ECOLOGICAL ASSESSMENT REPORT

PROPOSED REZONING

BAKALI ROAD
FORRESTERS BEACH

JANUARY 2022
REF: 22006

ECOLOGICAL ASSESSMENT REPORT

PROPOSED REZONING

BAKALI ROAD
FORRESTERS BEACH

Conacher Consulting Pty Ltd

Environmental and Land Management Consultants

PO Box 4082, East Gosford NSW
Phone: 02 4324 7888
conacherconsulting@gmail.com

This document is copyright ©
Conacher Consulting P.L. ABN 62 166 920 869

PREFACE

This Flora and Fauna Assessment Report has been prepared by *Conacher Consulting* to identify the flora and fauna characteristics of land at The Entrance Road & Bakali Road, Forresters Beach.

This report provides an assessment of existing habitats and the potential for the planning proposal to impact on threatened species according to the provisions of Section 5(A) of *the Environmental Planning and Assessment (EP&A) Act* 1979 and the *Threatened Species Conservation Act* 1995.

PHILLIP ANTHONY CONACHER B.Sc.(Hons), Dip.Urb Reg Planning, M.Nat.Res.
NPWS Scientific Licence Number: SL100361
Project Director
Conacher Consulting

TABLE OF CONTENTS

SECTION 1
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION 1
1.2 SITE DETAILS 1
1.3 PROPOSED DEVELOPMENT 1
1.4 SUMMARY OF BIODIVERSITY ASSESSMENTS COMPLETED 3

SECTION 2
FLORA CHARACTERISTICS

2.1 THREATENED FLORA SPECIES 7
2.2 ENDANGERED FLORA POPULATIONS & ECOLOGICAL COMMUNITIES 8
2.3 VEGETATION SURVEY METHODOLOGY 11
2.4 FLORA SPECIES AND VEGETATION COMMUNITY DESCRIPTIONS 12

SECTION 3
FAUNA AND FAUNA HABITATS

3.1 THREATENED FAUNA SPECIES 21
3.2 ENDANGERED FAUNA POPULATIONS 25
3.3 FAUNA HABITATS 25
3.4 FAUNA SURVEY METHODOLOGY 26
3.5 FAUNA OBSERVED 29

SECTION 4
ASSESSMENTS AND CONCLUSIONS

4.1 BIODIVERSITY OFFSET SCHEME THRESHOLD ASSESSMENT 33
4.2 BIODIVERSITY CONSERVATION ACT (2016) ASSESSMENT OF SIGNIFICANCE 33
4.3 STATE ENVIRONMENTAL PLANNING POLICY (KOALA HABITAT PROTECTION) 2021 33
4.4 ENVIRONMENTAL PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) ASSESSMENT 33
4.5 CONSIDERATION OF MAPPED SWIFT PARROT IMPORTANT HABITAT 34
4.6 CONCLUSIONS 34

REFERENCES

REFERENCES 35

FIGURES

FIGURE 1.1 SITE LOCATION 4
FIGURE 1.2 SITE DETAILS 5
FIGURE 1.3 AREAS OF DIRECT IMPACT AVOIDANCE 6
FIGURE 2.1 MAP OF PLANT COMMUNITY TYPES 19
FIGURE 2.2 MAP OF THREATENED ECOLOGICAL COMMUNITIES 20
FIGURE 3.1 FAUNA SURVEY DETAILS 31
FIGURE 3.2 OPEN SPACE/SWIFT PARROT IMPORTANT HABITAT 32

APPENDICES

APPENDIX 1 - BIODIVERSITY OFFSET SCHEME ENTRY THRESHOLD REPORT
APPENDIX 2 - BIODIVERSITY CONSERVATION ACT (2016) TEST OF SIGNIFICANCE
APPENDIX 3 - EPBC SIGNIFICANT IMPACT ASSESSMENT
APPENDIX 4 - ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) PROTECTED MATTERS SEARCH REPORT
APPENDIX 5 – SEPP (KOALA HABITAT PROTECTION) 2021 ASSESSMENT
APPENDIX 6 –SWIFT PARROT IMPORTANT HABITAT

SECTION 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Conacher Consulting has been engaged to prepare an Ecological Assessment Report for a planning proposal for land at Central Coast Highway and Bakali Road, Forresters Beach.

This report has been prepared to determine on a preliminary basis whether the proposed development is likely to significantly affect threatened species in accordance with Part 7 of the *Biodiversity Conservation Act (2016)* and if the future development is required to be assessed under the provisions of the BC Act which require the preparation of a Biodiversity Development Assessment Report (BDAR) for any future development application prepared under Part 4 of the EP&A Act.

This Report also provides an assessment of whether the proposal is likely to constitute a controlled action and require a referral under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

A previous version of this report was reviewed by Council in December 2021. Council raised several matters with regard to the information in the previous ecological assessment report. These matters are identified below and addressed in this version of the report:

- Measures to avoid and minimise impacts to biodiversity values within the site,
- Clarification on the impact on areas of Swift Parrot Important Habitat Area,
- Extent of biodiversity offsets (or biodiversity credits) required to offset impacts for the proposal. This information is currently being prepared by an accredited biodiversity assessor and will be provided at a later date.

1.2 SITE DETAILS

The planning and cadastral details of the subject site are provided in Table 1.1. The location of the site is shown in Figure 1.1. Figure 1.2 shows the details of the site, aerial view and relevant lot boundaries.

TABLE 1.1
SITE DETAILS

Location (Subject site)	Lot 522 DP 1077907, Lot 3 DP 101694 Central Coast Highway & Lots 1-4 DP 1000694 Bakali Road, Forresters Beach.
Area	Approximately 9.8 hectares
Local Government Area	Central Coast Council
Existing Land Use	Rural residential / Vacant land

The area of proposed rezoning also includes the 30 small lots (most with dwellings) located along the western side of the Central Coast Highway. These lots are currently zoned as 'Deferred Matter' and Council have requested that they be included in the planning components of the rezoning proposal. These lots were not subjected to ecological surveys or assessments.

1.3 PROPOSED DEVELOPMENT

The planning proposal assessed in this report is the rezoning of the subject site to enable future residential development. The planning proposal will result in the retention and management of an area of native vegetation within the north-west and southern section of the site under an environmental conservation zoning.

The future land-uses within the site will incorporate both development areas (residential lots) and conservation areas of maintained, managed and improved vegetation. These outcomes are summarised below.

Development Outcomes

- Residential lots, residential dwellings, roads, drainage infrastructure and urban services.
- Residential developments are planned to be undertaken in separate stages (Stages 1-6).
- Staged development will be dependent on the timing by each land holder and future approvals by Council.
- Stages 1, 2, 3 will cover Lot 522, Lot 3 DP 101649 and Lot 4.
- Stage 4 will cover Lot 3 DP 1000694.
- Stage 5 will cover Lot 2.
- Stage 6 will cover Lot 1.
- The timing of development stages will be subject to future planning considerations by Council (eg Development Control Plans, Voluntary Planning Agreements etc).

Avoid and Minimise (Biodiversity Conservation) Outcomes

Ongoing consideration of the avoid and minimise direct impacts on biodiversity has been undertaken during the initial planning and ecological assessment by both Council and the proponent. The current areas considered for avoidance of direct impacts through vegetation clearing are shown in Figure 1.3. These areas include:

- All areas of mapped Swift Parrot Important Habitat Map.
- Areas of Swamp Sclerophyll Forest Endangered Ecological Community in the north-west and southern parts of the site.
- Areas of Swamp Oak Floodplain Forest Endangered Community in the north-west part of the site.
- The constructed dam and adjoining fringe areas in the northern part of Lot 3 DP 1000694.

