

Ecological Assessment

Project:

Proposed Medical Centre at 14 Highfields
Circuit, Port Macquarie

Client:

Primary Health Care Limited
C/- EPM Projects

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Contents

List of Photos	5
Executive Summary	6
1.0 Introduction	8
2.0 Background Information	8
2.1. Location of the Subject Site and Key Definitions	8
2.2. Development Proposal	8
2.3. Soils, Topography and Geology	9
3.0 Methods	12
3.1. Desktop Study and Literature Review	12
3.2. Flora Survey	12
3.2.1. Vegetation Classification and Mapping	13
3.2.2. Threatened Flora Species Searches and Occurrence Assessment	13
3.3. Fauna Survey	14
3.3.1. Habitat Evaluation	14
3.3.2. Direct Observation	14
3.3.3. Secondary Evidence/Habitat Searches	14
3.3.4. Koala Food Tree Survey	15
4.0 Results	16
4.1. Desktop Search Results	16
4.1.1. Locally Recorded Threatened Species	16
4.1.2. Matters of National Environmental Significance	20
4.2. Flora Survey Results	21
4.2.1. Site Vegetation Communities	21
4.2.2. Threatened Flora	24
4.2.3. Endangered Ecological Communities and Endangered Populations	24
4.3. Fauna Survey Results	24
4.3.1. Habitat Evaluation, Corridors and Linkages	24
4.3.2. Observed/Detected Fauna	28
4.4. Potential Occurrence Assessment	29



5.0 Impact of the Proposal	30
5.1. Direct Impacts	30
5.2. Indirect Impacts	30
6.0 PMHC DCP Compliance Assessment	32
6.1. Koala Food Trees	32
7.0 Biodiversity Conservation Act 2016 Assessment	34
7.1. Assessment Pathway	34
7.2. Test of Significance	35
7.2.1. Entities to be Assessed	36
7.2.2. Responses	36
7.3. Conclusion	40
8.0 EPBC Act 1999 Significance Assessment	41
8.1. Assessment Summary	41
8.2. Koala Referral Assessment	42
8.3. Protected Species Assessments	43
8.3.1. Grey-headed Flying Fox	43
8.3.2. Migratory Species	45
9.0 Recommendations	47
9.1. General Clearing Measures	47
9.2. Pre-clearing Survey	47
9.3. Landscaping	47
9.4. External Lighting	47
9.5. Domestic Animals	47
10.0 Conclusion	48
11.0 References	49
Appendix 1: Potential Occurrence Assessment and Impact Assessment Eligibility	51
Appendix 2: Flora List	64
Appendix 3: EPBC MNES Search Results	66



List of Figures

Figure 1: Site locality	10
Figure 2: Proposed development layout	11
Figure 3: PMHC vegetation communities	23
Figure 4: OEH Key Habitats and Corridors	27
Figure 5: Location of Koala Food Tree	33
Figure 6: Biodiversity value map	35

List of Tables

Table 1: Locally recorded threatened species	16
Table 2: List of species with potential to occur in the locality	20
Table 3: Matters of State Environmental Significance search results	20
Table 4: Summary of site habitat values	24
Table 5: Fauna species recorded on the site	28
Table 6: Threatened species potentially occurring in the study area	29
Table 7: Details of primary Koala food tree on site	32
Table 8: Assessment of BDAR requirement	34
Table 9: Contribution to Key Threatening Processes	37
Table 10: Summary of MNES	41
Table 11: Koala habitat assessment	42
Table 12: Critical habitat assessment	43
Table 13: Eligibility for Seven Part Test Assessment – Flora	51
Table 14: Eligibility for Test of Significance and MNES Assessment	54

List of Photos

Photo 1: View of the site from Highfields Circuit	9
Photo 2: Vegetation in the south of the site	22
Photo 3: Vegetation in the north of the site	22



Executive Summary

The site was assessed in accordance with the requirements of the NSW *Biodiversity Conservation Act 2016*, *Biodiversity Conservation Regulation 2017* and the Commonwealth *Environment Protection and Biodiversity Conservation (EPBCA) Act 1999* - Matters of National Environmental Significance (MNES). Assessment of the relevant provisions for Koala food trees under the Port Macquarie-Hastings Council Development Control Plan 2013 is also provided.

Key Survey Results

A site survey was carried out in October 2017. The subject site was found to be largely modified and comprises planted ornamental shrubs, ornamental trees and a few native trees. No threatened flora species were recorded and the site vegetation does not qualify as an Endangered Ecological Community (EEC).

The Koala was the only threatened fauna species recorded on the site. A total of seven threatened fauna species were found to have at least a low potential to occur within the study area.

Impact of the Proposal

The proposed development will have a limited impact on native flora and fauna. Only four Eucalypt trees currently growing in the south of the Lot will require removal. These trees do not contain hollows and are not preferred Koala food trees. Other landscaping trees which may provide a nectar source for bird and bats will also be removed, however landscaping established as part of the development will compensate for this loss.

Indirect impacts associated with the proposal will be minor due to the scale of the development, residential context of the site and the existing level of disturbance in the area.

Legislative Compliance

Local

PMHC Development Control Plan: Section 2.6 of the DCP applies as the site contains a preferred Koala food tree. This tree is proposed to be retained, hence the proposed development can comply with the PMHC DCP.

State

SEPP 44 – Koala Habitat Protection: The subject site is less than 1ha, hence SEPP 44 does not apply.

SEPP 26– Littoral Rainforests: No SEPP 26 Littoral Rainforest occurs within the study area.

SEPP 14 Wetlands: No SEPP 14 Wetlands are mapped in the study area.

Fisheries Management Act 1994: The proposal does not contain any aquatic habitat and will not affect any matters listed under the FM Act.



Biodiversity Conservation Act and Regulation: The proposed development will not trigger the requirement for a Biodiversity Development Assessment Report (BDAR) as the amount of vegetation removal required will not exceed the prescribed threshold and the site is not mapped on the Biodiversity Value Map.

The recorded and potentially occurring species have been assessed as per the Test of Significance. This has determined that the proposal will not result in a significant effect on listed species of ecological communities, or their habitats. A BDAR or Species Impact Statement is not required to accompany the Development Application.

Federal

Assessment under the EPBCA – MNES determined that the impact of the proposal on MNES was unlikely to be significant. Hence referral to Department of Environment and Energy (DEE) for approval is not considered to be required.



1.0 Introduction

Biodiversity Australia Pty Ltd Trading as Naturecall Environmental (hereafter referred to as 'Naturecall') was requested to undertake the required ecological and statutory assessments for a proposed medical centre on 14 Highfields Circuit, Port Macquarie. This assessment will form part of the Development Application to be submitted to Port Macquarie-Hastings Council.

The survey and assessment was performed in consideration of the draft *Threatened Species Survey and Assessment – Guidelines for Developments and Activities* (DEC 2004), the *Threatened Species Assessment Guidelines – Assessment of Significance* (DECC 2007) and the *Biodiversity Assessment Method* (NSW Government 2017). The assessment has also been undertaken in accordance with the Ecological Consultants Association of NSW – *Code of Ethics* (2002) available at www.ecansw.org.au.

2.0 Background Information

2.1. Location of the Subject Site and Key Definitions

The site is located on Highfields Circuit about 500m east of the Oxley Highway and 3.5km southwest of the Port Macquarie CBD (See Figure 1 and Photo 1 below). The site is accessed directly from Highfields Circuit.

The subject site currently comprises a residential Lot with a brick dwelling, garage and sheds, in-ground swimming pool and landscaped gardens. The site is zoned R1 – General Residential under the Port Macquarie-Hastings Local Environment Plan (LEP) 2011. Surrounding developments include medical centres and residential dwellings. Port Macquarie Base Hospital is located nearby to the north on Wrights Road.

The subject site is defined as Lot 15 DP 262236 which is 3524m² in area. The study area is land within 100m of the subject site. The locality is land within 10km radius of the site.

2.2. Development Proposal

This proposal will see the construction of a new medical centre on the subject site. The preliminary development design is for a single storey facility with a ground floor area of approximately 1145m² and 53 car spaces (Figure 2). The development plans allow space for landscape plantings along the road frontage and along the southern and eastern boundary.

The proposal would see removal of the current dwelling, swimming pool, garages and most of the existing vegetation on the site.



2.3. Soils, Topography and Geology

The subject site is generally level and sits at 20m elevation. There are no distinct topographical features on the subject site, however retaining walls have been constructed around the swimming pool. Top soils throughout the site are typically red-brown clay loams with underlying rock present in some spots. No natural waterbodies or defined drainage lines occur on the site.

The site does not fall on any mapped quaternary soils, or geological formations (Troedson & Hashimoto 2008).

