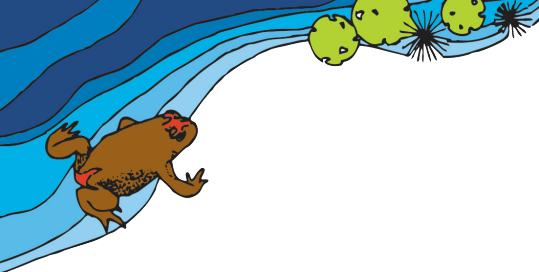
Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area	In feature area
Calidris alba Sanderling [875]		Roosting known to occur within area	In buffer area only
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only



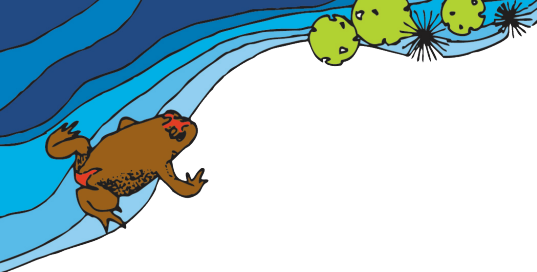
Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area



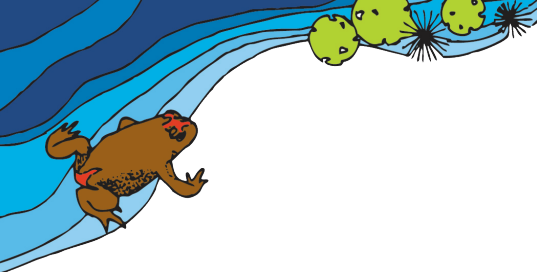
Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa limosa Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only



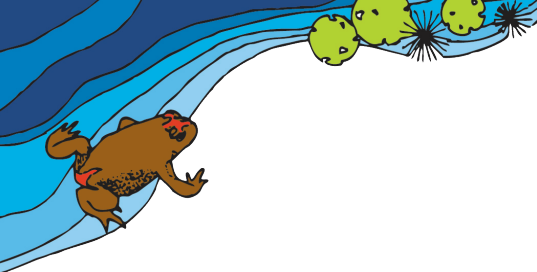
Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only



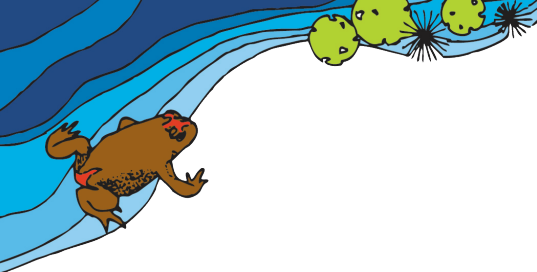
Scientific Name	Threatened Category	Presence Text	Buffer Status
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area



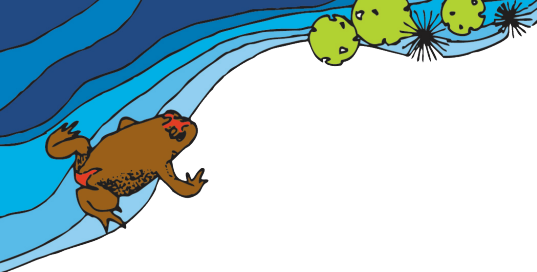
Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Fish			
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In buffer area only
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In buffer area only
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In buffer area only



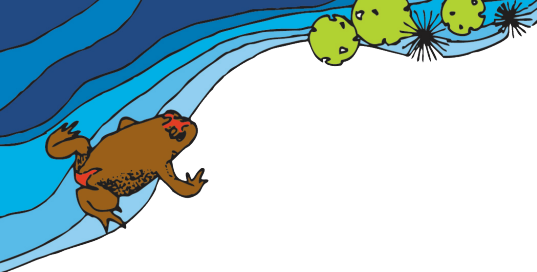
Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In buffer area only
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In buffer area only
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Hydrophis platurus as Pelamis platurus Yellow-bellied Sea Snake [93517]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Whales and Other Cetaceans [Resource Information]			
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only