Other impact minimisation and habitat amelioration to be implemented would include:

- Inclusion of retained areas in appropriate zones as supported by a Voluntary Planning Agreement.
- Preparation of a Vegetation Management Plan for retained areas of vegetation in accordance with Councils VMP Guidelines.
- Preparation of a Fauna Management Strategy.
- Implementation of a tree hollow/artificial nestbox strategy for hollow removal and habitat augmentation.
- Ecological inspection of habitats/trees prior to clearing.
- Preparation and Implementation of an Erosion and Sediment Control Plan for all components of site development (tree clearing, grubbing, topsoil removal, site regrading, installation of roads/services etc) in accordance with Councils DCP requirements.
- Preparation of a site or stage specific Construction Environment Management Plan Implementation of a contractor.
- Environmental induction program.

Detailed plans of the proposal have been provided as separate documentation to this report.

1.4 SUMMARY OF BIODIVERSITY ASSESSMENTS COMPLETED

Summary details of biodiversity assessments undertaken within this Report and the outcomes of these assessments are provided in Table 1.2.

TABLE 1.2
SUMMARY OF BIODIVERSITY ASSESSMENTS

Assessment	Relevant Report Section	Conclusion
Biodiversity Offset Scheme Threshold (BOSET)	4.1, Appendix 1	BDAR required for clearing more than 0.5 ha.
BC Act Assessment of Significance	4.2, Appendix 2	Not likely to significantly impact threatened habitats or their habitats
BSC Act Consideration of mapped Swift Parrot Habitat	4.5 Appendix 6	Avoidance of development in mapped areas. Implementation of VMP
SEPP (Koala Habitat Protection) 2021	4.3, Appendix 5	No core koala habitat present.
EPBC Act Significance Assessment	4.4, Appendix 3	Not likely to significantly impact matters of national environmental significance.


tennis courts
TUMBI ROAD RESERVE
SWINGERS GOLF RANGE
mini golf
ALBATROSS PARK
ALISTAIR AV
FORRESTERS BEACH
ROAD
THE ENTRANCE
WARRAMBOOL RD
BAKALI RD
MAAS RD
blockage
BOOS RD
HENRYS RD
PACIFIC VIEW STREET RESERVE
Forresters Beach
SCENIC RD
NORTH
CARBEEN RD
CARBEEN ROAD RESERVE
ARCHIBOLD PARK
BLUE WAVE CR
CRYSTAL
JOHN ST
NOORONG AV
STREET
tidal limit
toilets
lookout
Legend
Subject Site Boundary
conacher consulting
0 100 200 300 400 m
Plan produced as A4 colour
Drawn By: DC
Drawing No: 22006
Drawing Version: 1
Date: 20/01/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © NSW Gov. (2021)
Figure 1.1
Site Location
Bakali Road, Forresters Beach


Lot522 DP1077907
Lot 3 DP101649
Lot 3 DP1000694
Lot 4 DP1000694
Lot 2 DP1000694
Lot 1 DP1000694
BAKALI ROAD
CENTRAL COAST HIGHWAY
Legend
Subject Site Boundary
Lot Boundary
conacher consulting
N
0 25 50 75 100 m
Plan produced as A4 colour
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 20/1/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2021) Aerial Photo Date: 30 Aug 2021
Figure 1.2
Site Details
Bakali Road, Forresters Beach


BAKALI ROAD
CENTRAL COAST HIGHWAY
Legend
Subject Site Boundary
Lot Boundary
Direct Impact Avoidance Areas
conacher consulting
N
0 25 50 75 100 m
Plan produced as A4 colour
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 14/1/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2021) Aerial Photo Date: 30 Aug 2021
Figure 1.3
Areas of Direct Imapct Avoidance
Bakali Road, Forresters Beach

SECTION 2

FLORA CHARACTERISTICS

2.1 THREATENED FLORA SPECIES

A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2022) was undertaken to identify records of threatened flora species located within 10 km of the site. This allowed for a specific search for threatened flora to be undertaken to determine if any threatened flora species are present within the subject site. Details on threatened flora species as listed in Schedules 1 and 2 are provided in Table 2.1.

TABLE 2.1
THREATENED FLORA SPECIES OF THE AREA

Name	BC Act	EP&BC Act	Habitat Requirements	Comments
Chamaesyce psammogeton	E	-	Prostrate herb. Grows on coastal dunes.	No suitable habitat present.
Diuris praecox	V	V	Terrestrial orchid. Grows in sclerophyll forest near the coast, most often found on clay graminoid heath on coastal headlands.	No suitable habitat present.
Eucalyptus camfieldii	V	V	Stringybark to 10 m high. Grows in coastal shrub heath and woodlands on sandy soils derived from alluviums and Hawkesbury sandstone.	Suitable habitat present. Not observed during surveys.
Melaleuca biconvexa	V	V	Tall shrub. Grows in wetlands adjoining perennial streams and on the banks of those streams, generally within the geological series known as the Terrigal Formation.	Suitable habitat present. Not observed during surveys.
Pultenaea maritima	V	-	Prostrate mat forming shrub with hairy stems. Occurs in grasslands, shrublands and heath on exposed coastal headlands. Distribution Newcastle to Bryon Bay less than 1km from coast.	No suitable habitat present.
Senecio spathulatus	E	-	Small spreading shrub growing on coastal dunes.	No suitable habitat present.
Syzygium paniculatum	E	V	Small tree. Subtropical and littoral rainforest on sandy soil.	No suitable habitat present.
Wilsonia backhousei	V	-	A perennial subshrub with procumbent branches to 15cm high. Grows in saltmarshes and on sea cliffs.	No suitable habitat present.

Ext = Extinct P. Ext = Presumed Extinct CE = Critically Endangered
E = Endangered V = Vulnerable Species

The threatened flora species considered to have suitable habitat present within the subject have been assessed under the 5 part test of significance as detailed in Appendix 2 of this report.

2.2 ENDANGERED FLORA POPULATIONS & ECOLOGICAL COMMUNITIES

2.2.1 Endangered Flora Populations

There are no endangered flora populations listed within the *BC Act*, known from the local government area. No endangered populations were observed within the subject site.

2.2.2 Endangered Ecological Communities

Details regarding the habitat attributes and indicative species for the endangered ecological communities known to be present in the local government area are provided in Table 2.2.

TABLE 2.2
ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA

Name	BC Act	EPBC Act	Habitat Requirements	Comments
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	EEC	V	**Geology / Soils:** Estuarine mud flats. **Topography:** Intertidal zone on the shores of estuaries and lagoons. **Characteristic Species:** *Sarcocornia quinqueflora, Sporobolus virginicus, Juncus krausii and Baumea juncea*.	No suitable habitat present.
Coastal Upland Swamp in the Sydney Basin Bioregion	EEC	EEC	**Geology / Soils:** Periodically waterlogged acidic soils on Hawkesbury Sandstone. **Topography:** Impermeable sandstone plateaus in the headwater valleys of streams and on sandstone benches with abundant moisture seepage. **Characteristic Species:** Highly diverse and variable, includes scrubs, heaths, sedgelands and fernlands.	No suitable habitat present.
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	EEC	-	**Geology / Soils:** Silts, muds or humic loams. **Topography:** Depressions, flats, drainage lines, backswamps, lagoons and lakes associated with coastal floodplains. **Characteristic Species:** Composition is variable and dependent on water regime. May include amphibious grasses and sedges, emergent floating herbs and emergent tall sedges and floating and submerged aquatic herbs.	No suitable habitat present.