Photo 1: View of the site from Highfields Circuit

Source: Google Streetview 2017





Figure 1: Site locality

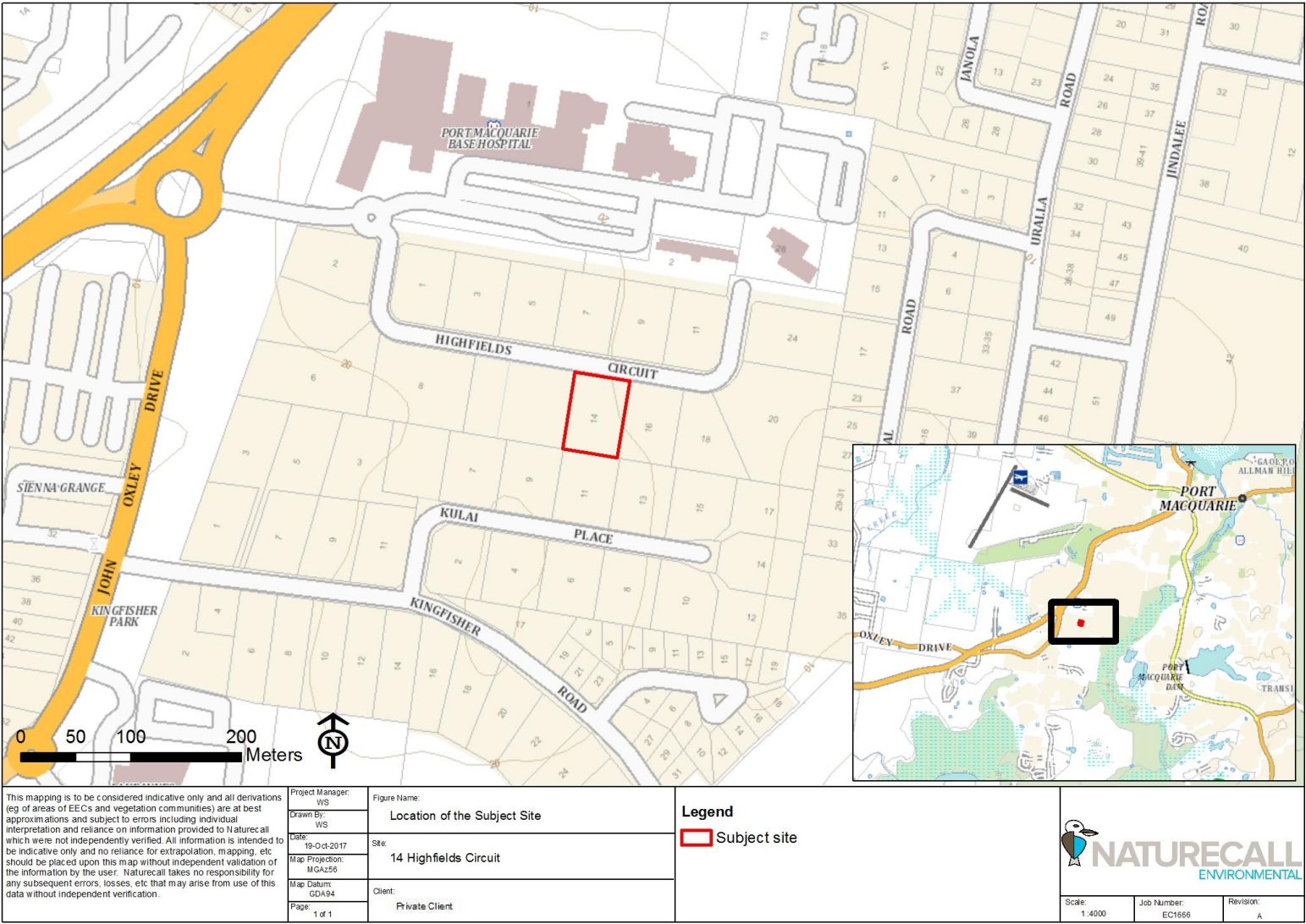
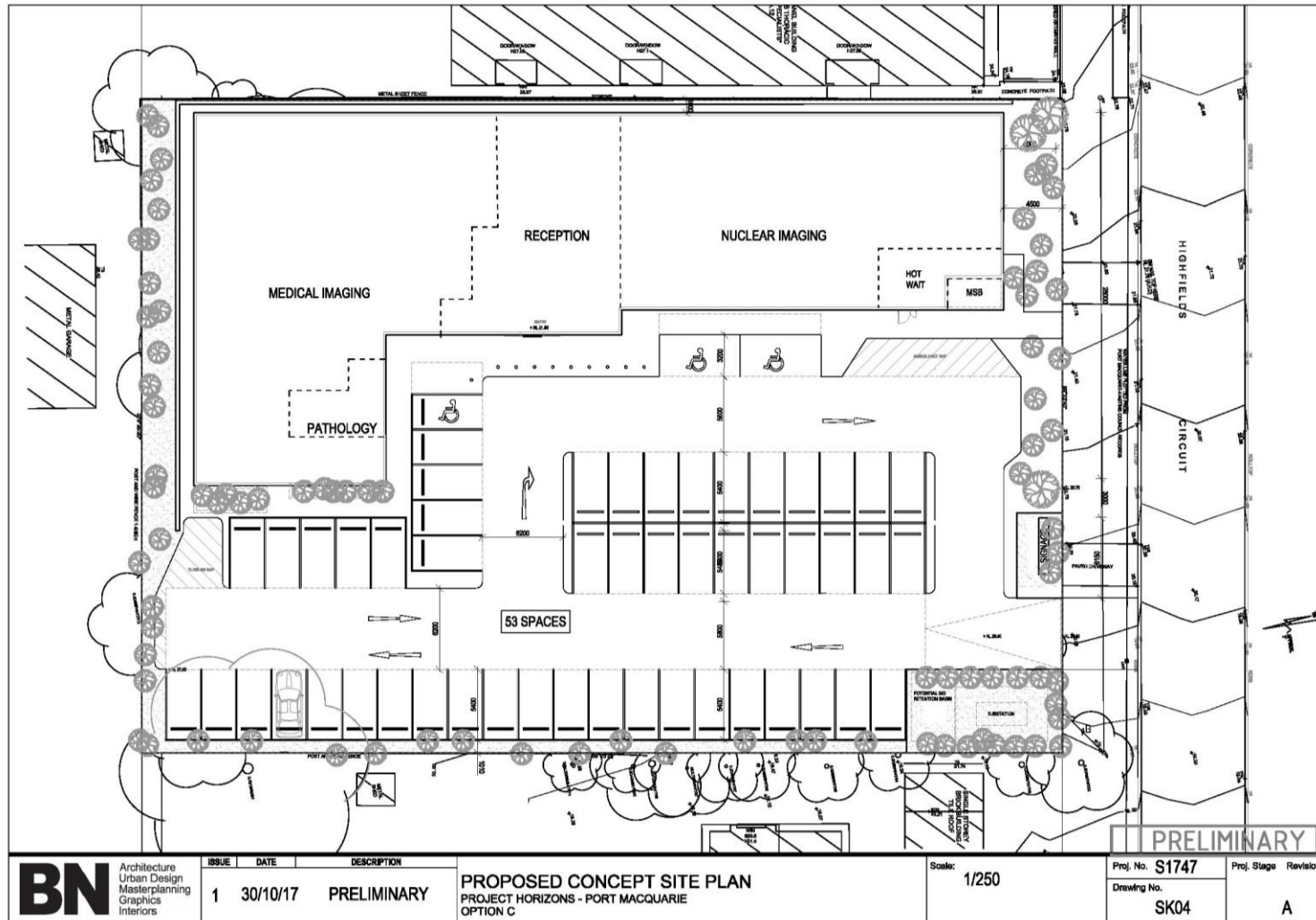




Figure 2: Proposed development layout





3.0 Methods

3.1. Desktop Study and Literature Review

A desktop study was carried out prior to the field survey to gather relevant information and data. The following databases and Geographic Information System (GIS) layers were searched/obtained:

- Department of Environment and Energy Protected Matters Search Tool (DEE 2017).
- Office of Environment and Heritage NSW Atlas of Wildlife (OEH 2017a).
- NSW Biodiversity Value Map (OEH 2017b).
- Port Macquarie LGA Vegetation Communities and EECs digital data layer (Biolink 2013).
- Coastal Quaternary Geology – North and South Coast of NSW digital data layer (Troedson & Hashimoto 2008).

The following literature was reviewed:

- Ecological Due Diligence Assessment of 14 Highfields Circuit, Port Macquarie (Naturecall 2017).
- Arboricultural Impact Assessment, 14 Highfields Circuit, Port Macquarie (Woodvale 2017).
- ERM (2012). Port Macquarie Base Hospital Redevelopment Ecological Assessment.
- Darkheart (2013). Ecological Impact Assessment for Proposed Medical Facility on 22 and 20 Highfields Circuit, Port Macquarie.
- Darkheart (2012). SEPP 44 Koala Plan of Management for UNSW School of Rural Health Port Macquarie Campus.

3.2. Flora Survey

The flora survey consisted of three main components:

- Identification, description and mapping of the major vegetation communities on the site.
- Identification, mapping and condition assessment of any Endangered Ecological Communities (EEC) listed under Schedule 2 of the *Biodiversity Conservation Act 2016* (BC Act), and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Searches for threatened species listed under the Schedule 1 of the BC Act and the EPBC Act.



3.2.1. Vegetation Classification and Mapping

3.2.1.1. Data review

Existing vegetation mapping of the subject site produced by Biolink (2013a) was initially reviewed as part of preliminary scoping. This mapping was also used to identify vegetation types and potential Threatened Ecological Communities (TEC) present on the subject site to assist with the survey and identify areas which required further investigation.

3.2.1.2. Survey Methodology

Vegetation communities were sampled by walking random meander transects over the subject site and study area.

The vegetation communities were described from data collected during random meander transect studies. The vegetation classification is based on the NSW Plant Community Type (PCT) Classification.

Plant species were identified to species or subspecies level and nomenclature conforms to that currently recognized by the Royal Botanic Gardens and follows Harden and PlantNET for changes since Harden.

Identification of possible EECs was based on the data collected in the survey and review of the relevant listings on the Office of Environment and Heritage (OEH) website (www.environment.nsw.gov.au) and Department of Environment and Energy– MNES SPRAT website (DEE 2017).

3.2.2. Threatened Flora Species Searches and Occurrence Assessment

3.2.2.1. Searches

Searches for the locally recorded threatened flora recorded in the Local Government Area (LGA) and regionally (OEH 2017a, DEE 2016) in similar habitats to those occurring on the subject site were carried out over the survey period.

Threatened plant searches consisted of undertaking random meanders throughout the subject site for locally and regionally recorded threatened species as part of the overall vegetation survey. Given the small site area, this allowed a thorough search of its entire extent.

3.2.2.2. Potential Occurrence Assessment

Potential occurrence assessment of threatened flora species is provided in Section 4.2.2. This section assesses threatened species for their potential to occur on subject site.



3.3. Fauna Survey

A survey was undertaken by a Principal Ecologist and Ecologist under Naturecall's scientific license and animal research authority. The methods per survey measure are detailed below.

3.3.1. Habitat Evaluation

This was the main survey method employed to assess the suitability of the subject site habitats for threatened species recorded in the locality, or in broadly similar habitats in the region.

Habitats on and adjacent to the subject site were defined and assessed according to parameters such as:

- Structural and floristic characteristics of the vegetation e.g. understorey type and development, crown depth, groundcover density, etc.
- Degree and extent of disturbance e.g. fire, logging, weed invasion, modification to structure and diversity, etc.
- Presence of water in any form e.g. rivers, dams, creeks, drainage lines, soaks.
- Size and abundance of hollows and fallen timber.
- Availability of shelter e.g. rocks, logs, hollows, undergrowth.
- Wildlife corridors, refuges and proximate habitat types.
- Presence of mistletoe, nectar, gum, seed, sap, etc. sources.

This information is considered for evaluation of the potential occurrence of threatened species on or adjacent to the subject site based on cited ecology and personal experience/knowledge of the species.

3.3.2. Direct Observation

This involved passive and active observation of any fauna on or directly adjacent to the subject site during survey activities. Birds and reptiles were the main focus as those considered likely to be present on or near the site are generally most active diurnally. A total of two hours was spent on this activity over a single day.

3.3.3. Secondary Evidence/Habitat Searches

Physical habitat searches involved lifting up of any timber, rocks and debris, and inspection of dense vegetation and leaf litter for frogs and reptiles; binocular inspection of trees; searches for nests; and searches for scats, owl regurgitation pellets, tracks and scratches. A total of one hour was spent on habitat and secondary evidence searches.



3.3.4. Koala Food Tree Survey

All primary Koala food trees listed under the PMHC Development Control Plan 2013 (DCP) were identified on site, marked with orange flagging tape and assigned an identifier number with white spray paint.



4.0 Results

4.1. Desktop Search Results

4.1.1. Locally Recorded Threatened Species

The following table lists the threatened flora and fauna species identified in database and literature searches.

