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**ECOLOGICAL ASSESSMENT
SMITHS ROAD EMERALD BEACH**

Final Report

July 2021

KEILEY HUNTER PLANNING

Executive summary

Ecosure was contracted by Keiley Hunter Planning on behalf of Christine Frewin to undertake an ecological assessment at 14-22 Smiths Road Emerald Beach in the Coffs Harbour Local Government Area. The assessment will contribute to a Planning Proposal that seeks to amend the Coffs Harbour Local Environmental Plan 2013 to reduce the minimum lot size on the property from 1 ha to 0.5 ha to facilitate a two-lot subdivision.

The desktop assessment identified mapped vegetation communities that include koala habitat on the site and records of threatened species within 1.5 km of the site. The site assessment evaluated the accuracy of mapped plant community types and the on-ground extent of native vegetation. The assessment also considered the presence of, and potential impacts to, threatened species likely to utilise the site including a survey to determine koala usage level, confirmation that the vegetation meets the definition of secondary and tertiary koala habitat, and that the proposed subdivision meets the objectives of the Coffs Harbour Comprehensive Koala Plan of Management.

Native vegetation on the lot is highly modified, limited to scattered canopy trees and a small, sparse area of native understorey which contains numerous introduced species. One eucalypt (a grey ironbark) was identified as significant due to its large size and habitat potential. All other native canopy trees may provide refuge and seasonal foraging opportunities which are potentially utilised by threatened species. Tests of significance undertaken for the koala, grey-headed flying-fox and two microbats, recorded within 1.5 km of the site, determined no significant impact is likely to occur as a result of the proposed development.

While no clearing is expected to occur at this stage of the development, the subdivision design identifies the proposed dividing boundary is in proximity to a grey ironbark tree. Potential future clearing for fencing should avoid any disturbance that could negatively affect the tree.

Glossary, acronyms and abbreviations

BC Act	<i>Biodiversity Conservation Act 2016</i>
BOS	Biodiversity Offsets Scheme
BV	Biodiversity Values
CHCC	Coffs Harbour City Council
CKPoM	Comprehensive Koala Plan of Management
DBH	Diameter at Breast Height
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
KFT	Koala Feed Tree
LEP	Local Environmental Plan
LGA	Local Government Area
MLS	Minimum Lot Size
NSW	New South Wales
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SAT	Spot Assessment Technique
SKH	Secondary Koala Habitat
TKH	Tertiary Koala Habitat
VIS	Vegetation Information System

Contents

Executive summary.....	i
Glossary, acronyms and abbreviations	ii
List of figures	iv
List of tables.....	iv
1 Introduction.....	1
1.1 Project scope	1
1.2 Site description	1
2 Methods.....	3
2.1 Desktop assessment.....	3
2.1.1 Threatened flora and fauna.....	3
2.1.2 Mapped vegetation communities.....	3
2.1.3 Relevant policies and plans	3
2.2 Site assessment	4
2.2.1 Flora	4
2.2.2 Fauna	4
3 Results.....	5
3.1 Desktop assessment.....	5
3.1.1 Threatened flora and fauna.....	5
3.1.2 Mapped vegetation communities.....	6
3.1.3 Relevant policies and plans	6
3.1.3.1 Coffs Harbour LEP and DCP	6
3.1.3.2 Koala habitat	6
3.1.3.3 Biodiversity Offsets Scheme.....	7
3.2 Site assessment	9
3.2.1 Flora	9
3.2.2 Fauna	10
4 Discussion/recommendations	13
References	14
Appendix 1 Design plan	15
Appendix 2 Protected Matters Search Tool.....	16
Appendix 3 Tests of significance.....	18

List of figures

Figure 1 Site map.....	2
Figure 2 Mapped plant community types and koala habitat.....	8
Figure 3 Tree and habitat assessment.....	12

List of tables

Table 1 Threatened species BioNet records within 1.5 km of the site.....	5
Table 2 Vegetation communities mapped on the site	6
Table 3 Consistency with management actions for SKH	7
Table 4 Flora list	9
Table 5 Native tree assessment.....	10

1 Introduction

Ecosure Pty Ltd was contracted by Keiley Hunter Planning on behalf of Christine Frewin to undertake an ecological assessment at Lot 1 DP726095 (the site) at 14-22 Smiths Road, Emerald Beach. The assessment contributes to a Planning Proposal for Coffs Harbour City Council (CHCC) to consider amending the minimum lot size (MLS) from 1 ha to 0.5 ha to facilitate a two-lot subdivision. Design files showing the proposed dividing boundary were provided by surveyors Newnham Karl Weir and Partners Pty Ltd.