TABLE 2.2 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	**BC Act**	**EPBC Act**	**Habitat Requirements**	**Comments**
Kincumber Scribbly Gum Forest in the Sydney Basin Bioregion	CEEC	-	**Geology / Soils:** Terrigal Formation of the Narrabeen Group. Soils are characterised by Yellow Podzolic Soils and Yellow Earths of the Erina Soil Landscape. **Topography:** Footslopes, gently inclined crests and ridges. **Characteristic Species:** *Eucalyptus racemosa, Angophora costata, Corymbia gummifera, Syncarpia glomulifera, Eucalyptus piperita* and *Allocasuarina littoralis.*	No suitable habitat present.
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	CE	**Geology / Soils:** Sand dunes and on soils derived from underlying rocks **Topography:** Located near the seaoin coastal dunes, headland or riparian habitats. **Characteristic Species:** Comprises the *Cupaniopsis anacardioides - Acmena* spp. alliance of Floyd (1990).	No suitable habitat present.
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E	CE	**Geology / Soils**: High nutrient geological substrates, notably basalts and fine-grained sedimentary rocks. **Topography:** Coastal plains and plateaux, footslopes and foothills up to 600m ASL and within the Sydney basin below 350m ALS **Characteristic Species:** Principally encompasses the following groupings of Floyd (1990): *Argyrodendron trifoliatum* alliance (suballiances 1, 5 & 6); *Dendrocnide excelsa - Ficus* spp. alliance (suballiances 14 & 15); and *Drypetes australasica – Araucaria cunninghamii* alliance (suballiances 21 & 22).	No suitable habitat present.
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	E	-	**Geology / Soils:** Shale-derived soils from Narrabeen series geology **Topography:** Undulating to rolling hills. **Characteristic Species:** *Corymbia maculata* and *Eucalyptus paniculata.*	No suitable habitat present.

TABLE 2.2 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	**BC Act**	**EPBC Act**	**Habitat Requirements**	**Comments**
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	**Geology / Soils:** Silts, clay-loams and sandy loams. **Topography:** Periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. **Characteristic Species:** Eucalypt canopy with species belonging to the genus Angophora or the sections Exsertaria or Transversaria of the genus Eucalyptus. Has low abundance of *E. robusta*, Casuarina and Melaleuca species and a groundcover of soft-leaved forbs and grasses.	No suitable habitat present.
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	**Geology / Soils:** Waterlogged or periodically inundated grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline. **Topography:** Flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. **Characteristic Species:** *Casuarina glauca.*	Suitable habitat present. Observed during surveys.
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	**Geology / Soils:** Waterlogged or periodically inundated humic clay loams and sandy loams. **Topography:** Alluvial flats and drainage lines associated with coastal floodplains. **Characteristic Species:** *Eucalyptus robusta, E. longifolia, E. botryoides, Melaleuca quinquenervia* and *M. ericifolia.*	Suitable habitat present. Observed during surveys.
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	E	-	**Geology / Soils:** Generally on the Warriewood and Tuggerah Soil Landscapes. **Topography:** Freshwater swamps in swales and depressions on sand dunes and low nutrient sand plain sites in coastal areas. **Characteristic Species:** *Eleocharis sphacelata, Baumea juncea, B. rubiginosa, B. articulata, Gahnia sieberiana, Ludwigia peploides* and *Persicaria* sp.	No suitable habitat present.

TABLE 2.2 ENDANGERED ECOLOGICAL COMMUNITIES OF THE AREA				
Name	**BC Act**	**EPBC Act**	**Habitat Requirements**	**Comments**
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E	-	**Geology / Soils:** Found on a range of substrates including old sand dunes above cliffs and on basalt headlands, and less frequently on sandstone. **Topography:** Sea cliffs and coastal headlands. **Characteristic Species:** *Themeda australis.*	No suitable habitat present.
Umina Coastal Sandplain Woodland in the Sydney Basin Bioregion	E	-	**Geology / Soils:** Holocene sediments of coastal sand. Iron podzols on the Woy Woy Soil Landscape. **Topography:** Sand plains on the Woy Woy Peninsula at Umina and Pearl Beach. **Characteristic Species:** *Eucalyptus botryoides* and *Angophora floribunda* with a diverse understorey of sclerophyllous shrubs.	No suitable habitat present.
Key to BC Act and EP&BC Act Status Ext = Extinct - P. Ext = Presumed Extinct - CE = Critically Endangered – E = Endangered - V = Vulnerable Species				

The following threatened ecological communities were observed within the subject site during surveys:

- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (SOFF);

- Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (SSFCF).

The SOFF EEC corresponds to the Disturbed Swamp Oak Forest vegetation community shown in Figure 2.1.

The SSFCF EEC corresponds to the Paperbark Swamp Sclerophyll Forest and Managed Land with Swamp Sclerophyll Trees vegetation communities shown in Figure 2.1.

Both areas of good (intact) and low (highly disturbed) quality habitat for EEC vegetation have been delineated in the mapping.

The endangered ecological communities observed within the subject site are assessed under the test of significance as detailed in Appendix 2 of this report.

2.3 VEGETATION SURVEY METHODOLOGY

To determine the likely and actual occurrence of flora species and plant communities on the subject site, field survey work was undertaken to supplement literature reviews and previous flora surveys of the area. The methods utilised for the flora survey are outlined as follows.

- A search of the Bionet Atlas of NSW Wildlife 2022 was undertaken to identify records of threatened flora species located within 10 km of the site. This enabled the preparation of a predictive list of threatened flora species that could possibly occur within the habitats found on the site.

- Aerial photographs were utilised to identify the extent of vegetation with respect to the site and surrounding areas.

Field Survey

- Meander searches, survey transects and survey quadrats were undertaken across the subject site to identify the presence of threatened flora species and to identify the main flora species present. .

Flora surveys were undertaken on the following dates:
30 January 2008
15 March 2014
12 February 2015
27 March 2021

The March 2021 surveys were completed by biodiversity accredited consultants, J. Manners (Conacher Consulting) and B. Furchert (Cumberland Ecology).

2.4 FLORA SPECIES AND VEGETATION COMMUNITIES DESCRIPTIONS

The following vegetation communities were observed within the subject site during surveys:

- Disturbed Swamp Oak Forest (EEC);
- Paperbark Swamp Sclerophyll Forest (EEC);
- Managed Land with Swamp Sclerophyll Trees (EEC);
- Managed Land with Coastal Woodland Trees;
- Derived Freshwater Wetland;
- Cleared Land / Non-endemic Vegetation.

Vegetation community descriptions are provided below and a detailed species list is provided in Table 2.3. The locations of vegetation communities are shown in Figure 2.1. The flora list does not cover all plant species present. More detailed site surveys are to be completed as part of the BDAR process.

DISTURBED SWAMP OAK FOREST (EEC)
(PCT 1728 Swamp Oak – Prickly Paperbark- Tall Sedge Swamp Forest on Coastal Lowlands of the Central Coast and Lower North Coast)

Structure:

Upper Stratum:	To 12 metres high, with 70% Projected Foliage Cover (PFC).
Mid Stratum:	To 4 metres high, with 10% PFC.
Lower Stratum:	To 0.2-0.5 metres high, with 100% PFC.