Table 1: Locally recorded threatened species

Common Name	Scientific Name	BC Act ¹	EPBC Act ²	Source
Flora				
Scented Acronychia	<i>Acronychia littoralis</i>	E	E	OEH Bionet
Trailing Woodruff	<i>Asperula asthenes</i>	V	-	OEH Bionet Naturecall 2016a
Dwarf Heath Casuarina	<i>Allocasuarina defungens</i>	E	E	OEH Bionet
Bailey's Cypress Pine	<i>Callitris baileyi</i>	E	-	OEH Bionet
Sand Spurge	<i>Chamaesyce psammogeton</i>	E	-	OEH Bionet
White-flowered Wax Plant	<i>Cynanchum elegans</i>	E	E	OEH Bionet
Spider Orchid	<i>Dendrobium melaleucaphilum</i>	E	-	OEH Bionet
Narrow-leaved Black Peppermint	<i>Eucalyptus nicholii</i>	E	-	OEH Bionet
Wallangarra White Gum	<i>Eucalyptus scoparia</i>	E	V	OEH Bionet
Slender Screw Fern	<i>Lindsaea incisa</i>	E	-	Naturecall 2017b
Slender Marsdenia	<i>Marsdenia longiloba</i>	E	V	Naturecall 2016b
-	<i>Maundia triglochinoides</i>	V	-	OEH Bionet Naturecall 2016a
Biconvex Paperbark	<i>Melaleuca biconvexa</i>	V	V	OEH Bionet
Grove's Paperbark	<i>Melaleuca groveana</i>	V	-	OEH Bionet
Red-flowered King of the	<i>Oberonia titania</i>	E	-	OEH Bionet



Common Name	Scientific Name	BC Act ¹	EPBC Act ²	Source
Fairies				
Brown Fairy-chain Orchid	<i>Peristeranthus hillii</i>	V	-	OEH Bionet
Rainforest Cassia	<i>Senna acclinis</i>	E	-	OEH Bionet
Silverbush	<i>Sophora tomentosa</i>	E	-	OEH Bionet
Fauna				
Mammals				
Rufous Bettong	<i>Aepyprymnus rufescens</i>	V	-	OEH Bionet
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	V	OEH Bionet
Hoary Wattled bat	<i>Chalinolobus nigrogriseus</i>	V	-	OEH Bionet
Spotted-Tailed Quoll	<i>Dasyurus maculatus</i>	V	E	OEH Bionet
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-	OEH Bionet
Little Bent-Wing Bat	<i>Miniopterus australis</i>	V	-	OEH Bionet
Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	V	-	OEH Bionet
Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	V	-	OEH Bionet
Southern Myotis	<i>Myotis macropus</i>	V	-	OEH Bionet
Greater Glider	<i>Petauroides volans</i>	-	V	OEH Bionet
Yellow-Bellied Glider	<i>Petaurus australis</i>	V	-	OEH Bionet
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	-	OEH Bionet Darkheart 2013
Brushtailed Phascogale	<i>Phascogale tapoatafa</i>	V	-	OEH Bionet
Koala	<i>Phascolarctos cinereus</i>	V	V	OEH Bionet Darkheart 2013 Naturecall 2017b
Common Planigale	<i>Planigale maculata</i>	V	-	OEH Bionet
Eastern Chestnut Mouse	<i>Pseudomys</i>	V	-	OEH Bionet



Common Name	Scientific Name	BC Act ¹	EPBC Act ²	Source
	<i>gracilicaudatus</i>			
Grey Headed Flying Fox	<i>Pteropus poliocephalus</i>	V	V	OEH Bionet
Yellow-Bellied Sheath-tail Bat	<i>Saccolaimus flaviventris</i>	V	-	OEH Bionet
Greater Broad-Nosed Bat	<i>Scoteanax rueppellii</i>	V	-	OEH Bionet
Eastern Blossom Bat	<i>Syconycteris australis</i>	V	-	OEH Bionet
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	V	-	OEH Bionet
Birds				
Magpie Goose	<i>Anseranas semipalmata</i>	V	-	OEH Bionet
Regent Honeyeater	<i>Anthochaera phrygia</i>	E	E	OEH Bionet
Dusky Woodswallow	<i>Artamus cyanopterus</i> <i>cyanopterus</i>	V	-	OEH Bionet
Australasian Bittern	<i>Botaurus poiciloptilus</i>	V	E	OEH Bionet
Bush-Stone Curlew	<i>Burhinus grallarius</i>	E	-	OEH Bionet
Glossy Black Cockatoo	<i>Calyptorhynchus lathami</i>	V	-	OEH Bionet
Spotted Harrier	<i>Circus assimilis</i>	V	-	OEH Bionet
Brown Treecreeper	<i>Climacteris picumnus</i>	V	-	OEH Bionet
Barred Cuckoo Shrike	<i>Coracina lineata</i>	V	-	OEH Bionet
Varied Sittella	<i>Daphoenositta chrysoptera</i>	V	-	OEH Bionet
Jabiru/Black Necked Stork	<i>Ephippiorhynchus asiaticus</i>	V	-	OEH Bionet
Beach Stone-curlew	<i>Esacus magnirostris</i>	E	-	OEH Bionet
Little Lorikeet	<i>Glossopsitta pusilla</i>	V	-	OEH Bionet Naturecall 2017b
Brolga	<i>Grus rubicunda</i>	V	-	OEH Bionet
White-Bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	V	-	OEH Bionet
Little Eagle	<i>Hieraaetus morphnoides</i>	V	-	OEH Bionet



Common Name	Scientific Name	BC Act ¹	EPBC Act ²	Source
Black Bittern	<i>Ixobrychus flavicollis</i>	V	-	OEH Bionet
Swift Parrot	<i>Lathamus discolor</i>	E	E	OEH Bionet
Square-Tailed Kite	<i>Lophoictinia isura</i>	V	-	OEH Bionet
Powerful Owl	<i>Ninox strenua</i>	V	-	OEH Bionet Naturecall 2017b
Blue-Billed Duck	<i>Oxyura australis</i>	V	-	OEH Bionet
Eastern Osprey	<i>Pandion haliaetus</i>	V	-	OEH Bionet
Scarlet Robin	<i>Petroica boodang</i>	V	-	OEH Bionet
Wompoo Fruit Dove	<i>Ptilinopus magnificus</i>	V	-	OEH Bionet
Rose-Crowned Fruit Dove	<i>Ptilinopus regina</i>	V	-	OEH Bionet
Freckled Duck	<i>Stictonetta naevosa</i>	V	-	OEH Bionet
Grass Owl	<i>Tyto capensis</i>	V	-	OEH Bionet
Masked Owl	<i>Tyto novaehollandiae</i>	V	-	OEH Bionet
Amphibians				
Wallum Froglet	<i>Crinia tinnula</i>	V	-	OEH Bionet
Green and Golden Bell Frog	<i>Litoria aurea</i>	E	V	OEH Bionet
Green-thighed Frog	<i>Litoria brevipalmata</i>	V	-	OEH Bionet

Key: E – Endangered, V – Vulnerable

¹ Biodiversity Conservation Act 2016

² Environmental Protection and Biodiversity Conservation Act



The following species are considered likely to occur in the locality due to suitable habitat and regional records (some have been recorded within 20km).

Table 2: List of species with potential to occur in the locality

Common Name	Scientific Name	BC Act	EPBC Act
Flame Robin	<i>Petroica phoenicea</i>	V	-
Black-chinned Honeyeater	<i>Melithreptus gularis gularis</i>	V	-
Eastern Ground Parrot	<i>Pezoporus wallicus wallicus</i>	V	-
Barking Owl	<i>Ninox connivens</i>	V	-
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	-	V
Eastern Pygmy Possum	<i>Cercartetus nanus</i>	V	-
Golden-tipped Bat	<i>Kerivoula papuensis</i>	V	-

4.1.2. Matters of National Environmental Significance

The results of the MNES search are provided in Table 3. The search was undertaken using a 10km search radius from the subject site. See Appendix 4 for the full report.

Table 3: Matters of State Environmental Significance search results

Category	Result	Description
World Heritage Properties	No	-
National Heritage Places	No	-
Wetlands of International Importance	No	-
Great Barrier Reef Marine Park	No	-
Commonwealth Marine Area	No	-
Listed Threatened Ecological Communities	3	Three listed threatened ecological communities are listed as likely to occur within the area.
Listed Threatened Species	66	Species or species habitat known/likely/may occur within the area.
Listed Migratory Species	60	Migratory wetland, terrestrial and marine species or species habitat known/likely/may occur within the area
Other matters protected by the EPBC Act		



Category	Result	Description
Commonwealth Land	6	Refer to full report in Appendix 4
Commonwealth Heritage Places	No	-
Listed Marine Species	90	Species or species habitat known/likely/may occur within the area.
Whales and other Cetaceans	12	Species or species habitat known/likely/may occur within the area.
Critical Habitats	No	-
Commonwealth Reserves Terrestrial	No	-
Commonwealth Reserves Marine	No	-

4.2. Flora Survey Results

4.2.1. Site Vegetation Communities

The vegetation over most of the subject site consists of planted ornamental trees including Oleander, various palm trees, Port Wine Magnolia, Lilly Pilly, Bottlebrush, Grevilleas and Macadamia trees (Photo 2). The groundcover vegetation is characterised by mowed lawn which consists of a mix of native and exotic herbs and grasses including Couch, Native Violet, Common Paspalum, Lambs Tongue, Quaking Grass and Kidney Weed.

Some native canopy trees are located in the south of the site (Photo 3). These comprise two Grey Ironbark (*Eucalyptus siderophloia*), one Tallowwood (*Eucalyptus microcorys*) and two Pink Bloodwood (*Corymbia intermedia*), and one Narrow-leaved Black Peppermint (*Eucalyptus nicholii*). It is noted that *E. nicholii* is a threatened tree species in its native range in the New England Tablelands. The subject site specimen has been planted as an ornamental tree and is not a threatened species.

Existing LGA wide vegetation mapping (Biolink 2013a) has mapped some of the vegetation in the south of the subject site as Blackbutt Shrubby Moist Forest (Figure 3). This community is also mapped in the south of the adjacent Lot to the east.

The subject site inspection found that the few scattered trees on the site would be unlikely to conform to this vegetation community given the structure (isolated canopy trees with no native understorey or groundcover vegetation) and that very few native species are present.

The site photos below illustrate the vegetation present over the site. A flora species list is provided in Appendix 2.



Photo 2: Vegetation in the south of the site



Photo 3: Vegetation in the north of the site





Figure 3: PMHC vegetation communities





4.2.2. Threatened Flora

4.2.2.1. Results of Threatened Flora Survey

No threatened plants were recorded on the subject site.

4.2.2.2. Potential Occurrence Assessment

Searches of relevant literature and databases (OEH 2017a) found records of 18 threatened flora species in the locality. These species are individually assessed in Appendix 1 for their potential to occur on site.

Given that no threatened flora species were detected during this survey or surveys of land nearby, it is considered highly unlikely that any such species would occur on the subject site. Thus no threatened flora species are considered in the subsequent statutory assessments.

4.2.3. Endangered Ecological Communities and Endangered Populations

The vegetation on the subject site, as described above, is in a very modified state with few native species present. It does not meet the floristic or geomorphological criteria of any EEC listed under the BC Act or any Threatened Ecological Community (TEC) listed under the EPBC Act.

There are no listed endangered flora populations known to occur within the area.

4.3. Fauna Survey Results

4.3.1. Habitat Evaluation, Corridors and Linkages

The following table summarises the habitat evaluation results and comments on regional/local corridors and habitat linkages. The OEH mapped key habitats and corridors in relation to the subject site are shown in Figure 4.