1.1 Project scope

The scope of the project included:

- desktop assessment
 - review of relevant documents and databases including New South Wales (NSW) BioNet records for threatened species, *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST), *Biodiversity Conservation Act 2016* (BC Act), CHCC Development Control Plan (DCP) and the CHCC Comprehensive Koala Plan of Management (CKPoM)
- site assessment
 - vegetation assessment and classification of plant community types (PCTs) on the site
 - survey for threatened flora and fauna based on vegetation communities and likelihood of occurrence
 - threatened fauna habitat assessment
 - identification of native and introduced flora species
 - identification of any high conservation value habitat/vegetation including koala feed trees and hollow bearing trees
 - Spot Assessment Technique (SAT) to determine koala usage level.

1.2 Site description

The site is located at 14-22 Smiths Road Emerald Beach in the Coffs Harbour Local Government Area (LGA). The site is 1.065 ha and contains two dwellings and numerous outbuildings. The majority of the site is cleared with vegetation restricted to the northern and southern boundaries (Figure 1).



Figure 1: Site map

Keiley Hunter Planning

Smiths Road Ecological Assessment

Site boundaries

— Existing lot boundary

- - - Proposed dividing boundary

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Date: 03/05/2021



0 5 10 15 20 m

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter



Data Sources: © State of New South Wales (Department of Planning, Industry and Environment), 2021; © Ecosure 2021
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2 Methods

2.1 Desktop assessment

2.1.1 Threatened flora and fauna

A search of relevant databases was conducted to determine the likely presence of any threatened flora and fauna within 1.5 km of the site, and included:

- EPBC Act (PMST)
- NSW BioNet search.

2.1.2 Mapped vegetation communities

The Coffs Harbour On-line Mapping System was reviewed for the site to identify:

- fine-scale vegetation mapping
- any additional high value habitats mapped on the site
- the extent of mapped koala habitat.

Vegetation mapping layers obtained from the Department of Planning, Industry and Environment (DPIE) Data Portal and data from the NSW BioNet Vegetation Information System (VIS) (NSW Government 2017) were also analysed to determine alignment with CHCC mapping.

2.1.3 Relevant policies and plans

Relevant legislation, plans and policies were reviewed during preparation of this report. Components relating to biodiversity and land use within the Coffs Harbour Local Environmental Plan (LEP) 2013 and the Coffs Harbour DCP were assessed, along with the Coffs Harbour CKPoM which provides a framework for the conservation and management of koala habitat, and the management of threats to koalas within the Coffs Harbour LGA. Key objectives of the CKPoM include protecting important koala habitat, stabilising or reversing threats to koalas, and managing and restoring koala habitat.

This report also considered the NSW Government's Biodiversity Offset Scheme (BOS). The BOS threshold test is used to determine when it is necessary to apply the Biodiversity Assessment Method to assess the impacts of a proposal through preparation of a Biodiversity Development Assessment Report. The Biodiversity Conservation Regulation 2017 specifies the following threshold levels for when the scheme is triggered:

- whether the amount of native vegetation to be cleared exceeds an area threshold; or
- whether the impact of the development is to occur on an area mapped on the Biodiversity Values (BV) map (land identified to have high biodiversity value).

Where a proposed development does not exceed the BOS threshold, proponents are still required to undertake a threatened species 'test of significance' which is prepared under Section 7.3 of the BC Act to determine if an activity is likely to have a significant impact on threatened species, their habitats, and ecological communities.

2.2 Site assessment

A site assessment was carried out by Environmental Scientist Vanessa Cain on 26 April 2021. Flora and fauna habitat assessments were conducted to identify the ecological attributes and potential environmental constraints associated with the site.

2.2.1 Flora

To confirm vegetation communities, the site was traversed to identify dominant native tree species in the canopy. Individual assessments were made for native trees occupying the canopy including the species, diameter at breast height (DBH), presence of hollows and global positioning system location using a Fulcrum™ application. Field observations assessed the alignment of vegetation with mapped Plant Community Types (PCTs) using diagnostic species, position in the landscape and distribution. Searches were also conducted for threatened flora species potentially occurring within the area of mapped native vegetation.