Floristics:
(Characteristic Species)

Upper Stratum:	*Casuarina glauca.*
Mid Stratum:	*Melaleuca quinquenervia, Senna pendula var. glabrata* and *Lantana camara.*
Lower Stratum:	*Hydrocotyle bonariensis, Ageratina adenophora, Asparagus aethiopicus, Zantedeschia aethiopica* and *Stenotaphrum secundatum.*

Variation:
Larger patches generally contain higher densities of trees and an unmanaged understorey, whereas smaller patches occur in areas of managed exotic grassland.

Disturbance:
Disturbances include weed invasion, clearing and ongoing understorey management.

Weed Invasion:

High levels of weed invasion were present within the understorey layers. Dominant species observed include *Senna pendula var. glabrata, Lantana camara, Hydrocotyle bonariensis, Ageratina adenophora, Asparagus aethiopicus, Zantedeschia aethiopica* and *Stenotaphrum secundatum*

Location and Distribution:
This community occurs is scattered, particularly throughout the western sections of the site with a larger patch within the central western area. The area of occupancy within the site is approximately 0.7 hectares.

Classification:
This vegetation community corresponds to a disturbed variant of Map Unit SF11i Estuarine Swamp Oak Forest, as described by Bell (2019).

PAPERBARK SWAMP SCLEROPHYLL FOREST (EEC)
(PCT 1716 Prickly-leaved Paperbark forest on coastal lowlands of the Central Coast and Lower North Coast)

Structure:

Upper Stratum:	To 12 metres high, with 70% Projected Foliage Cover (PFC).
Mid Stratum:	To 4 metres high, with 10% PFC.
Lower Stratum:	To 0.2-0.5 metres high, with 100% PFC.

Floristics:
(Characteristic Species)

Upper Stratum:	*Casuarina glauca.*
Mid Stratum:	*Melaleuca quinquenervia, Senna pendula var. glabrata* and *Lantana camara.*
Lower Stratum:	*Hydrocotyle bonariensis, Ageratina adenophora, Asparagus aethiopicus, Zantedeschia aethiopica* and *Stenotaphrum secundatum.*

Variation:
Larger patches generally contain higher densities of trees and an unmanaged understorey, whereas smaller patches occur in areas of managed exotic grassland.

Disturbance:
Disturbances include weed invasion, clearing and ongoing understorey management.

Weed Invasion:
High levels of weed invasion were present within the understorey layers. Dominant species observed include *Senna pendula var. glabrata, Lantana camara, Hydrocotyle bonariensis, Ageratina adenophora, Asparagus aethiopicus, Zantedeschia aethiopica* and *Stenotaphrum secundatum*

Location and Distribution:
This community occurs is scattered, particularly throughout the western sections of the site with a larger patch within the central western area. The area of occupancy within the site is approximately 1.7 hectares.

Classification:
This vegetation community corresponds to Map Unit SF10i Estuarine Paperbark Scrub Forest, as described by Bell (2019).

MANAGED LAND WITH SWAMP SCLEROPHYLL TREES (EEC)
(PCT 1722 Swamp Mahogany- Paperbarks- Harsh Ground Fern swamp forest of the Central Coast)

Structure:

Upper Stratum:	To 8 metres high, with 20% Projected Foliage Cover (PFC).
Mid Stratum:	To 2.5 metres high, with 2% PFC.
Lower Stratum:	To 0.5 metres high, with 100% PFC.

Floristics:

(Characteristic Species)

Upper Stratum:	*Eucalyptus robusta* and *Angophora floribunda.*
Mid Stratum:	*Melaleuca quinquenervia* and *Melaleuca nodosa.*
Lower Stratum:	*Cynodon dactylon, Paspalum urvillei*, *Pennisetum clandestinum*, and *Oplismenus aemulus.*

Variation:
Higher levels of *A. floribunda* were observed around the dam.

Disturbance:
This vegetation type has been disturbed by the long-term management and removal of understorey vegetation.

Weed Invasion:
The understorey is dominated by non-endemic species, particularly *C. dactylon* and other common exotic pasture species.

Location and Distribution:
The vegetation type is scattered throughout the site in several small patches as shown in Figure 2.1. This community occupies approximately 0.5 hectares of the site.

Classification:
This vegetation type contains remnant trees characteristic of Map Unit SF07i Narrabeen Alluvial Sedge Woodland, as described by Bell (2019).

MANAGED LAND WITH COASTAL WOODLAND TREES
(PCT 1636 Scribbly Gum- Red Bloodwood- Angophora inopina healthy woodland on lowlands of the Central Coast)

Structure:

Upper Stratum:	To 8 metres high, with 30% PFC.
Mid Stratum:	Absent.
Lower Stratum:	To 0.2 metres high, with 10% PFC.

Floristics:
(Characteristic Species)

Upper Stratum:	*Eucalyptus haemastoma* and *Eucalyptus capitellata x camfieldii.*
Mid Stratum:	Absent.
Lower Stratum:	*Cynodon dactylon, Stenotaphrum secundatum* and *Entolasia stricta.*

Variation:
The cover of ground stratum vegetation is patchy.

Disturbance:
This vegetation type has been disturbed by the removal and management of understorey vegetation.

Weed Invasion:
The dominant ground stratum species, *Cynodon dactylon* and *Stenotaphrum secundatum* are non-endemic.

Location and Distribution:
This vegetation type occurs as a small patch within the western section of the site as shown in Figure 2.1. This community occupies approximately 0.1 hectare of the site.

Classification:
This vegetation community contains remnant trees characteristic of Map Unit E31 Narrabeen Doyalson Coastal Woodland, as described by Bell (2019).

DERIVED FRESHWATER WETLAND
(PCT 1737 Typha Rushland)

Structure:

Upper Stratum:	Absent.
Mid Stratum:	Absent.
Lower Stratum:	To 1.5 metres high, with 20% PFC.

Floristics:
(Characteristic Species)

Upper Stratum:	Absent.
Mid Stratum:	Absent
Lower Stratum:	*Typha orientalis.*

Variation:
Nil.

Disturbance:
Derived Freshwater Wetland vegetation is present within a man-made dam and is not a natural occurrence of Freshwater Wetland vegetation.

Weed Invasion:
No exotics were observed within this community.

Location and Distribution:
This community occurs within the dam in the western section of the site as shown in Figure 2.1. This community occupies approximately 0.02 hectares of the site.

Classification:
This vegetation type is described by Bell (2019) as Map Unit SP02i Freshwater Typha Wetland. This vegetation community does not correspond to the Freshwater Wetlands on Coastal Floodplain EEC as it is considered to be an artificial wetland created on previously dry land.

CLEARED LAND / NON-ENDEMIC VEGETATION
Cleared Land is present within the areas of the site which contain buildings, roads, landscape gardens, previous stock grazing pastures and areas of exotic grassland. The floristics is highly variable and dominated by exotic/non-endemic grasses such as *Pennisetum clandestinum*, *Cynodon dactylon* kikuyu and *Stenotaphrum secundatum.* Cleared Land / Non-endemic Vegetation is present across approximately 6.78 hectares of the site as mapped in Figure 2.1.