Table 4: Summary of site habitat values

Habitat/ Attribute Type	Site/Study Area	Potential Values to Threatened Species Occurrence
Groundcover	The majority of the site comprises a regularly maintained dense cover of native and exotic grasses and herbs.	Maintained groundcover may provide cover for common species only.
Leaf litter	Sparse overall with some accumulations under canopy trees.	No significance for any threatened species.
Logs and debris	Regularly maintained ground cover contains only minor woody debris accumulations under some trees. None of these debris are considered to have hollow bearing potential.	Temporary habitat for common ground and mid story perching birds and reptiles.



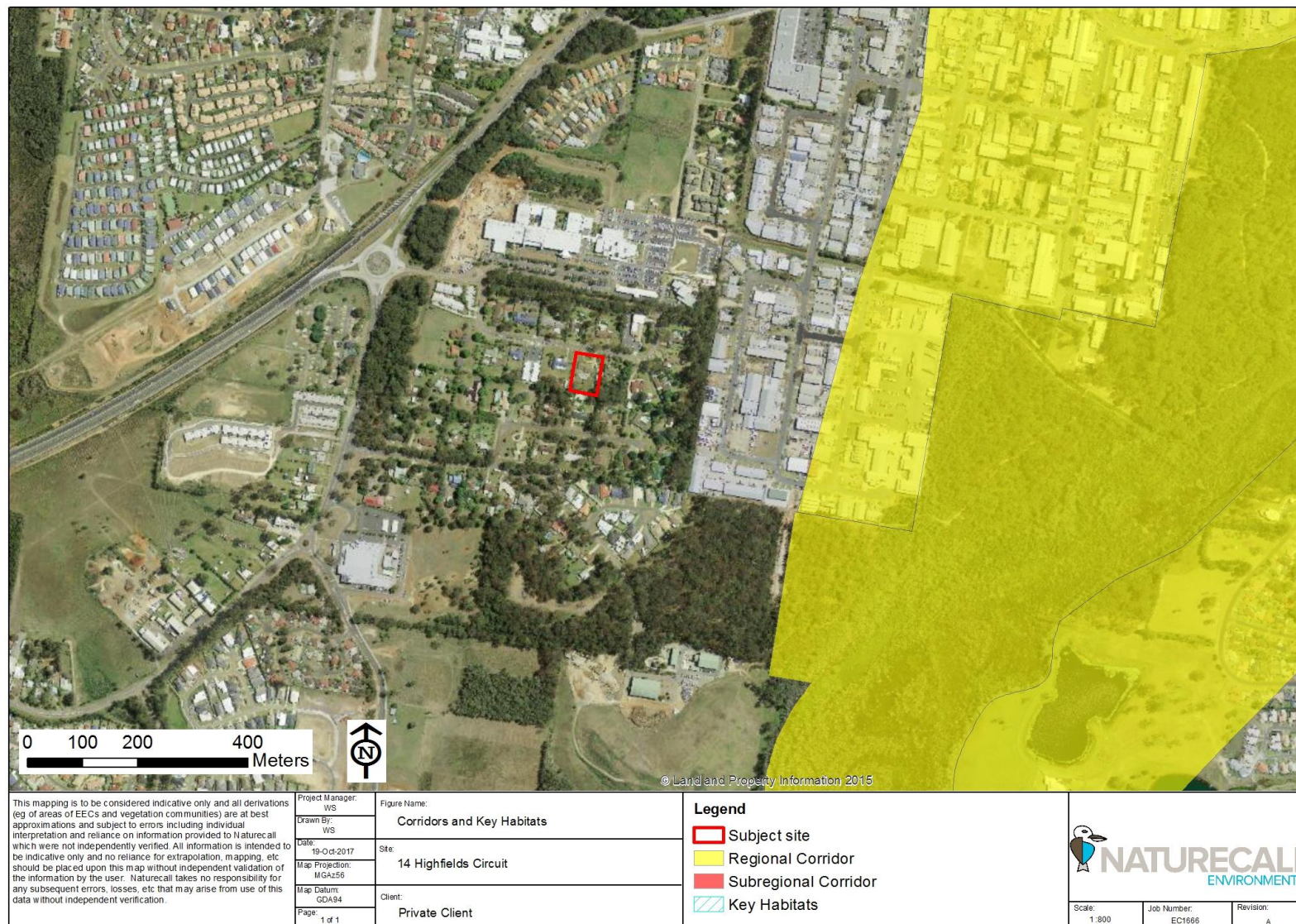
Habitat/ Attribute Type	Site/Study Area	Potential Values to Threatened Species Occurrence
Hollows	Absent	Absence of hollows on site is a critical habitat limitation for hollow-obligate fauna species.
Nectar Sources	Canopy trees on site only likely to provide a spring-summer nectar source. A few flowering shrubs such as Grevilleas and Bottlebrush occur on the site.	Minor potential nectar source for the Grey-headed Flying Fox and Squirrel Glider.
Sap and gum sources	All species present offer potential sap sources, with Bloodwoods being a preferred species.	Site contains a sap resource for the threatened Squirrel Glider. No sap incisions noted during site survey.
Primary preferred Koala browse trees	The site contains one Tallowwood which is a preferred Koala food tree. Tallowwood also occur on adjoining properties to the south and east.	Site contains a very minor foraging resource for Koalas. Old Koala scats were found under a large Ironbark tree on site. Fresh Koala scats were found on the eastern boundary of the site which were from a Koala foraging in trees on the adjoining Lot.
Allocasuarinas	Absent	No foraging resource for Glossy Black Cockatoo.
Aquatic/wetland habitats	Small artificial pond occurs at the rear of the Lot with exotic wetland plants.	Would contain potential habitat for common frogs. No habitat for threatened species.
Fruiting species	A few planted ornamental trees which contain fruit are present on site such as Lilly Pilly.	Lack of potential foraging resources for threatened frugivores such as Wompoo Fruit-dove, Rose-crowned Fruit-dove, Barred Cuckoo Shrike and the Grey Headed Flying Fox.
Caves, cliffs, overhangs, culverts, bridges	Absent on site	Absence of roosts for obligate Microbats.
Small terrestrial prey	Common dasyurids and rodents such as Black Rat and Bush Rat plus House Mouse most likely to form main prey base.	Site may form part of the foraging range of the Square-tailed Kite.
Corridors	Figure 4 shows that the site does not fall within a mapped corridor	N/A



Habitat/ Attribute Type	Site/Study Area	Potential Values to Threatened Species Occurrence
Habitat Linkages	<p>Given the limited vegetation on site, it has poor linkages to adjacent habitat. Adjoining vegetation is located on Lots to the south and east of the site and the mature trees on site may facilitate some linkage between these areas.</p> <p>Lack of understory vegetation is a limitation for small terrestrial species.</p>	<p>Clearings on site would pose a barrier for small terrestrials dependant on continuous cover (e.g. Common Planigale, Eastern Chestnut Mouse) and gap shy birds such as the Varied Sittella.</p> <p>Arboreal species such as the Squirrel Glider and Koala would be able to access the site vegetation.</p> <p>Highly mobile species (e.g. birds and bats) would be able to move freely through the site.</p>
Key Habitat	As seen in Figure 4, the site is not mapped as Key Habitat by OEH.	N/A



Figure 4: OEH Key Habitats and Corridors





4.3.2. Observed/Detected Fauna

Only common medium sized woodland birds and urban birds were observed on and adjacent to the survey area. These included Laughing Kookaburra, Spotted Dove, Rainbow Lorikeet, Magpie and Noisy Miners.

Grass Skinks were common on site amongst leaf litter and in gardens. Diggings and scats indicative of feral rabbits were common on the site and a rabbit was observed in the front yard. Minimal scratching was detected on most trees, but detection was limited by the dominance of rough-barked species. No incisions indicative of gliders were observed on the Bloodwoods on site.

Scat searches undertaken over the site found Koala scats in the southeast corner of the site. These were from overhanging Tallowwoods on the adjacent Lot to the east. A few old Koala scats were also found under the large Ironbark tree on site.

The following table shows the full fauna list recorded by this survey in the study area:

Table 5: Fauna species recorded on the site

Group	Common Name	Species	Detection Method
Mammals	Koala	<i>Phascolarctos cinereus</i>	Scats
	Rabbit	<i>Oryctolagus cuniculus</i>	Obs, scats
	Red-necked Wallaby	<i>Macropus rufogriseus</i>	Scats
Birds	Australian Magpie	<i>Cracticus tibicen</i>	Obs, HC
	Spotted Dove	<i>Spilopelia chinensis</i>	Obs
	Galah	<i>Eolophus roseicapilla</i>	Obs
	Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Obs
	Noisy Miner	<i>Manorina melanocephala</i>	Obs, HC
	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Obs, HC
Amphibians	Bleating Tree Frog	<i>Litoria dentate</i>	HC
Reptiles	Garden Skink	<i>Lampropholis delicata</i>	Obs
Observation Key: Obs – Observation; HC – heard calling Bold: Vulnerable under BC Act and EPBC Act			



4.4. Potential Occurrence Assessment

Each of the species listed below in Table 6 have been evaluated for their potential to occur on the subject site/study area, as well as for the likely significance of the proposed development and thus their eligibility for the Test of Significance and MNES assessment, in Appendix 1. From this assessment, the following species are known or considered to potentially use the site and/or the study area:

Table 6: Threatened species potentially occurring in the study area

Species	Occurrence Type	Occurrence Likelihood
Squirrel Glider	Marginal potential foraging habitat.	Low chance of occurrence using site and study area as small part of foraging range.
Square-tailed Kite	Minute portion of large foraging territory.	Moderate chance as infrequent fly-over.
Grey-headed Flying Fox	Generic potential foraging habitat.	Very high – suitable foraging habitat on site and recorded nearby.
Little and Eastern Bent-wing Bats East-coast Freetail Bat Greater Broad-nosed Bat	Foraging over site as minute part of non-breeding range.	Fair to moderate using study area as part of local foraging movements.



5.0 Impact of the Proposal

5.1. Direct Impacts

As mentioned previously, the proposal is to construct a medical centre on the subject site. This will comprise a single storey building, car park and landscaping.

Establishment of these structures will involve the following removal and/or modifications of habitat as follows:

- *Removal of native trees.* Two Ironbarks, two Bloodwoods will be removed. None of these were found to contain hollows and they are not primary Koala food trees. Ornamental plantings on the site will also be removed, which includes *Eucalyptus nicholii*, a supplementary Koala food tree.
- *Topographical modification:* Cutting and filling is required to provide a level/suitable building site.

There is potential to replace habitat that would be lost for the development via using native plant species for landscaping. This would provide amenity for users and attract native wildlife.

5.2. Indirect Impacts

The following potential indirect impacts may be associated with the proposal:

- Injury/mortality during clearing:*** No hollow-bearing trees occur on site. As such, the potential for fauna injury/mortality as a result of the proposal is low.
- Edge effects:*** The proposal will have limited impacts related to forest edge effects as the site vegetation is very open and clearings already occur on adjoining land.
- Fencing:*** Fences have potential to obstruct the movement of threatened fauna across the site. The current fencing enclosing the site will remain however internal fences will be removed. Any additional or new fencing should be Koala friendly and not pose any barrier.
- Erosion and sedimentation:*** Standard mechanisms and controls should ensure the prevention of erosion and sedimentation during construction and post-development and such impacts do not extend beyond the development footprint.
- Noise and vibration:*** The construction phase is unlikely to significantly increase noise levels beyond that which already occurs in the study area and will be diurnal only. Beyond the construction phase, noise levels will be typical of a residential area.
- Artificial Lighting:*** Exterior lighting may be required for the medical centre. This can have negative effects on native fauna if it is directed into adjacent vegetation. It is recommended that any exterior lighting proposed is sensor based and not directed into adjoining vegetation to the east.