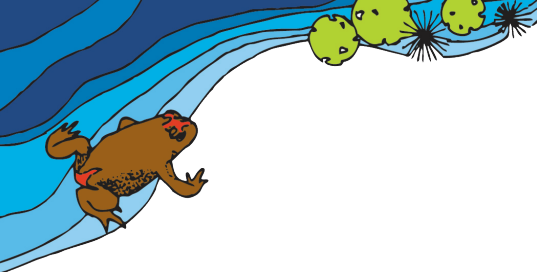
Current Scientific Name	Status	Type of Presence	Buffer Status
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Colongra Swamp	Nature Reserve	NSW	In buffer area only
Munmorah	State Conservation Area	NSW	In buffer area only
Tuggerah	Nature Reserve	NSW	In buffer area only
Tuggerah	State Conservation Area	NSW	In buffer area only
Wyrrabalong	National Park	NSW	In buffer area only

Regional Forest Agreements	[Resource Information]
Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.	

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

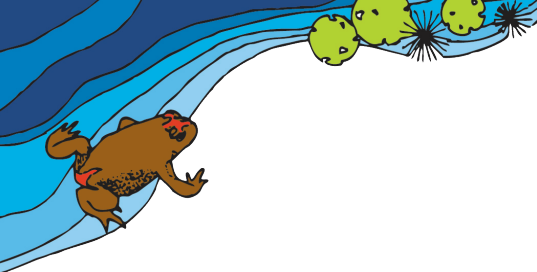


Nationally Important Wetlands [Resource Information]

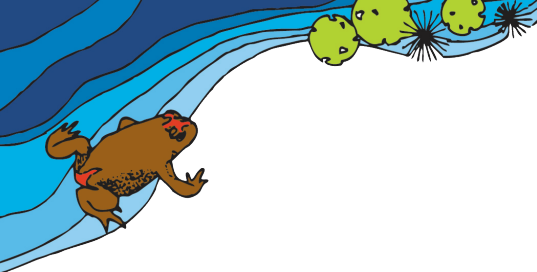
Wetland Name	State	Buffer Status
Budgewoi Lake Sand Mass	NSW	In buffer area only
Colongra Swamp	NSW	In buffer area only
Tuggerah Lake	NSW	In buffer area only
Wyong Racecourse Swamp	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

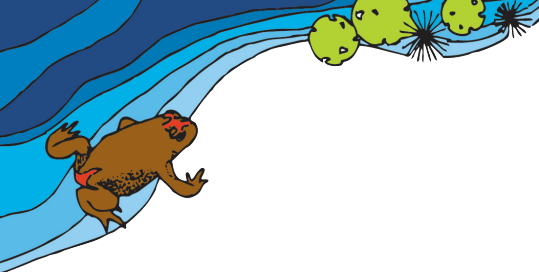
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Hunter-Central Coast Offshore Energy Initial Marine Field Investigations	2023/09480		Completed	In buffer area only
Hunter Central-Coast Offshore Energy Project	2023/09478		Assessment	In buffer area only
Lakes Ridge Residential Subdivision	2023/09580		Completed	In buffer area only
School campus K-12 development project	2023/09598		Assessment	In buffer area only
Torrens Title 8-Lot Industrial Subdivision	2023/09648		Assessment	In buffer area only
Wyong Regional Distribution Centre Expansion	2023/09473		Referral Decision	In buffer area only
Controlled action				
414 Old Maitland Road Residential Subdivision	2021/8968	Controlled Action	Proposed Decision	In buffer area only
New Intercity Fleet Maintenance Facility Kangy Angy, NSW	2016/7681	Controlled Action	Post-Approval	In buffer area only
Residential subdivision, Lot 2 http://epbcnotices.environment.gov.au/referralslist Valley, NSW	2016/7829	Controlled Action	Post-Approval	In buffer area only
Wallarrah 2 Coal Project	2007/3881	Controlled Action	Completed	In buffer area only
Wallarrah 2 Coal Project	2012/6388	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In buffer area only
Development of Westfield Limited land holdings at Tuggerah	2010/5562	Not Controlled Action	Completed	In buffer area only



Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Magenta Shores Integrated Tourist Facility and golf course	2003/995	Not Controlled Action	Completed	In buffer area only
Mandalong Mine Power Line, Mandalong, NSW	2018/8321	Not Controlled Action	Completed	In buffer area only
Mardi-Mangrove Link Project	2009/5112	Not Controlled Action	Completed	In buffer area only
Residential subdivision of Lot 22 DP 740435 Berkeley Road, Glenning Valley, NSW	2017/7992	Not Controlled Action	Completed	In buffer area only
Subdivision	2000/90	Not Controlled Action	Completed	In buffer area only
Subdivision, clearing and development of industrial zoned land Lot 3 DP 1007500	2008/4385	Not Controlled Action	Completed	In buffer area only
Tuggerah Business Park - Carpark	2000/61	Not Controlled Action	Completed	In buffer area only
Wallarah Peninsula Residential development	2004/1490	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
330kV Transmission Line http://epbcnotices.environment.gov.au/referralslist	2002/863	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Magenta Shared Pathway Stage 2, NSW	2017/7926	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Multipurpose Centre Dora St Lot 122 DP 881828 Morisset	2003/1084	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only
Residential Subdivision Dickson Road Lots 231 & 233 DP755271	2003/1105	Referral Decision	Completed	In buffer area only
Biologically Important Areas				
Scientific Name	Behaviour	Presence	Buffer Status	



Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In buffer area only
Seabirds			
Ardena grisea			
Sooty Shearwater [82651]	Foraging	Likely to occur	In buffer area only
Ardena pacifica			
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In buffer area only
Ardena tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In buffer area only
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Foraging	Known to occur	In buffer area only
Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In feature area



Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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



Acknowledgements

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

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

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



Appendix 6. Company Profile

Abel Ecology has been in the biodiversity consulting business since 1991, starting in the Sydney Region, and progressively more state wide in New South Wales since 1998, and now also in Victoria. During this time extensive expertise has been gained with regard to Master Planning, Environmental Impact assessments including flora and fauna, bushfire reports, Vegetation Management Plans, Management of threatened species, Review of Environmental Factors, Species Impact Statements, Biodiversity Development Assessment Reports and as Expert Witness in the Land and Environment Court. We have done consultancy work for industrial and commercial developments, golf courses, civil engineering projects, tourist developments as well as residential and rural projects. This process has also generated many connections with relevant government departments and city councils in NSW. Our team consists of four scientists and two administrative staff, plus casual assistants as required.

Licences

NPWS s132C Scientific licence number is SL100780.

NPWS GIS data licence number is CON95034.

DG NSW Dept of Primary Industries Animal Care and Ethics Committee Approval.

DG NSW Dept of Primary Industries Animal Research Authority.

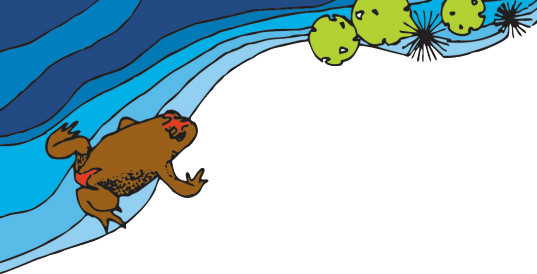
The Consultancy team

Dr Danny Wotherspoon

BSc, DipEd, MA, PhD, Grad Dip Bushfire Protection,
MECA NSW, MEPLA, MNELA, MESA, MEIANZ, White card.