TABLE 2.3
FLORA SPECIES OBSERVED DURING SURVEYS

Family Name	Scientific Name	Common Name
Upper Stratum		
Casuarinaceae	*Casuarina glauca*	Swamp Oak
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Myrtaceae	*Angophora floribunda*	Rough-barked Apple
	Erythrina sp	Coral Tree
	Eucalyptus camfieldii x capitellata	Hybrid Stringybark
	Eucalyptus haemastoma	Scribbly Gum
	Eucalyptus longifolia	Woolybutt
	Eucalyptus resinifera subsp. *resinifera*	Red Mahogany
	Eucalyptus robusta	Swamp Mahogany
	Melaleuca quinquenervia	Broad-leaved Paperbark
	Melaleuca styphelioides	Prickly-leaved Tea Tree
Proteaceae	*Grevillea robusta**	Silky Oak
Mid Stratum		
Araliaceae	*Polyscias sambucifolia*	Elderberry Panax

TABLE 2.3
FLORA SPECIES OBSERVED DURING SURVEYS

Family Name	Scientific Name	Common Name
Arecaceae	*Livistona australis*	Cabbage Tree Palm
Asteraceae	*Chrysanthemoides monilifera* subsp. *rotundata**	Boneseed/Bitou Bush
	Ozothamnus diosmifolius	Ball Everlasting
Euphorbiaceae	*Breynia oblongifolia*	Coffee Bush
	Glochidion ferdinandii	Cheese Tree
Faboideae	*Pultenaea daphnoides*	Large-leaf Bush Pea
Mimosoideae	*Acacia elongata*	Swamp Wattle
	Acacia floribunda	Sally Wattle
	Acacia longifolia var. *longifolia*	Sydney Golden Wattle
	Acacia suaveolens	Sweet Scented Wattle
Myrtaceae	*Leptospermum polygalifolium*	Lemon Scented Tea-tree
	Melaleuca ericifolia	Swamp Paperbark
	Melaleuca linariifolia	Snow in Summer
	Melaleuca nodosa	Ball Honey Myrtle
Oleaceae	*Ligustrum sinense**	Small-leaved Privet
Phytolaccaceae	*Phytolacca octandra**	Inkweed
Pittosporaceae	*Pittosporum revolutum*	Yellow Pittosporum
Verbenaceae	*Lantana camara**	Lantana
Lower Stratum		
Adiantaceae	*Adiantum aethiopicum*	Common Maidenhair
Alliaceae	*Narcissus sp**	Daffodil
	*Narcissus sp**	Jonquil
Anthericaceae	*Caesia parviflora var. parviflora*	Pale Grass Lily
Apiaceae	*Centella asiatica*	Swamp Pennywort
	Hydrocotyle laxiflora	Stinking Pennywort
Araeceae	*Zantedeschia aethiopica**	White Arum Lily
Asteraceae	*Ageratina adenophora**	Crofton Weed
	*Bidens pilosa**	Cobbler's Pegs
	*Cirsium vulgare**	Spear Thistle
	*Conyza sumatrensis**	Fleabane
	Euchiton sphaericus	-
	Euchiton sphaericus	Cudweed
	*Senecio madagascariensis**	Fireweed
	Sigesbeckia orientalis	Indian Weed
	*Taraxacum officinale**	Dandelion
Blechnaceae	*Doodia aspera*	Rasp Fern
Commelinaceae	*Commelina cyanea*	Scurvy Weed
Convolvulaceae	*Dichondra repens*	Kidney Weed
Cyperaceae	*Baumea juncea*	-
	*Cyperus eragrostis**	Umbrella Sedge
	Gahnia clarkei	Tall Saw-sedge
Dennstaedtiaceae	*Hypolepis muelleri*	Harsh Ground Fern
	Pteridium esculentum	Bracken
Faboideae	*Trifolium repens**	White Clover
Goodeniaceae	*Goodenia ovata*	-

TABLE 2.3
FLORA SPECIES OBSERVED DURING SURVEYS

Family Name	Scientific Name	Common Name
Haloragaceae	*Gonocarpus teucroides*	Raspwort
Juncaceae	*Juncus cognatus**	-
	Juncus usitatus	Common Rush
Lobeliaceae	*Lobelia anceps*	
	Pratia purpurascens	Whiteroot
Lomandraceae	*Lomandra longifolia*	Spiky-headed Mat-rush
Malvaceae	*Sida rhombifolia**	Paddy's Lucerne
Myrsinaceae	*Anagallis arvensis**	Blue Pimpernel
	*Anagallis arvensis**	Scarlet Pimpernel
Phormiaceae	*Dianella caerulea*	Blue Flax Lily
Plantaginaceae	*Plantago lanceolata**	Ribwort
Poaceae	*Briza maxima**	Quaking Grass
	*Chloris gayana**	Rhodes Grass
	*Cortaderia selloana**	Pampas Grass
	Cynodon dactylon	Common Couch
	Echinopogon caespitosus var. *caespitosus*	Tufted Hedgehog Grass
	Echinopogon ovatus	Forest Hedgehog Grass
	Entolasia marginata	Bordered Panic
	Entolasia stricta	Wiry Panic
	Imperata cylindrica var. *major*	Blady Grass
	Microlaena stipoides var. *stipoides*	Weeping Rice Grass
	Oplismenus aemulus	Basket Grass
	Oplismenus imbecillis	-
	Paspalum dilatatum	Paspalum
	*Paspalum urvillei**	Vasey Grass
	Poa affinis	-
	Pennisetum clandestinum	Kikuyu Grass
	*Setaria parviflora**	Slender Pigeon Grass
	*Sporobolus africanus**	Parramatta Grass
	*Sporobolus africanus**	Parramatta Grass
	Sporobolus elongatus	Slender Rat's Tail Grass
	Stenotaphrum secundatum	Buffalo Grass
Polygonaceae	*Rumex crispus**	Curled Dock
Rosaceae	*Rubus fruticosus*	Blackberry
Selaginallaceae	*Selaginella uliginosa*	Swamp Selaginella
Thymelaeaceae	*Pimelea linifolia* subsp. *linifolia*	Slender Rice Flower
Typhaceae	*Typha orientalis*	Cumbungi
Verbenaceae	*Verbena bonariensis**	Purpletop
Violaceae	*Viola hederacea*	Ivy-leaved Violet
Climbers		
Apocynaceae	*Parsonsia straminea*	Common Silkpod
Basellaceae	*Anredera cordifolia**	Madiera Vine
Bignoniaceae	*Pandorea pandorana*	Wonga Vine
Caprifoliaceae	*Lonicera japonica**	Japanese Honeysuckle
Convolvulaceae	*Ipomoea indica**	Coastal Morning Glory

TABLE 2.3 FLORA SPECIES OBSERVED DURING SURVEYS		
Family Name	**Scientific Name**	**Common Name**
Faboideae	*Glycine clandestina*	Twining Glycine
	Hardenbergia violacea	False Sarsparilla
	Kennedia rubicunda	Dusky Coral Pea
Lauraceae	*Cassytha glabella*	Slender Devil's Twine
	Cassytha pubescens	Common Devil's Twine
Luzuriagaceae	*Geitonoplesium cymosum*	Scrambling Lily
Menispermiaceae	*Sarcopetalum harveyanum*	Pearl Vine
Pittosporaceae	*Billardiera scandens*	Apple Dumplings
Species name [TS] = Threatened Species * = Introduced Species		


Legend
Site Area
Plant Community Types
1 PCT 1636 - Scribbly Gum - Red Bloodwood - Angophora inopina heathy woodland on lowlands of the Central Coast
2 PCT1716 - Prickly-leaved Paperbark forest on coastal lowlands of the Central Coast and Lower North Coast
3 PCT1722 - Swamp Mahogany - Paperbarks - Harsh Ground Fern swamp forest of the Central Coast
4 PCT1728 - Swamp Oak - Prickly Paperbark - Tall Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast
5 PCT 1737 - Typha Rushland
6 Cleared Land / Exotic & Planted Native Vegetation
conacher consulting
0 50 100 150 200 m
Plan produced on A4 colour
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 20/01/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2021) Air Photo Date: 14/01/2021
Figure 2.1
Map of Plant Community Types
Bakali Road, Forresters Beach

.