- g) *Introduction of feral and domestic predators:*** The proposal will not involve the introduction of any new species to the site which may prey on native wildlife.



6.0 PMHC DCP Compliance Assessment

Under the Port Macquarie-Hastings Council Local Environmental Plan (PMHC LEP) 2010, Council has prepared and implemented the PMHC Development Control Plan (DCP) 2013. The DCP has a specific section titled Environmental Management. This section has relevant provisions for Koala food trees.

6.1. Koala Food Trees

The Port Macquarie Hastings Council Development Control Plan 2013 states that the removal of any Koala browse tree species is to be replaced at a ratio of 2:1 on site.

There is one Primary Koala food tree (KFT) on site, the details of which are provide in Table 7 below (this tree is identified as tree 11 in the arborist report). The location of this tree is shown in Figure 5.

Table 7: Details of primary Koala food tree on site

Number	Species	Approx height (m)	Approx DBH (cm)	Easting	Northing
KFT 1	Tallowwood	13	28	488502	6519979

As per the DCP, if this tree is removed for future development, two Koala food trees must be planted on site or at an offsite location subject to negotiation with Council. Given that this tree is on the site boundary and is only small in size, it can be retained and no offsets are required.

It is important to note that a supplementary Koala food tree (*Eucalyptus nicholii*) occurs on site and will be removed for future development. The site specimen has been planted as an ornamental tree and does not require offsets as has poor form and low forage values for Koala.



Figure 5: Location of Koala Food Tree

Note: Locations are approximate and subject to GPS limitations





7.0 Biodiversity Conservation Act 2016 Assessment

7.1. Assessment Pathway

Under the NSW *Biodiversity Conservation Act 2016* and *Biodiversity Conservation Regulation 2017*, Part 4 developments under the *Environmental Planning & Assessment Act 1979* (other than State Significant Development) are assessed through the following process:

- For developments in which the impact exceeds the clearing threshold, will impact any area mapped on the Biodiversity Value Map or impact on an area of Outstanding Biodiversity Value, a Biodiversity Development Assessment Report (BDAR) will be required. This assesses the impact using the Biodiversity Assessment Method (BAM) and determines the offset obligations required. Offsets can be met through several options including:
 - Purchase and retirement of biodiversity credits from the open market
 - Establish a biodiversity stewardship site and create credits via managing the land for conservation in perpetuity
 - Pay an amount of money into the newly established Biodiversity Conservation Trust who will source credits on behalf of the proponent
- Developments which fall below the clearing threshold and do not impact on sensitive biodiversity values must be assessed under the new five part test of significance (replacing the former seven part test). If the test determines that a significant impact is likely, a BDAR or Species Impact Statement will be required. There is no offset obligation for Part 4 developments which fall below the threshold and/or are unlikely to have a significant impact on threatened species and ecological communities.

The table below provides an assessment to determine if a BDAR is required.

Table 8: Assessment of BDAR requirement

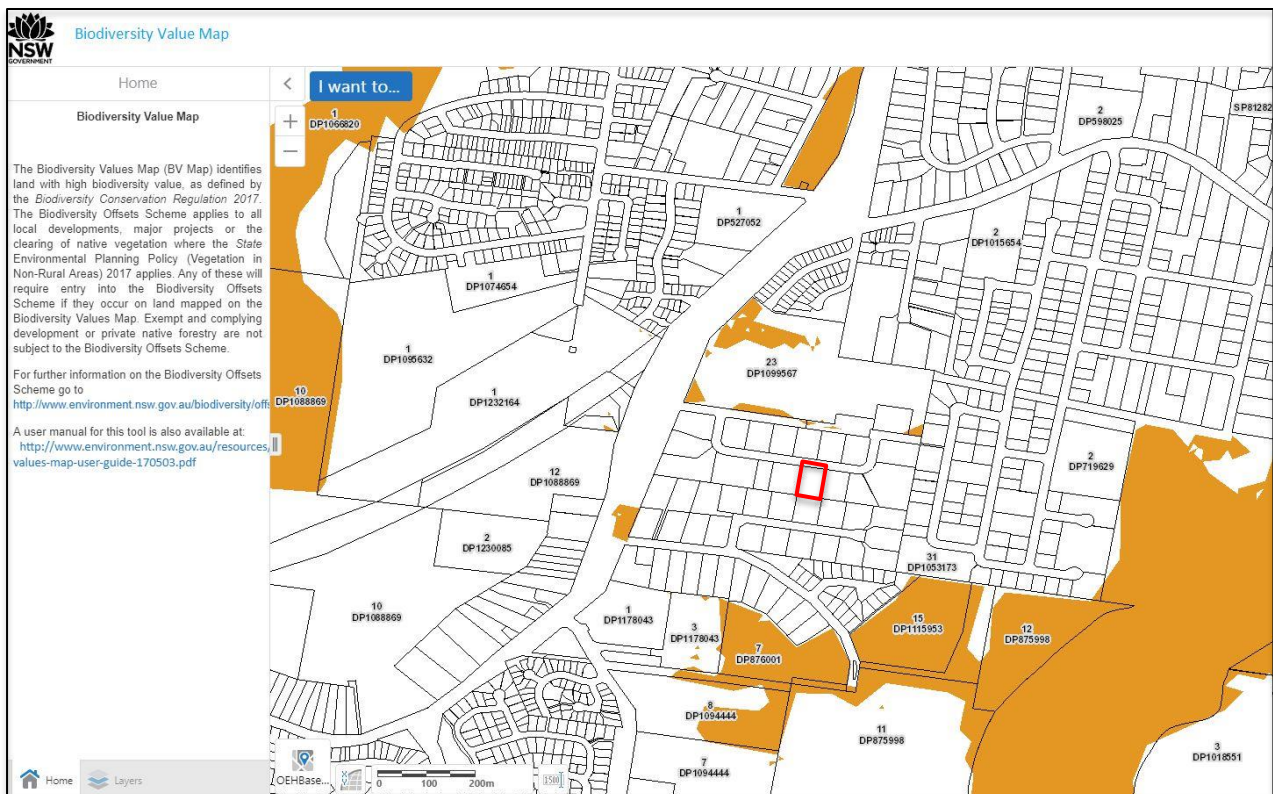
Criteria	Response
Will the development require clearing of native vegetation?	Yes
Has the development been granted Biodiversity Certification?	No
Is the development considered State Significant Infrastructure?	No
Does the development affect an area mapped in the NSW Biodiversity Values Map?	No – refer to Figure 6
Minimum lot size on which the development is	<1ha



located.	
Will the development require the removal of >0.25ha of vegetation?	No – five native trees to be removed
Result	BDAR not required

The above assessment has determined that a DBAR is not required for the proposal. The next stage of the assessment which determines whether is likely to have a significant effect threatened species or ecological communities is provided below.

Figure 6: Biodiversity value map



7.2. Test of Significance

The Test of Significance is prescribed in Part 7, Division 1, Section 7.2 of the *Biodiversity Conservation Act 2016*. The purpose of the Test of Significance is to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

If it is determined that a development or activity will have a significant effect, a Species Impact Statement or Biodiversity Development Assessment Report will be required.



7.2.1. Entities to be Assessed

The Koala was recorded on the site and is subject to the Test of Significance. The potential occurrence assessment in Appendix 1 has determined that the following species are considered to be potentially occurring in the study area and are subject to the Test of Significance:

- Squirrel Glider
- Grey-headed Flying Fox
- Little and Eastern Bent-wing Bat
- Greater Broad-nosed Bat
- East Coast Freetail Bat
- Square-tailed Kite

7.2.2. Responses

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

The proposed development is for a medical centre to be established over the subject site. This will involve the removal of a handful of native eucalypt trees which are located in the south of the site and other ornamental landscaping trees. There is some potential for minor indirect impacts such as noise and artificial lighting.

While the habitats present on the subject site may provide some seasonal foraging resources for the subject species, it would not comprise any significant extent foraging habitat or be capable of supporting breeding. As such, removal of this habitat would be highly unlikely to place a viable population of the subject species at risk of extinction.

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

- i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
- ii. Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

No EECs occur in the study area.

c) In relation to the habitat of a threatened species or ecological community:

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



- ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**
- iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**

The proposal will result in the removal of four native trees comprising two Bloodwoods and two Ironbarks. No other habitat features such as hollow-bearing trees, habitat logs or aquatic habitats will be removed.

The trees to be removed may provide local connectivity for species such as the Koala and Squirrel Glider and removal of these trees will lead to a minor reduction in connectivity for these arboreal species. Given that large eucalypts occur on surrounding properties to the east and south, and that landscaping plantings will be established on site, no areas of habitat will become isolated as a result of the proposal.

The site offers known/potential habitat for several threatened fauna species. However given the extent of modification and limitations of the site habitats, these species would be reliant on adjacent and nearby habitats to fulfil their lifecycle requirements and the site would not be of any key importance.

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

The proposed development will not directly or indirectly affect an area of outstanding biodiversity value.

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

A Key Threatening Process (KTP) is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities.

The following table lists all of the current KTP's listed under the BC Act and whether the proposed activity is recognised a threatening process.

Table 9: Contribution to Key Threatening Processes

Key Threatening Processes	Will Proposal Affect KTP
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners <i>Manorina melanoccephala</i>	No
Alteration of habitat following subsidence due to longwall mining	No
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	No
Anthropogenic Climate Change	Yes – vegetation removal and greenhouse gasses



	generated by machinery used during construction
Bushrock removal	No
Clearing of native vegetation	Yes – minor extent of native vegetation to be removed. Can potentially be offset through using native trees in landscaping
Competition and grazing by the feral European Rabbit, <i>Oryctolagus cuniculus</i>	No
Competition and habitat degradation by Feral Goats, <i>Capra hircus</i>	No
Competition from feral honey bees, <i>Apis mellifera</i>	No
Death or injury to marine species following capture in shark control programs on ocean beaches	No
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	No
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	No
Herbivory and environmental degradation caused by feral deer	No
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	No
Importation of Red Imported Fire Ants <i>Solenopsis invicta</i>	No
Infection by <i>Psittacine Circoviral</i> (beak and feather) Disease affecting endangered <i>psittacine</i> species and populations	No
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	No
Infection of native plants by <i>Phytophthora cinnamomi</i>	No
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family	No



Myrtaceae	
Introduction of the Large Earth Bumblebee <i>Bombus terrestris</i>	No
Invasion and establishment of exotic vines and scramblers	No
Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)	No
Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)	No
Invasion of native plant communities by <i>African Olive</i> <i>Olea europaea subsp. cuspidata</i> .	No
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>	No
Invasion of native plant communities by exotic perennial grasses	No
Invasion of the Yellow Crazy Ant, <i>Anoplolepis gracilipes</i> into NSW	No
Invasion, establishment and spread of Lantana (<i>Lantana camara</i>)	No
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	No
Loss of Hollow-bearing Trees	No
Loss or degradation (or both) of sites used for hill-topping by butterflies	No
Predation and hybridisation by Feral Dogs, <i>Canis lupus familiaris</i>	No
Predation by <i>Gambusia holbrooki</i> (Plague Minnow or Mosquito Fish)	No
Predation by the European Red Fox <i>Vulpes vulpes</i>	No
Predation by the Feral Cat <i>Felis catus</i>	No
Predation by the Ship Rat <i>Rattus rattus</i> on Lord Howe	No



Island	
Predation, habitat degradation, competition and disease transmission by Feral Pigs, <i>Sus scrofa</i>	No

7.3. Conclusion

The Test of Significance has determined that the proposed development would not result in a significant impact on threatened species or ecological communities. A Species Impact Statement or BDAR is not required for the development proposal.