Danny has practised as an ecological and bushfire consultant since 1991. He is a consulting ecologist to private developers, State Government agencies and various City Councils on a regular basis, for development applications, government projects, and as expert witness in the NSW Land and Environment Court.

Danny's PhD researched fragmented vegetation and fauna habitat use. He has special expertise in fauna habitat use. Danny has presented invited papers at international conferences since 2001 in Australia, China, South Africa, Sri Lanka and Israel on his PhD and other research, including golf course habitat management. Danny's scientific papers have been published in both international and Australian academic journals.



Koala survey qualification Dr Danny Wotherspoon

Requirements of SEPP Koala habitat Protection 2021

Surveys Must be Carried Out by a Suitably Qualified Person. This is taken to mean a person with:

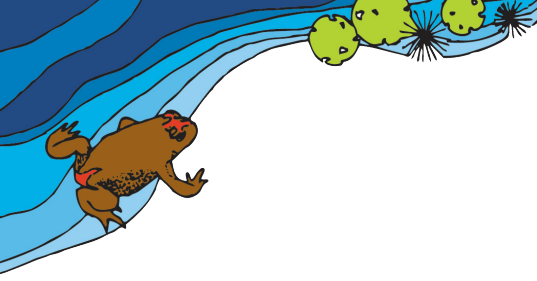
Criterion	Dr Wotherspoon
A minimum undergraduate qualification in natural sciences, ecology, environmental management forestry or similar from a university and	BSc (zoology and ecology) PhD (animal ecology)
A minimum 3 years experience in environmental assessment including field identification of plant and animal species and habitat.	Ecological consultant since 1991 Certified Practicing Ecological Consultant (ECA NSW registration no. 1).

This includes having as a minimum the following experience in conducting koala surveys:

Criterion	Dr Wotherspoon
<ul style="list-style-type: none"> Greater than 10 surveys 	Many surveys over more than 20 years. LGAs include Hawkesbury, Campbelltown, Port Macquarie, Blue Mountains, Pittwater, Snowy Monaro etc.
<ul style="list-style-type: none"> Experience in using the koala presence survey methods identified below 	Yes. Training workshop AKF annual Conference Philip Island 1999. NSW LEC expert witness.
<ul style="list-style-type: none"> Can accurately identify preferred koala use trees 	Yes. Arborist expert witness, so experience in identifying trees.
<ul style="list-style-type: none"> Can distinguish between koala faecal pellets and those from other species that may present similar characteristics 	Yes. Training workshop AKF annual Conference Philip Island 1999. Museum collection of pellets held in our office.

The person's skills in koala survey should be demonstrable by relevant qualifications and the following:

Criterion	Dr Wotherspoon
<ul style="list-style-type: none"> a history of experience in koala habitat / population assessments and associated survey methods and/or 	Research paper published by Australian Koala Foundation (AKF) (1999). Paper presented AKF annual Conference Philip Island 1999 Wotherspoon, D, (2021, in press) Koala survey and the SEPP (Koala Habitat Protection) 2019. <i>Consulting Ecology</i> .
<ul style="list-style-type: none"> a resume giving details of koala survey projects conducted over the previous 10 years including employers' names and periods of employment (where relevant). 	Owner and founder of Abel Ecology P/L (previously Blue Mountain Wilderness Services P/L) since 1991.



Mark Mackinnon

B Env. Sci. (Hons); Grad. Dip. in Bushfire Protection

Bushfire Planning & Design (BPAD), Accredited Practitioner Level 3. Accreditation number 36395.

MEIANZ, White Card

Mark is a passionate and enthusiastic scientist who thrives in the field of natural resource management. Mark has worked for a number of inter-state government agencies and environmental consultancies. He has experience in threatened species, fire ecology, bushfire management, pest plant and animals, and landscape restoration. In particular, he specializes in ornithology and bushfire management. Mark has a number of specialized field-based skills including simple and complex tree climbing, working at heights, general firefighter departmental fire accreditation, venomous snake and reptile handling, immunization to handle bat species, and an A - class bird banding license with mist-net endorsement. Mark is also skilled in ArcGIS mapping, first-aid, four -wheel-driving.