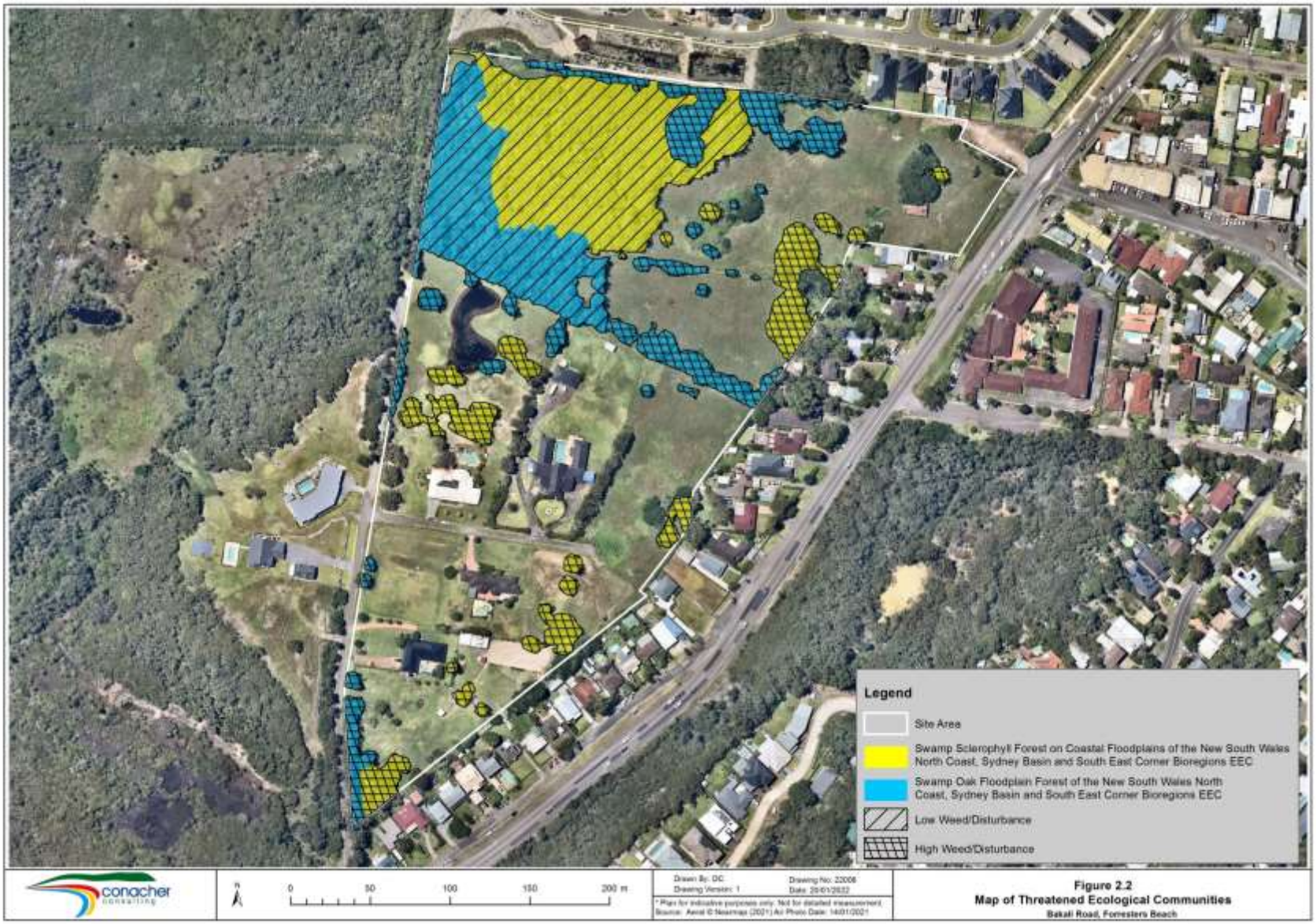


Figure 2.2
Map of Threatened Ecological Communities
Bakali Road, Forresters Beach

SECTION 3

FAUNA AND FAUNA HABITATS

3.1 THREATENED FAUNA SPECIES

A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2022) was conducted for threatened fauna species recorded within 10km of the subject site. This revealed a number of threatened species that have been recorded in the area. Details on threatened fauna species as listed in the Biodiversity Conservation Act, with a known or possible occurrence within the local area are provided in Table 3.1. Species which exclusively inhabit marine, estuarine and beach environments have been omitted due to a lack of suitable habitat within the study area.