8.0 EPBC Act 1999 Significance Assessment

8.1. Assessment Summary

The provisions of the EPBC Act require determination of whether the proposal has, will or is likely to have a significant impact on a Matter of National Environmental Significance (MNES). These matters are listed and addressed in summary as follows:

Table 10: Summary of MNES

Category	Relevance	Significant Impact Likely?
World Heritage Properties	The site is not listed as a World Heritage area	N/A
National Heritage Places	The site is not listed as a National Heritage Place	N/A
Wetlands of International Importance	The site does not contain important wetlands	N/A
Great Barrier Reef Marine Park	The proposal does not affect the Great Barrier Reef Marine Park.	N/A
Commonwealth Marine Environment (CME)	The site is not within the CME.	N/A
Listed Threatened Ecological Communities	No listed TEC's occur in the study area or are affected by the proposal	N/A
Listed Threatened Species	The Koala (Vulnerable) was recorded on site and the Grey-Headed Flying Fox (Vulnerable) is considered a potential occurrence	No threatened species is likely to be significantly affected by the proposal as assessed below.
Listed Migratory Species	Several migratory birds are considered potential occurrences	No Migratory species is likely to be significantly affected by the proposal as assessed below.
Nuclear Actions	The proposal is not a nuclear action	N/A
A water resource, in relation to coal seam gas development and large coal mining development	The proposal is not a mining development.	N/A

As shown in the above table, the proposal thus is not considered to require referral to Department of Environment and Energy (DEE) for approval under the EPBC Act.



8.2. Koala Referral Assessment

The habitat on the subject site has been assessed using the Koala habitat assessment tool from the EPBC Act Referral Guidelines (DotE 2014). To qualify as critical habitat, it must score five or more. This is shown in the following table:

Table 11: Koala habitat assessment

Attribute	Score	Reason	
Koala occurrence	2	Desktop	A number of Koala records occur within 2km of the site.
		On-ground	Koala recorded on site via scats.
Vegetation structure and composition	2	Desktop	PMHC vegetation mapping of site shows a small area of Secondary (B) Koala habitat on site.
		On-ground	Site has a few trees which are known to be used by Koalas.
Habitat connectivity	2	Site has a tentative linkage to Lake Innes Nature Reserve which is >500ha.	
Key existing threats	0	Desktop	OEH Bionet has records of Koala road kill in locality.
		On-ground	Domestic dogs in surrounding residential areas would be a high threat to local Koalas. Oxley Highway and John Oxley Drive also pose a risk of road strike.
Recovery value	0	<p>The following factors indicate that it is unlikely that the habitat to be removed is important for achieving the interim recovery objectives for the Koala:</p> <ul style="list-style-type: none">Minimal Koala foraging resources occur on siteRisk of dog attack and car strike in study areaRemoval of site vegetation will not affect movement throughout the regional corridor	
Total	6	Site qualifies as critical habitat.	

As per the Koala habitat assessment tool, the subject site does qualify as critical habitat. An assessment has been undertaken to determine if the proposal will adversely affect this habitat and/or interfere substantially with the recovery of the Koala and require referral to the Minister.

The following table derived from the Koala Referral Guidelines (DotE 2014) assesses whether the proposal is likely to adversely affect habitat critical to the survival of the Koala.



Table 12: Critical habitat assessment

Factor	Y/N	Reason
Does impact area contain habitat critical to the survival of the Koala	Y	Site scores six as per the Koala habitat assessment tool and just qualifies as critical habitat.
Do the areas proposed to be cleared contain known Koala food trees	Y	Habitat to be removed contains trees known to be used by Koalas
Are you proposing to clear ≤ 2 ha of habitat containing known Koala food trees in an area with a habitat score of ≤ 5	Y	Proposal will remove four trees in an area that scores six.
Are you proposing to clear > 20 ha of habitat containing known Koala food trees in an area with a habitat score of ≥ 8	N	Proposal will remove four trees in an area that scores six.
Outcome	Impact unlikely to be significant. Referral to DEE for the Koala is not required.	

8.3. Protected Species Assessments

8.3.1. Grey-headed Flying Fox

8.3.1.1. Factors to Be Considered for Vulnerable Species

The guidelines to assessment of significance to this Matter, define an action is as likely to have a significant impact on a Vulnerable and/or Endangered species, if it will:

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

An *important population* is one that is necessary for a species' long-term recovery. This includes such



populations as:

- Key populations either for breeding or dispersal.
- Populations that are necessary for maintaining genetic diversity, and or:
- Populations that are near the limit of the species range:

8.3.1.2. Assessment of Significance

This section addresses each of the previous points listed.

a) Lead to a long-term decrease in the size of an important population of a species, or:

The proposal will require the removal of a handful of trees from an area of potential foraging habitat. This likely provides an extremely small nectar resource for the population relative to its ecological requirements and local extent of potential habitat. While in very strict terms a negative effect, this loss will have a very low impact on the local Grey-headed Flying Fox population as the site in total would only form a very minute fraction of this species wider opportunistic/seasonally variable foraging range.

The study area is also not a known roost (Eby 2000) and better quality alternative foraging habitat in the locality is evidently extensive. The proposal will thus not lead to a long-term decrease in the size of an important population.

b) Reduce the area of occupancy of an important population, or:

For the Grey-headed Flying Fox, the minor loss of foraging habitat on the subject site is insignificant relative to the area of occupancy which is measured in terms of hundreds of thousands of hectares. Consequently, the proposal only represents a very slight contraction of the marginal fringe of the area of occupancy of the important population.

c) Fragment an existing important population into two or more populations, or:

The Grey-headed Flying Fox is highly mobile and known to be capable of crossing human-modified habitat. The proposal will offer no barrier to movement. Thus it will not fragment an existing important population.

d) Adversely affect habitat critical to the survival of a species, or:

“*Critical habitat*” refers to areas critical to the survival of a species or ecological community may include areas that are necessary for/to:

- Activities such as foraging, breeding, roosting or dispersal
- Succession
- Maintain genetic diversity and long term evolutionary development, or
- Reintroduction of populations or recovery of the species/community.

The vegetation on site is not considered critical habitat for the Grey-headed Flying Fox due to its limited extent and ecology of the species.

e) Disrupt the breeding cycle of an important population or:



The habitat in the site to be removed would not represent potential breeding habitat and its removal would not be capable of disrupting the breeding cycle of this species.

f) Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or:

As detailed previously, the nature of the development and degree of vegetation/habitat loss is not significant enough to affect a population of the subject species to the point it could cause a decline of the species.

g) Result in invasive species, that are harmful (by competition, modification of habitat, or predation) to a Vulnerable species, becoming established in the Vulnerable species' habitat, or:

No new species that affects the Grey-headed Flying Fox is likely to be introduced as a direct result of the proposal.

h) Introduce disease that may cause a species to decline; or

No disease that affects the subject species is likely to be introduced as a direct result of the proposed works.

i) Interferes substantially with the recovery of the species.

As detailed previously, the proposal will result in the removal/modification of a relatively minute area of foraging habitat for the subject fauna species that is not significant enough to interfere with their recovery.

8.3.1.3. Conclusion

The proposal is not considered likely to have a significant impact on the Grey-headed Flying Fox, and thus a referral to DEE is not required.

8.3.2. Migratory Species

No migratory bird species were recorded during the field survey.

The habitats present across the site provide potential habitat for a few listed migratory species such as the Satin Flycatcher, White-throated Needle-tail Swift and Fork-tailed Swift.

These species are collectively assessed below.



8.3.2.1. Factors To Be Considered

The guidelines to assessment of significance to this Matter, define an action as likely to have a significant impact on a migratory species, if it will:

- a) Substantially modify (including fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or;
- b) Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or;
- c) Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species.

An *important area of habitat* is:

- 1) Habitat used by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, or;
- 2) Habitat utilised by a migratory species which is at the limit of the species range, or;
- 3) Habitat within an area where the species is declining.

8.3.2.2. Assessment of Significance

This section addresses each of the previous points listed.

- a) Substantially modify (including fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or;**

The subject site was not considered to be *important habitat* for the migratory species likely to occur there. Overall, the development will displace a minor area of vegetation, resulting in a reduction in the local area of potential habitat. However, the small areas to be altered are unlikely to represent *substantial* modification of such habitat which is abundant elsewhere in the locality.

- b) Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or;**

An invasive species is one that may become established in the habitat and harm the migratory species by direct competition, modification of habitat, or predation. No such invasive species is to be introduced as a result of the proposal.

- c) Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species**

The site is unlikely to be important habitat for migratory species and their lifecycles are unlikely to be disrupted by the proposed development.



9.0 Recommendations

The following are recommended to be included as conditions of consent if the proposal is approved. The conclusions of this assessment assume the measures are implemented and effective in mitigating impacts.

9.1. General Clearing Measures

Any trees to be retained on site must be surveyed and shown on a plan. These trees are to be marked or fenced prior to construction to avoid damage or encroachment into the root zone. All such protective fencing is to be Koala permeable and pose no risk of injury e.g. no exposed wire ends or risk of entanglement

No further clearing is to be undertaken outside of that allowable for the establishment of the medical centre. Any future proposal to remove trees on site will require approval under the Port Macquarie Hastings Council DCP 2013.

9.2. Pre-clearing Survey

The area of clearing work is to be inspected for Koalas and other fauna by a qualified ecologist immediately prior to the commencement of any vegetation removal involving machinery and/or tree felling. If a Koala is present in the proposed clearing envelope, works are to be suspended until the Koala moves along on its own volition. If the Koala is located in a position that a 50m buffer may be established, works may proceed outside this buffer.

9.3. Landscaping

Any landscaping as part of the development is recommended to locate plantings to provide wildlife linkages and use indigenous food tree species for native wildlife.

9.4. External Lighting

External lighting must not result in light spillage on the retained vegetation to the east or south as it can deter arboreal fauna usage (especially Squirrel Gliders) or advantage predators. External lighting should also be minimised or strategic (e.g. sensor-based) around landscaping designed to provide habitat for the same reasons.

9.5. Domestic Animals

Dogs and cats should be prohibited from the site with signage indicating this restriction, excluding medical assistance animals (e.g. guide dogs).