Mark Sherring

BM, MAABR, Cert. Hort., Cert. Bush Regen, Cert. Rural Ops, White Card.

Member of the Australian Association of Bush Regenerators

Mark has extensive knowledge and experience of plant species in New South Wales. He has built up his expert knowledge on NSW native plant species over the many years that he has practised as a Botanist. He is regularly asked to contribute to the extensive (ongoing) flora surveys of the Sydney Basin and Blue Mountains carried out by the Royal Botanic Gardens, Sydney. Mark has extensive field survey experience, having worked for over ten years in various plant-related roles. His role in Abel Ecology is to provide expert advice on flora and on the full range of flora management issues encountered and in the design and management of environmental monitoring projects.

Nick Tong

BSc (Biology), MPhil (Ecology), Cert. III CLM

BAM Accredited Assessor (BAAS22012),

MECA NSW, Snr First Aid, White card.

Nicholas is an experienced ecologist with expertise in fauna, plant species identification, vegetation assessment and ecological restoration. In the last six years, he has been a consulting ecologist to private developers and large corporations, for a variety of projecting including State Significant Developments. Nick has extensive field work experience in Sydney, the Blue Mountains and Central West NSW. His Master's project investigated the impacts of exotic predators on herpetofauna in the arid zone. His role at Abel Ecology is to provide expert advice on fauna and the application of the Biodiversity Offset Scheme.



Carna Feldtmann

BEnvSys *USYD*., DipCLM (enrolled).

AMEIANZ, ECA (NSW), White Card.

Botanist/Écologist.

Carna is an Environmental Scientist with a strong background in environmental systems, having graduated from the University of Sydney. With a particular interest in conservation, she is committed to contributing to the sustainable management of natural resources. She brings a range of skills, including fieldwork experience, enabling her to develop well informed strategies and recommendations. Her current research interests involve investigating how the fragmentation of natural habitats affects the distribution, abundance, and intersections of fauna and flora species, as well as the overall resilience of the ecosystem. Carna also has experience in management and monitoring of Koala populations.

Nina Potts

B. Env. Sys. (Hons 1) (USYD)

Plant ecologist

Nina has comprehensive technical expertise across a number of ecological fields including botany, community restoration, hydrology, soil science, geology and ecology. Nina has practical experience as a botanist in managing bush regeneration projects in the greater Sydney area. Previously, as a Field Conservation Officer, Soil Conservation Service, NSW Dept. of Primary Industries Nina has experience of logistics and day-to-day operations of a construction site and projects. Internationally Nina has worked with the Institut National de la Recherche Agronomique, France conducting ecological assessments and detailed botanical surveys in alpine to lowland forest and meadow ecosystems in northern France and western Germany and with the Crawford Fund, Savannakhet, Lao PDR, on agricultural projects in Laos, including fungal pathogen control in small crops.

Emily Barbaro

BA, MPublishing, Grad. Cert. EnvSc, MEScM (enrolled).

Junior Ecologist

Emily has completed a Graduate Certificate in Environmental Science and is currently enrolled in a Masters of Environmental Science and Management. Emily has previously worked as a Bush Regenerator and has been volunteering with Bushcare for Blue Mountains City Council for the last three years. She is passionate about learning more about her local Blue Mountains flora and fauna.



Dr Stephanie Clark

B Sc (Hons), PhD

Stephanie has over 30 years experience in the collection, identification and taxonomy of marine, estuarine, freshwater and terrestrial molluscs. She has conducted numerous targeted surveys for endangered and threatened species (particularly land and freshwater molluscs) in both Australia and the United States. She is particularly interested in the systematics, taxonomy, morphology (external and internal), population and conservation genetics and conservation of molluscs particularly terrestrial (especially the Helicoidea) and freshwater (especially the Hydrobiidae and related families) groups.