TABLE 3.1
THREATENED FAUNA SPECIES OF THE AREA

Common Name Scientific Name	BC Act	EP&BC Act	Preferred Habitat	Comments
Wallum Froglet *Crinia tinnula*	V	-	Found in acidic paperbark swamps and wallum country with dense groundcover. Breeds in temporary and permanent pools and ponds of high acidity.	Suitable habitat present.
Red-crowned Toadlet *Pseudophryne australis*	V	-	Prefers sandstone areas, breeds in grass and debris beside non-perennial creeks or gutters. Shelters under logs and rocks in non - breeding periods.	No suitable habitat present.
Green and Golden Bell Frog *Litoria aurea*	E	V	Breeding habitat consists of shallow (<1m) ponds or slowly moving waterways which undergo disturbance regimes such as fluctuating water flow or inflow of saline water with both areas of open water and dense low vegetation.	Suitable habitat present.
Stephens' Banded Snake *Hoplocephalus stephensii*	V	-	A nocturnal and partly arboreal species that inhabits open and closed forest communities sheltering under bark, in hollows and under exfoliating slabs of granite.	No suitable habitat present.
Wompoo Fruit-Dove *Ptilinopus magnificus*	V	-	Inhabits large undisturbed patches of lowland, adjacent highland rainforest and moist eucalypt forests feeding on fruit.	No suitable habitat present.
Superb Fruit-Dove *Ptilinopus superbus*	V	-	Rainforests, adjacent mangroves, eucalypt forests, scrublands with native fruits.	No suitable habitat present.
Black-necked Stork *Ephippiorhynchus asiaticus*	E		Prefers shallow, permanent, freshwater terrestrial wetlands, and surrounding marginal vegetation.	Suitable habitat present.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	**BC Act**	**EP&BC Act**	**Preferred Habitat**	**Comments**
Australasian Bittern *Botaurus poiciloptilus*	E	E	Inhabits shallow freshwater or brackish wetlands with tall dense beds of reeds, sedges or rush species and swamp edges.	Suitable habitat present.
Black Bittern *Ixobrychus flavicollis*	V	-	Prefers permanent freshwater wetlands with tall, dense vegetation.	Suitable habitat present.
Square-tailed Kite *Lophoictinia isura*	V		Utilises coastal and sub-coastal open forest, woodland or lightly timbered habitats.	Suitable habitat present.
Little Eagle *Hieraaetus morphnoides*	V		Inhabits a variety of habitats including woodland open forest, partially cleared areas, along watercourses and around wetlands.	Suitable habitat present.
Eastern Osprey *Pandion cristatus*	V	-	Utilises waterbodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding.	No suitable habitat present.
Bush Stone-curlew *Burhinus grallarius*	E	-	Open woodland, pasture areas.	Suitable habitat present.
Gang-gang Cockatoo *Callocephalon fimbriatum*	V		Prefers wetter forests and woodlands from sea level to > 2000m on Divide, timbered foothills and valleys, timbered watercourses, coastal scrubs, farmland and suburban gardens.	Suitable habitat present.
Glossy Black-Cockatoo *Calyptorhynchus lathami*	V		Open forests with *Allocasuarina* species and hollows for nesting.	Suitable habitat present.
Swift Parrot *Lathamus discolor*	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts.	Suitable habitat present.
Little Lorikeet *Glossopsitta pusilla*	V		Inhabits forests and woodlands feeding mostly on nectar and pollen particularly in profusely-flowering eucalypts.	Suitable habitat present.
Barking Owl *Ninox connivens*	V		Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting.	Suitable habitat present.
Powerful Owl *Ninox strenua*	V		Mature forests containing large hollows for breeding & densely vegetated gullies for roosting.	Suitable habitat present.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	**BC Act**	**EP&BC Act**	**Preferred Habitat**	**Comments**
Masked Owl Tyto novaehollandiae	V		Open forest & woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting.	Suitable habitat present.
Sooty Owl *Tyto tenebricosa*	V	-	Tall, dense, wet forests containing trees with very large hollows for roosting and breeding.	No suitable habitat present.
Regent Honeyeater *Anthochaera phrygia*	CE	E	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts.	Suitable habitat present.
Varied Sittella *Daphoenositta chrysoptera*	V		Prefers open eucalypt woodlands and forests, mallee, inland acacia, coastal tee-tree scrubs, parks and gardens.	Suitable habitat present.
Spotted-tailed Quoll *Dasyurus maculatus*	V	E	Inhabits a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Shelters in hollow-bearing trees, fallen logs, small caves and rock crevices.	Suitable habitat present.
Koala *Phascolarctos cinereus*	V	V	Inhabits both wet & dry eucalypt forest on high nutrient soils containing preferred feed trees.	Suitable habitat present.
Eastern Pygmy-possum *Cercartetus nanus*	V	-	Found in a variety of habitats from rainforest through open forest to heath. Feeds on insects but also gathers pollen from banksias, eucalypts and bottlebrushes. Nests in banksias and myrtaceous shrubs.	Suitable habitat present.
Yellow-bellied Glider *Petaurus australis*	V		Inhabits tall mature eucalypt forests with high nectar producing species and shelters in large hollow bearing trees.	No suitable habitat present.
Squirrel Glider *Petaurus norfolcensis*	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and coastal forest with heath understorey. Shelters in tree hollows.	Suitable habitat present.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	**BC Act**	**EP&BC Act**	**Preferred Habitat**	**Comments**
Grey-headed Flying-fox *Pteropus poliocephalus*	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy.	Suitable habitat present. Observed flying over the subject site.
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris*	V	-	Inhabits wet and dry sclerophyll forest, open woodland, shrubland, mallee, grassland and desert. Roosts in tree hollows.	Suitable habitat present.
Eastern Coastal Freetail-bat *Micronomus norfolkensis*	V		Inhabits eucalypt forest and woodland on the coastal side of the Great Dividing Range. Roosts in tree hollows, under bark and in various man-made structures.	Suitable habitat present.
Eastern Cave Bat *Vespadelus troughtoni*	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies.	Suitable habitat present.
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	V		Inhabits wet sclerophyll forest, open forest, rainforest and coastal mallee. Roosts mostly in roosts in hollow trunks of eucalypts but also in caves and man-made structures.	Suitable habitat present. Recorded on site.
Large Bentwing-bat *Orianae australis*	V		Inhabits rainforest, vine thicket, wet and dry melaleuca swamps and coastal forests. Roosts in caves, man-made structures such as abandoned mines and buildings and occasionally banana trees and tree hollows.	Suitable habitat present.
Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*	V		Inhabits rainforest, wet and dry sclerophyll forest, open woodland, Melaleuca forests and open grassland. Roosts in caves and man-made structures.	Suitable habitat present. Recorded on site.
Southern Myotis *Myotis macropus*	V		Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water.	Suitable habitat present. Recorded on site.

TABLE 3.1 THREATENED FAUNA SPECIES OF THE AREA				
Common Name Scientific Name	**BC Act**	**EP&BC Act**	**Preferred Habitat**	**Comments**
Greater Broad-nosed Bat *Scoteanax rueppellii*	V		Inhabits moist gullies in mature coastal forest, rainforest, open woodland, Melaleuca swamp woodland, wet and dry sclerophyll forest, cleared areas with remnant trees and tree-lined creeks in open areas. Roosts in tree hollows, cracks and fissures in trunks and dead branches, under exfoliating bark, and in man-made structures.	Suitable habitat present.
Giant Dragonfly *Petalura gigantea*	E	-	Inhabits permanent swamps and bogs with some free water and open vegetation.	Suitable habitat present.
CE = Critically Endangered Species Ext. = Presumed Extinct Species V = Vulnerable Species E = Endangered Species				

The threatened fauna species which were observed, or are considered to have suitable habitat within the subject site, have been assessed under the test of significance as detailed in Section 4 and Appendix 2 of this report.

3.2 ENDANGERED FAUNA POPULATIONS

There are no endangered fauna populations listed within the local government area.

3.3 FAUNA HABITATS

The site contains coastal swamp forest/scrub vegetation, areas of disturbed remnant canopy vegetation characteristic of coastal swamp forest and coastal dry sclerophyll forest vegetation and cleared areas. A range of niche habitats are present throughout the site, these include:

- Several hollow bearing trees;
- Areas of forest/scrub and canopy only vegetation;
- Nectar and seed producing trees and shrubs;
- Leaf litter leaf litter and fallen timber;
- Cleared areas;
- Farm dam, ponds in drainage line.

A summary of fauna habitats present and absent is provided in Table 3.2.

TABLE 3.2 FAUNA HABITATS PRESENT		
Key habitat Type	**Presence**	**Comments**
Hollow bearing trees	Yes	No large hollows suitable for large forest owls observed
Mature trees	Yes	Many trees present
Culverts	No	None observed
Rock Shelters / Caves / Crevices	No	None observed
Acacia shrubs	Yes	Low densities
Banksia shrubs	No	None observed
Native Grasses	Yes	Native understory grasses are present
Man-made features	Yes	Several dwellings, including one dilapidated dwelling and garage present.
The native vegetation types present	Yes	See Section 2
Areas of cleared land and exotic vegetation	Yes	See Section 2
Any exposed areas of bush rock including outcrops	No	None observed
Natural burrows	No	None observed
Large trees with basal cavities	No	None observed
Logs	Yes	Low densities only
Wetlands, streams, and waterbodies etc.	Yes	A dam is present within the site A mapped watercourse is also present in the location of a man-made drainage channel
Large nests and roosts	No	None observed
Wombat burrows	No	None observed
Dens used by Petaurus gliders	No	None observed
Petaurus glider sap feed trees	No	None observed
Distinctive scats	No	None observed
Latrine and den sites pf the Spotted-tailed Quoll	No	None observed
Allocasuarina spp. trees	No	None observed
Flying-fox camps	No	None observed
Micro chiropteran bat subterranean roosts (culverts, tunnels and disused mineshafts	No	None observed
Regent Honeyeater feed or nest trees;	No site use observed	Suitable feed trees present
Swift Parrot feed trees;	No site use observed	Suitable feed trees present
Winter-flowering eucalypts	Yes	*Eucalyptus robusta* is present.
Mistletoes	No	None observed.
Permanent soaks and seepages	Yes	The western section of the site contains low lying land which is subject to inundation.