10.0 Conclusion

This report has assessed the impact of establishing a medical centre at 14 Highfields Circuit, Port Macquarie. The subject site comprises a residential Lot with existing dwelling and landscaped gardens. Only a handful of native eucalypts occur at the rear of the Lot and most of these will require removal to establish the development. The primary Koala food tree (Tallowwood) will be retained.

While no threatened flora species or Endangered Ecological Communities were detected on subject site, one threatened fauna species was detected, namely the Koala. A total of seven other threatened fauna species have been identified as having potential to use the site as a small part of a larger range.

Assessment of these species and the species recorded concluded they were unlikely to be significantly impacted by the proposal due to their ecology, the limited vegetation loss associated with the proposal and the mitigation measures proposed. Hence neither a referral to the DEE or a Biodiversity Development Assessment Report/Species Impact Statement is required.



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Appendix 1: Potential Occurrence Assessment and Impact Assessment Eligibility

A1.1 Flora

As mentioned previously (see section 4.2), no threatened flora species were detected on site. Searches of relevant literature and databases (OEH 2017a) found records of 15 threatened for a species within a 10km of the subject site and a number may occur according to the protected matters search tool (DEE 2017). These species are collectively assessed for their potential to occur in the following table:

Table 13: Eligibility for Seven Part Test Assessment – Flora

Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
<i>Acronychia littoralis</i>	E	E	7	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10030	Unlikely potential to occur. Study area lacking preferred habitat of this species.	No
<i>Allocasuarina defungens</i>	E	E	5	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=21924	Unlikely potential to occur. Study area lacking preferred habitat of this species.	No
<i>Arthraxon hispidus</i>	V	V	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=9338	Unlikely potential to occur. Study area lacking preferred habitat of this species.	No
<i>Asperula asthenes</i>	V	V	1	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=14004	Unlikely potential to occur. Study area lacking preferred habitat of this species.	No
<i>Callitris baileyi</i>	E	-	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10131	Site is outside natural range. Specimens in local area are planted.	No



Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
<i>Chamaesyce psammogeton</i>	E	-	4	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10160	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Cryptostylis hunteriana</i>	V	V	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=19533	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Cynanchum elegans</i>	E	E	1	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=12533	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Dendrobium melaleucaphilum</i>	E	-	4	http://www.environment.nsw.gov.au/determinations/DendrobiumMelaleucaphilumAnEpiphyticOrchidEndSpListing.htm	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Eucalyptus nicholii</i>	V	V	5	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=20992	Site is outside natural range. Specimens in local area are planted.	No
<i>Eucalyptus scoparia</i>	E	V	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10315	Site is outside natural range. Specimens in local area are planted.	No
<i>Euphrasia arguta</i>	CE	CE	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=4325	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Lindsaea incisa</i>	E	-	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10482	Site does not contain suitable habitat for this species. Unlikely to occur.	
<i>Macadamia integrifolia</i>	V	V	1	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=7326	Site is outside natural range. Specimens in local area are planted.	No



Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
<i>Marsdenia longiloba</i>	E	V	1	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=2794	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Maundia triglochinos</i>	V	-	10	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10511	Site does not contain suitable habitat for this species. Unlikely to occur.	
<i>Melaleuca biconvexa</i>	V	V	44	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=5583	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Melaleuca groveana</i>	V	-	4	http://www.environment.nsw.gov.au/savingour speciesapp/project.aspx?ProfileID=10516	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Oberonia titania</i>	V	-	3	http://www.environment.nsw.gov.au/determinations/OberoniaTitaniaVulSpListing.htm	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Peristeranthus hillii</i>	V	-	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10868	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Phaius australis</i>	E	E	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=5872	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Senna acclinis</i>	E	-	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10753	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Sophora</i>	E	-	7	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10765	Site does not contain suitable habitat for this species. Unlikely to occur.	No



Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
<i>tomentosa</i>					species. Unlikely to occur.	
<i>Syzygium paniculatum</i>	E	V	0	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10794	Site does not contain suitable habitat for this species. Unlikely to occur.	No
<i>Thesium australe</i>	V	V	2	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=15202	Site does not contain suitable habitat for this species. Unlikely to occur.	No

A1.2 Fauna

A number of threatened and migratory fauna have been recorded in the locality, and a number of others are considered potential occurrences by the consultant. In the table below, these species are evaluated for their potential to occur on the site; significance of the proposal to this potential occurrence; and thus their eligibility/requirement for the Test of Significance/MNES assessment.

Table 14: Eligibility for Test of Significance and MNES Assessment

	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Regent Honeyeater (<i>Anthochaera phrygia</i>)	E	CE	5	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82338	Site does not contain preferred winter flowering eucalypts for this species. Recorded in the locality but unlikely to occur on site.	No
	Swift Parrot (<i>Lathamus discolor</i>)	E	CE, M	7	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=744	Site does not contain preferred winter flowering eucalypts for this species.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
						Recorded in the locality but unlikely to occur on site.	
	Little Lorikeet (<i>Glossopsitta pusilla</i>)	V	-	16	http://www.environment.nsw.gov.au/determinations/littlelorikeetFD.htm	Small extent of potential foraging habitat on site is unlikely to attract the species.	No
	Square-tailed Kite (<i>Lophoictinia isura</i>)	V	-	29	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10495	Records of this species occur nearby and it has the potential to forage over the site as part of its larger territory.	Yes
	Spotted Harrier (<i>Circus assimilis</i>)	V	-	1	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20134	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Little Eagle (<i>Hieraaetus morphnoides</i>)	V	-	2	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20131	Site does not contain preferred foraging habitat and urban context is likely to exclude the species. Unlikely to occur.	No
	Eastern Osprey (<i>Pandion cristatus</i>)	V	M	52	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82411	Site does not contain any foraging habitat, hence unlikely to occur.	No
	White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)	V	M	41	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=943	No foraging habitat on site. Unlikely to occur.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Powerful Owl (<i>Ninox strenua</i>)	V	-	10	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10562	Site does not contain preferred foraging habitat and urban context is likely to exclude the species. Unlikely to occur.	No
	Barking Owl (<i>Ninox connivens</i>)	V	-	0	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10561	As for Powerful Owl. Unlikely to occur.	No
	Masked Owl (<i>Tyto novaehollandiae</i>)	V	-	15	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10820	As for Powerful Owl. Unlikely to occur.	No
	Wompoo Fruit Dove (<i>Ptilinopus magnificus</i>)	V	-	8	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10707	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Rose Crowned Fruit Dove (<i>Ptilinopus regina</i>)	V	-	12	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10708	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Glossy Black-Cockatoo (<i>Calyptrorhynchus lathamii</i>)	V	-	35	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10140	No Allocasuarinas on site which may be used for foraging. Unlikely to occur.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Scarlet Robin (<i>Petroica boodang</i>)	V	-	1	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20133	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Flame Robin (<i>Petroica phoenicea</i>)	V	-	0	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20133	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Brown Treecreeper (<i>Climacteris picumnus</i>)	V	-	1	http://www.environment.nsw.gov.au/determinations/BrownTreecreeperVulSpListing.htm	Unlikely chance of occurrence on site due to lack of preferred habitat structure. No proximate records.	No
	Varied Sittella (<i>Daphoenositta chrysoptera</i>)	V	-	20	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20135	Unlikely chance of occurrence on site due to lack of preferred habitat structure. No proximate records.	No
	Dusky Woodswallow (<i>Artamus cyanopterus</i>)	V	-	6	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20303	Marginal habitat present on site. Unlikely chance of occurrence.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Barred Cuckoo-shrike (<i>Coracina lineata</i>)	V	-	25	http://www.environment.nsw.gov.au/resources/threatenedspecies/PASconsultation/CP/CPCoracinalineata.pdf	Unlikely chance of occurrence on site due to lack of preferred foraging resources and habitat structure. No proximate records.	No
	Bush-stone Curlew (<i>Burhinus grallarius</i>)	V	-	2	http://www.environment.nsw.gov.au/animals/BushStonecurlew.htm	Unlikely chance of occurrence on site due to lack of preferred foraging resources. No proximate records.	No
	Oriental Cuckoo (<i>Cuculus optatus</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=86651	Fair chance of occurrence due to presence of generic habitat.	No
	White-throated Needletail (<i>Hirundapus caudacutus</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=682	Fair chance of occurrence due to presence of generic habitat.	Yes
	Fork-tailed Swift (<i>Apus pacificus</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678	Fair chance of occurrence due to presence of generic habitat.	Yes
	Black-faced Monarch (<i>Monarcha melanopsis</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=609	Fair chance of occurrence due to presence of generic habitat.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Spectacled Monarch (<i>Monarcha melanopsis</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=610	Fair chance of occurrence due to presence of generic habitat.	No
	Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=591	Fair chance of occurrence due to presence of generic habitat.	No
	Rufous Fantail (<i>Rhipidura rufifrons</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=592	Fair chance of occurrence due to presence of generic habitat.	No
	Greater Egret (<i>Ardea alba</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59541	No foraging habitat on site. Unlikely to occur.	No
	Cattle Egret (<i>Ardea ibis</i>)	-	M	-	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59542	Fair chance of occurrence due to presence of generic habitat.	No
MAMMALS	Brush-tailed Phascogale (<i>Phascogale tapoatafa</i>)	V	-	2	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10613	Site contains potential foraging and denning habitat. Low potential to occur on site.	No
	Spotted-tailed Quoll (<i>Dasyurus maculatus</i>)	V	E	24	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10207	No potential habitat on site and located within residential area. Unlikely to occur.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Squirrel Glider (<i>Petaurus norfolcensis</i>)	V	-	26	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10604	Site contains a very small area of potential foraging habitat. Recorded previously on Highfields Circuit. Low to fair potential to occur.	Yes
	Greater Glider (<i>Petauroides Volans</i>)	-	V	2	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=254	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat.	No
	Rufous Bettong (<i>Aepyprymnus rufescens</i>)	V	-	1	http://www.environment.nsw.gov.au/determinations/RufousBettongVulSpListing.htm	Unlikely chance of occurrence on site due to disturbance history and poor quality site habitat. No proximate records.	No
	Common Planigale (<i>Planigale maculate</i>)	V	-	3	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10635	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat.	No
	New Holland Mouse (<i>Pseudemys novaehollandiae</i>)	-	V	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=96	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat. No records in the locality.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Eastern Chestnut Mouse (<i>Pseudomys gracilicaudatus</i>)	V	-	15	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=254	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat. Lack of proximate records.	No
	Common Blossom Bat (<i>Syconycteris australis</i>)	V	-	1	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10785	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat. Lack of proximate records.	No
	Grey-headed Flying Fox (<i>Pteropus poliocephalus</i>)	V	V	108	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10697	Potential foraging habitat on site and recorded nearby. Very high potential to occur	Yes
	Eastern Free-tail Bat (<i>Mormopterus norfolkensis</i>)	V	-	20	http://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProjectID=10544	Site vegetation provides suitable foraging habitat. Fair potential to occur.	Yes
	Eastern Cave Bat (<i>Vespadelus troughtoni</i>)	V	-	10	http://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProjectID=10829	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat. Lack of proximate records.	No
	Eastern False Pipistrelle	V	-	5	http://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProjectID=10544	Unlikely potential to occur. Site does not contain preferred foraging or structural	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	(<i>Falsistrellus tasmaniensis</i>)					habitat and sparse local records.	
	Yellow-bellied Sheathtail Bat (<i>Saccolaimus flaviventris</i>)	V	-	4	http://www.environment.nsw.gov.au/resources/threatenedspecies/PASconsultation/CP/CPSaccolaimusflaviventris.pdf	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat. No records in the locality.	No
	Little Bent-wing Bat (<i>Miniopterus australis</i>)	V	-	21	http://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProfileID=10533	Site vegetation provides suitable foraging habitat. Moderate potential to occur.	Yes
	Eastern Bent-wing Bat (<i>Miniopterus schreibersii oceanensis</i>)	V	-	48	http://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProfileID=10534	Site vegetation provides suitable foraging habitat. Moderate potential to occur.	Yes
	Golden Tipped bat (<i>Kerivoula papuensis</i>)	V	-	0	http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10444	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat.	No
	Dwyer's Bat (<i>Chalinobus dwyeri</i>)	V	V	1	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=183	Unlikely potential to occur. Site does not contain preferred foraging or structural habitat and only single local record.	No