2.2.2 Fauna

The fauna survey included actively searching for tracks, scats, burrows, nests, scratch marks on trees and other signs of fauna activity. Habitat assessments for key habitat features such as food trees, tree hollows and nesting sites were also conducted across the site.

A SAT survey was undertaken at two species of koala feed tree (KFTs) within the area of mapped koala habitat. SAT surveys involved searching for koala faecal pellets beneath each tree within a 1 m radius for two minutes. If no faecal pellets were initially detected, a second search was undertaken where leaf litter and ground cover was disturbed (Phillips and Callaghan 2011).

3 Results

3.1 Desktop assessment

3.1.1 Threatened flora and fauna

A search of the EPBC Act PMST within a 1.5 km radius of the site identified two threatened ecological communities (TECs), 49 nationally listed threatened species and 24 listed migratory species as potentially occurring (Appendix 1).

A search of the NSW BioNet database within 1.5 km of the site returned records of 15 threatened fauna species and four threatened flora species listed under the NSW BC Act and/or EPBC Act (Table 1). No records were returned within the boundary of the site.

Table 1 Threatened species BioNet records within 1.5 km of the site

Class	Scientific name	Common name	NSW status (BC Act)	C'wealth status (EPBC Act)
Aves	<i>Apus pacificus</i>	fork-tailed swift		C,J,K
Aves	<i>Hirundapus caudacutus</i>	white-throated needletail		V,C,J,K
Aves	<i>Ardena pacifica</i>	wedge-tailed shearwater		J
Aves	<i>Ardena tenuirostris</i>	short-tailed shearwater		C,J,K
Aves	<i>Ephippiorhynchus asiaticus</i>	black-necked stork	E1	
Aves	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	V	
Aves	<i>Lophoictinia isura</i>	square-tailed kite	V	
Aves	<i>Pandion cristatus</i>	eastern osprey	V	
Aves	<i>Irediparra gallinacea</i>	comb-crested jacana	V	
Mammalia	<i>Phascogale tapoatafa</i>	brush-tailed phascogale	V	
Mammalia	<i>Phascolarctos cinereus</i>	koala	V	V
Mammalia	<i>Petaurus australis</i>	yellow-bellied glider	V	
Mammalia	<i>Pteropus poliocephalus</i>	grey-headed flying-fox	V	V
Mammalia	<i>Miniopterus australis</i>	little bent-winged bat	V	
Mammalia	<i>Miniopterus orianae oceanensis</i>	large bent-winged bat	V	
Flora	<i>Rhodamnia rubescens</i>	scrub turpentine	E4A	
Flora	<i>Rhodomyrtus psidioides</i>	native guava	E4A	
Flora	<i>Zieria prostrata</i>	headland zieria	E1	E
Flora	<i>Quassia</i> sp. Moonee Creek	Moonee quassia	E1	E

BC Act: E1 Endangered, E4A Critically Endangered, V Vulnerable. **EPBC Act:** C J K Camba Jamba Rokamba migratory bird agreements, V Vulnerable.

Tests of significance ('5-part tests') have been prepared under Section 7.3 of the NSW BC Act for species determined most likely to utilise the site based on BioNet records and surveyed habitat. Tests of significance are provided for koala, grey-headed flying-fox, little bent-winged bat and large bent-winged bat in Appendix 2. No significant impact to the long-term survival of

each species was determined.

3.1.2 Mapped vegetation communities

The Fine-scale Vegetation Mapping Layer provided in the Coffs Harbour Online Mapping System (CHCC 2016) identifies vegetation on the site as Coast and Escarpment Blackbutt Dry Forest and Foothills Turpentine – Grey Gum – Ironbark Moist Shrubby Forest with an additional small area of unclassified native remnant vegetation.

Vegetation mapping layers from DPIE (2018) identify three native vegetation types on the site including wet and dry sclerophyll forest. These broadly correspond with CHCC vegetation mapping and are detailed in Table 2 and presented in Figure 2.