	Species	BC Act	EPBC Act	No. of records	Link to Profile	Likelihood of Occurrence	Significance Assessment Required?
	Southern Myotis (<i>Myotis macropus</i>)	V	-	14	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10549	No suitable foraging habitat occurs on site or in the study area. Unlikely to occur.	No
	Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)	V	-	20	http://www.environment.nsw.gov.au/avingourspeciesapp/project.aspx?ProfileID=10748	Site vegetation provides suitable foraging habitat. Fair potential to occur.	Yes
FROGS	Wallum Froglet (<i>Crinia tinnula</i>)	V	-	49	http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10484	No suitable habitat present on site. Unlikely to occur.	No
	Green-thighed Frog (<i>Litoria brevipalmata</i>)	E	E	4	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1942	No suitable habitat present on site. Unlikely to occur.	No
	Giant Barred Frog (<i>Mixophyes iteratus</i>)	E	E	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1944	No suitable habitat present on site. Unlikely to occur.	No
	Stuttering Frog (<i>Mixophyes balbus</i>)	E	V	0	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1942	No suitable habitat present on site. Unlikely to occur.	No
	Green and Golden Bell Frog (<i>Litoria aurea</i>)	E	V	4	http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1870	No suitable habitat present on site. Unlikely to occur.	No

Key: E – Endangered, V – Vulnerable, M - Migratory



Appendix 2: Flora List

Frequency: D Dominant at least in some areas,
C Common,
O Occasional,
U Uncommon,
R Rare on site, few specimens.

#denotes a planted landscape tree

Common name	Scientific name	Frequency
Canopy Trees		
Red Bloodwood	<i>Corymbia gummifera</i>	2 trees
Cadahgi Gum [#]	<i>Corymbia torelliana</i>	1 tree
Tallowwood	<i>Eucalyptus microcorys</i>	1 tree
Peppermint [#]	<i>Eucalyptus nicholii</i>	1 tree
Grey Ironbark	<i>Eucalyptus siderophloia</i>	2 trees
Understorey trees and shrubs		
Cootamundra Wattle [#]	<i>Acacia baileyana</i>	R
Fringed Wattle [#]	<i>Acacia fimbriata</i>	U
Weeping Bottlebrush [#]	<i>Callistemon viminalis</i>	O
Grevillea [#]	<i>Grevillea sp.</i>	O
Lemon Scented Tea Tree [#]	<i>Leptospermum petersonii</i>	U
Macadamia [#]	<i>Macadamia integrifolia</i>	R
Melaleuca [#]	<i>Melaleuca linariifolia</i>	U
Port Wine Magnolia [#]	<i>Michelia figo</i>	R
Oleander [#]	<i>Nerium oleander</i>	U
Senna	<i>Senna pendula</i>	R
Lilly Pilly [#]	<i>Syzygium spp.</i>	U
Golden Penda [#]	<i>Xanthostemon chrysanthus</i>	R
Grasses		
Whisky Grass	<i>Andropogon virginicus</i>	C
Shivery Grass	<i>Briza maxima</i>	U
Couch	<i>Cynodon dactylon</i>	D
Panic Grass	<i>Ehrharta erecta</i>	O
Blady Grass	<i>Imperata cylindrica</i>	U
Australian Basket Grass	<i>Oplismenus aemulus</i>	U
Common Paspalum	<i>Paspalum dilatatum</i>	C
Setaria	<i>Setaria sphacelata</i>	O
Groundcovers		
Scarlet Pimpernel	<i>Anagallis arvensis</i>	U
Farmer's Friend	<i>Bidens pilosa</i>	O
Wandering Jew	<i>Commelina cyanea</i>	U
Fleabane	<i>Conyza bonariensis</i>	O
Kidney Weed	<i>Dichondra repens</i>	O
Lambs Tongue	<i>Plantago lanceolata</i>	O
Whiteroot	<i>Pratia purpurascens</i>	C



Common name	Scientific name	Frequency
Fireweed	<i>Senecio madagascariensis</i>	R
White Clover	<i>Trifolium repens</i>	O
Native Violet	<i>Viola banksii</i>	U
Vines and creepers		
Asparagus Fern	<i>Asparagus aethiopicus</i>	U
Wombat Berry	<i>Eustrephus latifolius</i>	U
Glycine	<i>Glycine clandestina</i>	U
Corky Passionfruit	<i>Passiflora suberosa</i>	U



Appendix 3: EPBC MNES Search Results



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 19/10/17 17:02:47

[Summary](#)

[Details](#)

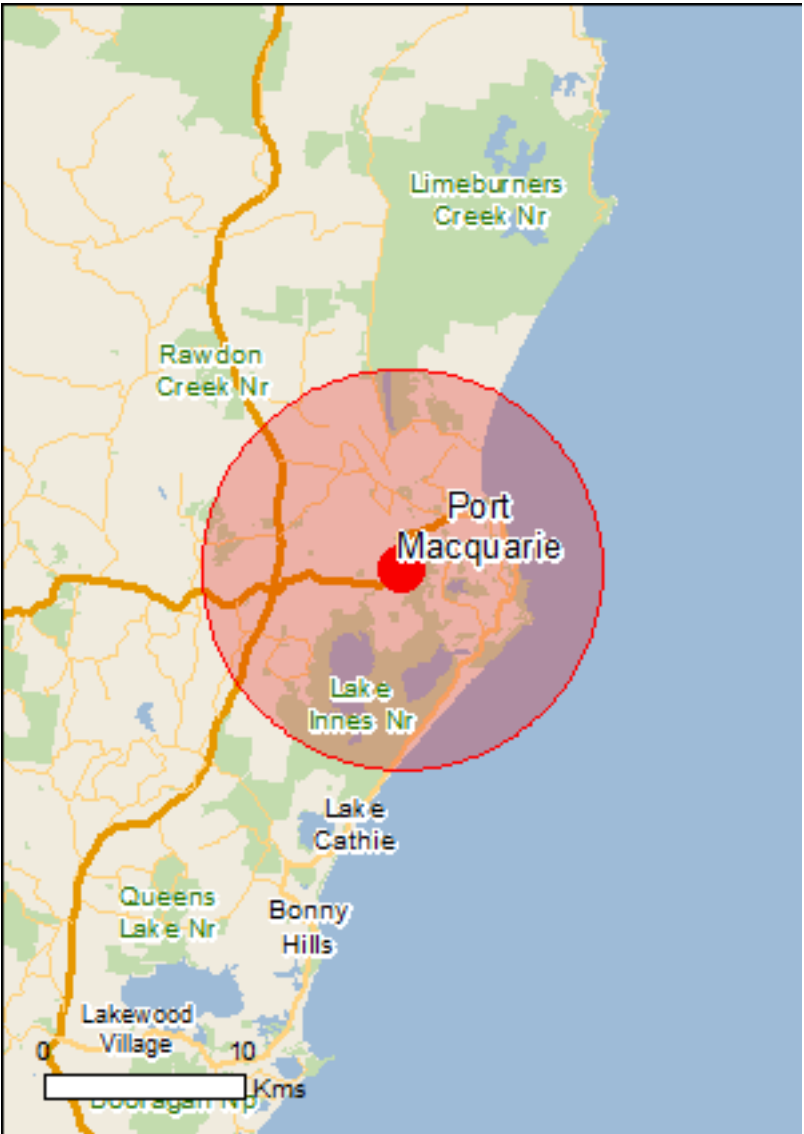
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

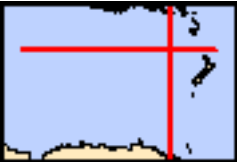
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 10.0Km](#)



Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	66
Listed Migratory Species:	60

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 <http://www.environment.gov.au/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 Land:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	90
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	7
Regional Forest Agreements:	1
Invasive Species:	39
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	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.

Name	Status	Type of Presence
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within 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
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Thalassarche cauta_steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fish		
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat may occur within area
Insects		
Argynnis hyperbius_inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus_maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus_tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Allocasuarina defungens Dwarf Heath Casuarina [21924]	Endangered	Species or species habitat known to occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Sharks		

Name	Status	Type of Presence
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		

Name	Threatened	Type of Presence
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land	[Resource Information]
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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.

Name
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Postal Corporation
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Commonwealth Bank of Australia
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species	[Resource Information]
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* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		within area Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area

Name	Threatened	Type of Presence
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area

Name	Threatened	Type of Presence
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche sp. nov. Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down		Species or species

Name	Threatened	Type of Presence
Pipefish, Eastern Upside-down Pipefish [66227]		habitat may occur within area
Hippichthys heptagonus		
Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus		
Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus whitei		
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]		Species or species habitat may occur within area
Histiogamphelus briggsii		
Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Lissocampus runa		
Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata		
Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Solegnathus dunckeri		
Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus spinosissimus		
Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus		
Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paegnius		
Rough-snout Ghost Pipefish [68425]		Species or species habitat may occur within area
Solenostomus paradoxus		
Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
Stigmatopora nigra		
Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus		
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus		
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris		
Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer		
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri		
Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus		
Australian Fur-seal, Australo-African Fur-seal		Species or species

Name	Threatened	Type of Presence
[21]		habitat may occur within area
Dugong dugon		
Dugong [28]		Species or species habitat may occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans		
Elegant Seasnake [1104]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis		
Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus		
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis		
Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Stenella attenuata		
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		
Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
LNE Special Management Zone No1	NSW
Lake Innes	NSW
Lake Innes	NSW
Limeburners Creek	NSW
Macquarie	NSW
Sea Acres	NSW
Woregore	NSW

Regional Forest Agreements	[Resource Information]
Note that all areas with completed RFAs have been included.	
Name	State
North East NSW RFA	New South Wales

Invasive Species	[Resource Information]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.	

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata		
Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern,		Species or species

Name	Status	Type of Presence
Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425] Asparagus plumosus Climbing Asparagus-fern [48993]		habitat likely to occur within area Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Nationally Important Wetlands		[Resource Information]
Name		State
Limeburners Creek Nature Reserve		NSW

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-31.45454 152.87889

Acknowledgements

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

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

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

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