Table 2 Vegetation communities mapped on the site

Coffs Harbour vegetation community profile name and no.	PCT ID	PCT common name	Vegetation class
Coast and Escarpment Blackbutt Dry Forest (CH_DOF01)	686	Blackbutt - Pink Bloodwood shrubby open forest of the coastal lowlands of the NSW North Coast Bioregion	North Coast Dry Sclerophyll Forests
Foothills Turpentine – Grey Gum – Ironbark Moist Shrubby Forest (CH_WSF17)	1262	Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast	Northern Hinterland Wet Sclerophyll Forests
Unmapped	827	Flooded Gum - Tallowood - Brush Box moist open forest of the coastal ranges of the North Coast	North Coast Wet Sclerophyll Forests
Native remnant vegetation (CH_NRV01)	-	-	Native remnant vegetation

3.1.3 Relevant policies and plans

3.1.3.1 Coffs Harbour LEP and DCP

The Coffs Harbour LEP 2013 identifies land use zoning on the site as R5 (Large Lot Residential) with an MLS of 1 ha. The objectives of the R5 zone include:

- provision of residential housing in a rural setting while preserving and minimising impacts on environmentally sensitive locations and scenic quality
- ensuring large residential lots do not hinder the proper and orderly development of urban areas in the future.

Section C1.5 of Coffs Harbour DCP stipulates design requirements for R5 zones, including an objective to ensure that subdivisions are responsive to the environmental context of the land.

3.1.3.2 Koala habitat

A small area of secondary koala habitat (SKH) and tertiary koala habitat (TKH) is mapped along the eastern boundary of the site (Figure 2). The mapped area extends further north and east of the site with the entire patch comprising approximately 20 ha. The patch contributes to

a network of mapped koala habitat within the broader area also comprised of SKH and TKH.

SKH is defined in the CKPoM as land that generally has lower koala activity levels than primary habitat, but still supports koala populations away from the coastal fringe, contributing to overall habitat availability and providing a vital connectivity role. Similarly, TKH occurs mostly in rural areas of the LGA and has lower levels of koala activity but still provides habitat and connectivity for koalas (Lunney et al. 1999).

Under the CKPoM, the consent authority must take into consideration certain factors when assessing development that occurs in areas of SKH and TKH, including denying consent when the proposed works include the removal of preferred koala feed trees, unless the development does not significantly destroy, damage or compromise the values of the land as koala habitat. While both SKH and TKH are mapped on the site, SKH is mapped where the dividing boundary is proposed, therefore management actions relating to SKH have been addressed in Table 3 below.

Table 3 Consistency with management actions for SKH

Management actions for koala habitat	Consistency with CKPoM
Minimal net loss of SKH.	There will be zero net loss of SKH. Design plans indicate the proposed dividing boundary will avoid any impact to KFTs within the SKH and therefore any future boundary fencing is unlikely to remove SKH.
The level of significance to koalas of the trees proposed to be removed.	Primary KFTs are present on the site (swamp mahogany and flooded gum), however the habitat has been cleared of understorey resulting in a highly modified environment.
The number of trees proposed to be removed in relationship to the extent and quality of adjacent or nearby Primary Koala Habitat and/or SKH.	The proposed subdivision will not require removal of any trees. Koala habitat on the site is located at the southern end of a larger patch (approximately 20 ha) that extends across multiple private properties to the north and east.
Threats to koalas which may result from the development.	The proposed subdivision is not expected to result in threats to koalas.
All other options for protecting koala trees as listed above.	No trees are proposed to be removed from the site.
The impacts to existing or potential koala movement corridors.	No impacts are expected to occur to existing or potential koala movement corridors.
Whether the land is accredited under the Timber Plantation (Harvest Guarantee) Act 1995.	n/a

3.1.3.3 Biodiversity Offsets Scheme

As detailed in Section 2.1.3, the BOS is triggered when:

- the amount of native vegetation to be cleared exceeds an area threshold, or
- the impact of the development is to occur on an area mapped on the BV map.

Potential future vegetation clearing for boundary fencing is not expected to exceed the area threshold and BV mapping does not occur on the site. Threatened species 'tests of significance' have been prepared and provided in Appendix 2.



Vegetation mapping

- Flooded Gum - Tallowwood - Brush Box moist open forest of the coastal ranges (PCT 827)
- Blackbutt - Pink Bloodwood shrubby open forest of the coastal lowlands (PCT 686)
- Tallowwood - Small-fruited Grey Gum dry grassy open forest (PCT 1262)

Figure 2: Mapped plant community types and koala habitat

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Smiths Road Ecological Assessment

Site boundaries

- Existing lot boundary
- Proposed dividing boundary

Koala habitat

- Secondary
- Tertiary



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GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

3.2 Site assessment

3.2.1 Flora

The majority of the site consists of mown lawn interspersed with planted trees and shrubs. A mature stand of introduced weeping fig trees (*Ficus benjamina*) is a dominant feature along the eastern boundary. Native canopy trees are scattered throughout, mainly along the eastern and southern boundaries. A sparse native understorey consisting mostly of grasses and climbers was observed in the eastern portion of the site. Introduced plant species were recorded throughout the site. Two introduced species are listed by North Coast Local Land Services (LLS) as priority weeds and four species are on the North Coast weed watch list (North Coast LLS 2017). A flora list (excluding garden plants) is provided in Table 4.

Native vegetation has been largely cleared from the site. Remaining vegetation has been highly modified and therefore could not be confidently assigned to any PCT mapped for the site. Diagnostic canopy species listed for each PCT in the BioNet VIS database were not recorded within the mapped extent of their associated PCT. For example, no diagnostic canopy species listed for PCT 1262 were recorded on the site, and flooded gum associated with PCT 827 was recorded in PCT 1262. This is likely due to a combination of human modification over time and a margin of error present when mapping boundaries between different vegetation communities. In addition, the mapped extent of native vegetation is greater than the on-ground extent of native vegetation, with the area of PCT 1262 having been reduced north of the house (Figure 2). Surveys did not detect any vegetation consistent with nationally threatened ecological communities.

Table 4 Flora list

Scientific name	Common name
Native species	
<i>Eucalyptus siderophloia</i>	grey ironbark
<i>Corymbia intermedia</i>	pink bloodwood
<i>Eucalyptus pilularis</i>	blackbutt
<i>Eucalyptus grandis</i>	flooded gum
<i>Melaleuca quinquenervia</i>	broad-leaved paperbark
<i>Archontophoenix cunninghamiana</i>	bangalow palm
<i>Cupaniopsis anacardioides</i>	tuckeroo
<i>Notelaea longifolia</i>	mock olive
<i>Breynia oblongifolia</i>	coffee bush
<i>Glochidion ferdinandi</i>	cheese tree
<i>Smilax australis</i>	lawyer vine
<i>Cissus hypoglauca</i>	water vine
<i>Eustrephus latifolius</i>	wombat berry
<i>Calochlaena dubia</i>	rainbow fern
<i>Oplismenus imbecillis</i>	creeping beard grass
<i>Microlaena stipoides</i>	weeping grass

Scientific name	Common name
Introduced species	
<i>Cinnamomum camphora</i> *	camphor laurel
<i>Ficus benjamina</i>	weeping fig
<i>Schefflera actinophylla</i> *	umbrella tree
<i>Murraya paniculata</i>	mock orange
<i>Cestrum nocturnum</i> *	lady of the night
<i>Senna pendula</i> var. <i>glabrata</i>	senna
<i>Ardisia crenata</i>	coralberry
<i>Ochna serrulata</i>	Mickey Mouse plant
<i>Lantana camara</i> +	lantana
<i>Asparagus macowanii</i> +	pompom asparagus
<i>Centella asiatica</i>	Indian pennywort
<i>Passiflora suberosa</i> *	cork passionflower
<i>Wisteria sinensis</i>	Chinese wisteria
<i>Sida rhombifolia</i>	paddys lucerne
<i>Paspalum mandiocanum</i>	broadleaf paspalum

+ denotes priority weed species and * denotes weed watch list within the North Coast Local Land Services Region

3.2.2 Fauna

Fifteen canopy trees were assessed during the site visit (Table 5 and Figure 3). Trees were also included in the assessment if they were located close to the boundary and canopies extended into the lot. Most trees assessed included flooded gum as well as grey ironbark, blackbutt, pink bloodwood and lemon-scented gum. The grey ironbark was assessed as significant having a DBH greater than 80 cm and potentially containing small hollows (Table 5). One lemon-scented gum was also recorded with a large DBH (>80 cm), however it lacked structure likely to contain hollows. It should be noted that lemon-scented gums are native to north Queensland but are naturalised in some areas of NSW.

Koala habitat occupies a small portion of the lot with only one KFT (blackbutt) recorded within the extent of mapped habitat. Additional KFTs occur outside the mapped area of koala habitat and were included in the SAT survey. No faecal pellets were detected during the searches at each of the trees resulting in a low use determination. While the vegetation on the site is fragmented and modified, individual trees with connectivity to the broader area still have potential to provide foraging and refuge habitat for koalas. A lack of detection does not indicate total absence as trees may be used intermittently.

Table 5 Native tree assessment

Scientific name	Common name	DBH category (cm)	Hollow-bearing	KFT/SAT survey
<i>Eucalyptus siderophloia</i>	grey ironbark	>80	Yes	No
<i>Corymbia intermedia</i>	pink bloodwood	≥20 and ≤80	No	No

Scientific name	Common name	DBH category (cm)	Hollow-bearing	KFT/SAT survey
<i>Eucalyptus pilularis</i>	blackbutt	≥20 and ≤80	No	Yes
<i>Corymbia citriodora</i>	lemon-scented gum	>80	No	No
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	<20	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes
<i>Eucalyptus grandis</i>	flooded gum	≥20 and ≤80	No	Yes

The trees on the site are likely to provide seasonal foraging opportunities during flowering periods. Nectar and pollen provide a food resource for numerous native bird and insect species, as well as grey-headed flying-foxes and arboreal mammals such as gliders. Two threatened microbats were returned in the NSW BioNet search as occurring within 1.5 km of the site (Table 1). These species frequently utilise open areas in proximity to vegetation with dense canopy, and roost in a variety of habitats including under bark, in tree hollows and man-made structures.



Figure 3: Tree and habitat assessment

Keiley Hunter

Smiths Road Ecological Assessment

Site boundaries

— Existing lot boundary

- - - Proposed dividing boundary

Koala habitat

Secondary

Tertiary



Job number: PR6396
Revision: 1
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GDA 1994 MGA Zone 56
Projection: Transverse Mercator
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4 Discussion/recommendations

The proposed subdivision is not expected to significantly impact native vegetation on the site or threatened species that potentially use the site. No vegetation clearing is proposed at this stage of the development and potential future clearing is likely to be limited to the lot boundaries.

The proposed subdivision aligns with relevant objectives of both the Coffs Harbour LEP and DCP. Additionally, this report finds the subdivision is unlikely to result in any impact to koala habitat, aligning with all relevant components of the CHCC CKPoM.

Fauna habitat is restricted to the remaining canopy trees which likely provide foraging and refuge opportunities for a range of birds, insects and some mammals such as grey-headed flying-foxes. A large grey ironbark represents the most important habitat component on the site, potentially containing small hollows. Due to the proximity of the proposed dividing boundary, potential future clearing for fencing should avoid any disturbance to this tree.

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Appendix 1 Design plan

Appendix 2 Protected Matters Search Tool



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.

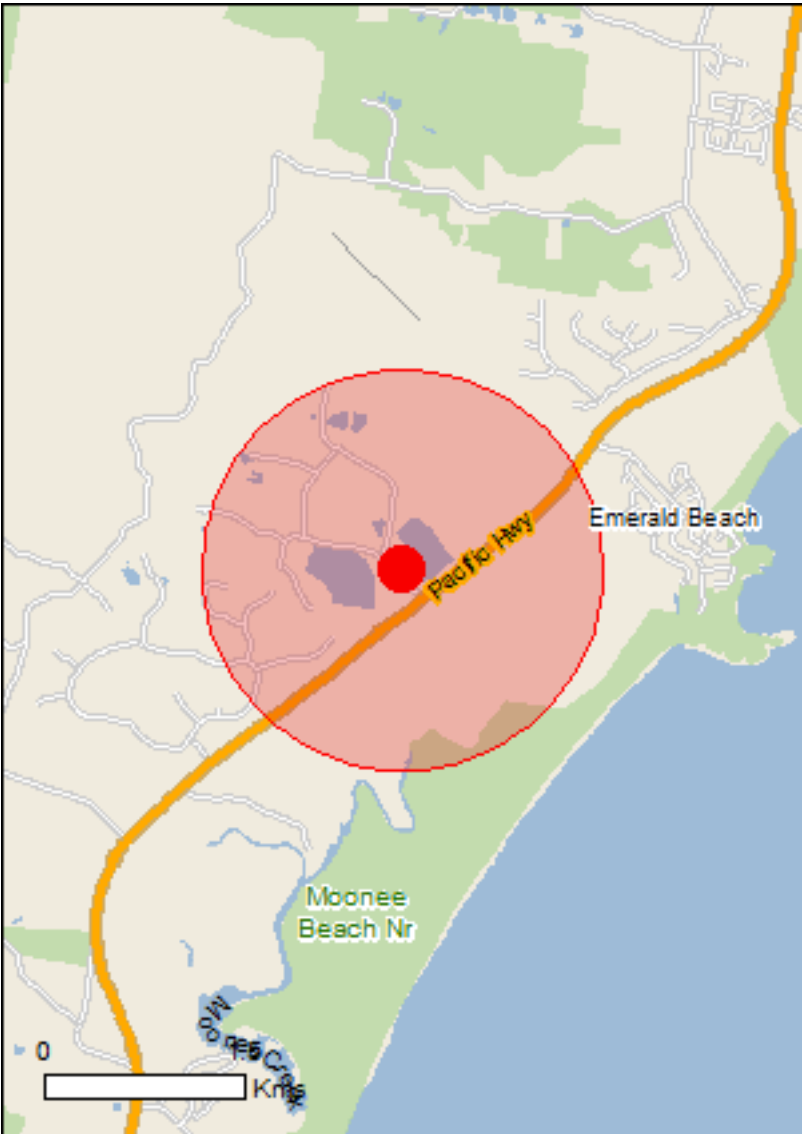
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

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

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- [Summary](#)
- [Details](#)

[Matters of NES](#)[Other Matters Protected by the EPBC Act](#)[Extra Information](#)
- [Caveat](#)
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This map may contain data which are
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[Buffer: 1.5Km](#)



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:	2
Listed Threatened Species:	49
Listed Migratory Species:	24

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	31
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	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:	1
Regional Forest Agreements:	1
Invasive Species:	37
Nationally Important Wetlands:	None
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
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely 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 may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Fish		
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Frogs		
Litoria olongburensis Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat may occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat known to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
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
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may 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 likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to 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
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to occur within area
Marsdenia longiloba Clear Milkvine [2794]	Vulnerable	Species or species habitat known to occur within area
Parsonsia dorrigoensis Milky Silkpod [64684]	Endangered	Species or species habitat likely to occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area
Samadera sp. Moonee Creek (J.King s.n. Nov. 1949) [86885]	Endangered	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area
Tylophora woollsii [20503]	Endangered	Species or species habitat likely to occur within area
Zieria prostrata Headland Zieria [56782]	Endangered	Species or species habitat known to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area

Name	Status	Type of Presence
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to 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
Sternula albifrons Little Tern [82849]		Breeding known to occur within area

Migratory Marine Species		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
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

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]	Endangered	habitat may occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]	Critically Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* 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 may 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 ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely 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 may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known 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 likely to occur within area
Sterna albifrons Little Tern [813]		Breeding known to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within

Name	Threatened	Type of Presence area
Fish		
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Moonee Beach	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

Name	Status	Type of Presence
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
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 known 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
Sus scrofa Pig [6]		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

Name	Status	Type of Presence
Anredera cordifolia		habitat likely to occur within area
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, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus		
Climbing Asparagus-fern [48993]		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]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera		
Bitou Bush, Boneseed [18983]		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
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]		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
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		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
Reptiles		
Hemidactylus frenatus		
Asian House Gecko [1708]		Species or species habitat likely to occur within area

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

-30.17306 153.16686

Acknowledgements

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

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

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

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

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Appendix 3 Tests of significance

Prepared under Section 7.3 of the *Biodiversity Conservation Act 2016*

Koala (*Phascolarctos cinereus*) – Vulnerable

Criteria	Assessment
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	Viable local population The site contains scattered native trees with limited connectivity to a 20-ha patch of vegetation mapped as SKH and TKH and which connects to Orara East State Forest in the broader area. Native vegetation on the site is highly modified containing two species of KFTs including flooded gum and blackbutt. Given the site has some connectivity with the broader area, and contains known KFTs, koalas may potentially utilise the site at any given time. Life cycle factors A search of NSW BioNet Atlas returned koala records within 1.5 km of the site. Given that the site contains suitable habitat containing KFTs, and limited connectivity remains within the broader area, the site may be potentially utilised by koalas and breeding may occur. Risk of extinction There is potential for the proposed development to remove understorey vegetation for future boundary fencing. However, this is expected to be limited and given that no koala activity was detected during surveys, the proposed development is unlikely to have an adverse effect on the life cycle of the species such that the local population will be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or ii) is likely to substantially and adversely modify the composition of the ecological	n/a

Criteria	Assessment
community such that its local occurrence is likely to be placed at risk of extinction	
c) In relation to the habitat of a threatened species or ecological community: i) 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 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. iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.	i) The site contains koala habitat containing known species of KFT within an area of highly modified native vegetation. The proposed development is not expected to remove KFTs and will not result in fragmentation of habitat. ii) Limited vegetation removal is expected. It is unlikely to substantially and adversely modify the composition of the habitat to the degree that it will place koalas at risk of local extinction. iii) The habitat will not be fragmented or modified and does not represent high quality habitat. However, native vegetation on the site remains important to maintain connectivity and for species to obtain their required resources both locally and throughout the broader landscape.
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).	n/a
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.	n/a

Grey-headed flying-fox (*Pteropus poliocephalus*) - Vulnerable

Criteria	Assessment
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	Viable local population Grey-headed flying-foxes (GHFFs) utilise a range of habitats including wet sclerophyll forest which occurs on the site. Three permanent GHFF camps are present in the Coffs Harbour LGA. The closest camp is Woolgoolga Lake camp which is considered nationally important as it has contained greater than 10,000 individuals multiple times in the last 10 years (Australian Government 2020). The camp provides roosting habitat critical to the survival of the species as specified in the GHFF Draft National Recovery Plan (Australian Government 2017). The proposed subdivision site contains suitable foraging habitat for GHFFs and it is highly likely that the species would utilise these resources when available. Life cycle factors Breeding exclusively takes place within camps, however the vegetation on the site includes foraging species utilised by GHFFs and therefore it may be utilised by mothers carrying young. Risk of extinction Given the proposed development is expected to require no clearing of native trees and to have a limited potential impact on understorey vegetation, the proposed subdivision is unlikely to have an adverse effect on the life cycle of the species such that the local population will be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	n/a
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.	
c) In relation to the habitat of a threatened species or ecological community:	
i) 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 ii) Is likely to substantially and adversely modify the composition of the ecological	i) The site contains suitable foraging species utilised by GHFFs. Potential vegetation removal is limited to understorey vegetation and will not result in fragmentation of foraging habitat. ii) Limited vegetation removal will potentially occur for future boundary fencing; however it is unlikely to substantially and adversely modify the composition of the habitat to the degree that it will place GHFFs at risk of local extinction. iii) The habitat will not be fragmented or modified. However, the canopy trees provide food resources for GHFFs and therefore potentially remain an important habitat component for the species to obtain their required resources.

Criteria	Assessment
community such that its local occurrence is likely to be placed at risk of extinction. 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.	
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).	n/a
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.	n/a.

Little bent-winged bat (*Miniopterus australis*) & large bent-winged bat (*M. orianae oceanensis*) - Vulnerable

These species are considered together in the '5-part test' due to their similar habitat requirements.

Criteria	Assessment
a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	Viable local population The site contains vegetation that provides suitable habitat for the little and large bent-winged bats, which forage for insects within and above the vegetation canopy. Little and large bent-winged bats are known to roost during the day in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges, and buildings (NSW Government 2020). Given that the vegetation occurs in association with a range of other suitable roosting habitats nearby, there is potential that the site may be utilised by both species. Life cycle factors The little bent-winged bat is thought to mainly utilise caves for maternity sites with only five known locations in Australia. The large bent-winged bat also utilises caves as maternity sites which have very specific temperature and humidity regimes (NSW Government 2020). Both species are known to disperse during non-breeding times and a search of NSW BioNet Atlas returned little and large bent-winged bat records within 1.5 km of the site. While breeding is unlikely to occur in the immediate area, the site potentially provides foraging and roosting habitat in tree hollows. Risk of extinction Given potential future clearing is likely to be limited to understorey vegetation, the proposed development is unlikely to have an adverse effect on the life cycle of the species such that the local population will be placed at risk of extinction.
b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	n/a
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.	
c) In relation to the habitat of a threatened species or ecological community:	
i) 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	i) The site contains suitable foraging and roosting opportunities for both species. Potential future vegetation removal is expected to be limited to understorey vegetation and will not result in fragmentation of habitat. ii) Potential future clearing is expected to be limited to understorey vegetation and will not substantially affect foraging habitat utilised by the species, therefore it is unlikely to substantially and adversely

Criteria	Assessment
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. 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.	modify the composition of the habitat to the degree that it will place little and large bent-winged bats at risk of local extinction. iii) The habitat will not be fragmented or modified, however the canopy trees provide foraging resources for both species of bent-winged bats and therefore potentially remains an important habitat component for the species to obtain their required resources.
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).	n/a
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.	n/a

Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed by	Approved by
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Final	13/07/2021	Ecological Assessment Smiths Road Emerald Beach	Vanessa Cain, Environmental Scientist	Nigel Cotsell, Senior Ecologist	Con Lokkers, Principal Ecologist

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