3.4 FAUNA SURVEY METHODOLOGY

In order to detect the possible occurrence of threatened fauna species the following specific methods targeting these species were employed.

Literature Review

- Review of local resource documents;

- A search of the Bionet Atlas of NSW Wildlife (NSW OEH 2022) was undertaken to identify records of threatened fauna species located within 10 km of the site. This enabled the preparation of a predictive list of threatened fauna species that could possibly occur within the habitats found on the site.

Fauna Surveys

The following methods were utilised for fauna surveys:

- Targeted nocturnal and diurnal reptile and amphibian searches;
- Diurnal and nocturnal bird surveys;
- Diurnal and nocturnal mammal surveys;
- Arboreal and terrestrial mammal trapping;
- Recorded call playback for threatened nocturnal bird, amphibian and mammal species;
- Spotlighting;
- Microchiropteran bat echolocation call detection;
- Koala habitat assessment;
- Habitat searches and opportunistic observations during the completion of method specific fauna surveys; and
- Hollow bearing tree observation survey.

Fauna survey locations are shown in Figure 2.1 and details of fauna survey effort are provided in Table 3.3.

TABLE 3.3
FAUNA SURVEY DETAILS

Survey Type	Date	Survey Method	Weather Conditions	Survey Effort/Time
Diurnal Surveys	23 January 2008	Amphibian habitat search Reptile habitat search Mammal census Bird census	0/8 cloud No wind No rain 17^{0}C	1hr 15min 7pm-8.15pm
	24 January 2008	Amphibian habitat search Reptile habitat search Mammal census Bird census	0/8 cloud No wind No rain 19^{0}C	1hr 30mins 7.30am-9.00am
	24 January 2008	Amphibian habitat search Reptile habitat search Mammal census Bird census	1/8 cloud Light NE wind No rain 16^{0}C	1hr 7.00pm-8.00pm
	25 January 2008	Amphibian habitat search Reptile habitat search Mammal census Bird census	5/8 cloud No wind No rain 16^{0}C	50mins 6.50am-7.40am
	26 January 2008	Amphibian habitat search Reptile habitat search Mammal census Bird census	1/8 cloud No wind No rain 20^{0}C	50mins 7.30am-8.20am
	14 March 2014	Amphibian habitat search Reptile habitat search Mammal census Bird census	Not Recorded	2 hrs 8.30am-10.30am
Diurnal Surveys	12 February 2015	Amphibian habitat search Reptile habitat search Mammal census Bird census	0/8 cloud SSE wind No rain 25^{0}C	1 hr 8.30am-9.30am
	25 March 2021	Amphibian habitat search Bird census	No rain 22°C	1 hr 3.00pm-4.00pm
	29 March 2021	Amphibian habitat search Bird census	No rain 19°	1hr 7.00am-8.00am
	19 August 2021	Bird census	No rain 18°C	2 hrs 9.00am-11.00am
	26 August 2021	Amphibian habitat search Bird census	After rain 16°C	1hr 30mins 8.00am-9.30am
	9 November	Amphibian habitat search	Light rain	1 hr

TABLE 3.3 FAUNA SURVEY DETAILS				
Survey Type	**Date**	**Survey Method**	**Weather Conditions**	**Survey Effort/Time**
	2021	Bird census	22°C	5.00pm-6.00pm
	17 November 2021	Amphibian habitat search Bird census	No rain 20°C	1hr 4.00pm-5.00pm
	3 December 2021	Bird census Amphibian habitat search	No rain 20°C	1 hr 30 mins 10.00am-11.30am
	7 December 2021	Amphibian habitat search Bird census Giant Dragonfly	No rain 17°C	1 hr4.00pm-5.00pm
Nocturnal Surveys	23 January 2008	Spotlighting /habitat search Amphibian call detection Threatened fauna playback Microchiropteran bat ultrasonic call recording x2 units	0/8 cloud No wind No rain 4/4 moon 17^{0}C	1hr 30mins 8.00pm-9.30pm
	24 January 2008	Spotlighting /habitat search Amphibian call detection Threatened fauna playback Microchiropteran bat ultrasonic call recording x2 units	0/8 cloud Light NE wind No rain 4/4 moon 16^{0}C	1hr 30mins 8.00pm-9.30pm
	19 August 2021	Spotlighting /habitat search Amphibian habitat search Bird census Mammal census	2/8 Cloud Light E breeze 15^{0}C	1 hr 30 mins 6.00pm-7.30pm
	9 November 2021	Amphibian habitat search Bird census	8/8 Cloud Light rain 20^{0}C	1hr 30mins 8.30pm-10.00pm
	22 November - 6 December 2021	3 Anabat/ call detectors	Variable	Call activated recording
Trapping Surveys	23-25 January 2008	15 arboreal Elliot trap nights 15 terrestrial Elliot trap nights	Variable	30 trap nights
	22 November-	3 Remote detection camera traps	Variable	42 trap nights

3.5 FAUNA OBSERVED

The fauna species observed within the subject site are listed in Table 3.4.

The threatened fauna species, Grey-headed Flying-fox was observed flying over the subject site during surveys. Three threatened micro-bat species were detected by the Anabat call detectors during the November/December 2021 nocturnal surveys. These species are Eastern False Pipistrelle, Eastern Bentwing-Bat and Southern Myotis. All other fauna species observed are considered relatively common within the local area.

TABLE 3.4
FAUNA RECORDED WITHIN THE SUBJECT SITE

Common Name	Scientific Name	Observation Type
Amphibians		
Brown-striped Frog	*Limnodynastes peronii*	W
Common Eastern Froglet	*Crinia signifera*	W
Eastern Dwarf Tree Frog	*Litoria fallax*	W
Tyler's Tree Frog	*Litoria tyleri*	W
Reptiles		
Dark-flecked Garden Sunskink	*Lampropholis delicata*	O
Eastern Water-skink	*Eulamprus quoyii*	O
Green tree Snake	*Dendrelaphis punctulatus*	O
Golden-crowned Snake	*Cacophis squamulosus*	O
Red-bellied Black Snake	*Pseudechis porphyriacus*	O
Eastern Water Dragon	*Intellagama lesueurii*	O
Lace Monitor	*Varanus Varius*	O
Birds		
Bar-shouldered Dove	*Geopelia humeralis*	O
Crested Pigeon	*Ocyphaps lophotes*	O
Purple Swamphen	*Porphyrio porphyrio*	OW
Masked Lapwing	*Vanellus miles*	OW
White-faced Heron	*Egretta novaehollandiae*	O
Australian Wood Duck	*Chenonetta jubata*	OW
Pacific Black Duck	*Anas superciliosa*	OW
Rainbow Lorikeet	*Trichoglossus haematodus*	OW
Sulphur-crested Cockatoo	*Cacatua galerita*	OW
Galah	*Eolophus roseicapillus*	OW
Eastern Rosella	*Platycercus eximius*	OW
Tawny Frogmouth	*Podargus strigoides*	O
Dollarbird	*Eurystomus orientalis*	OW
Laughing Kookaburra	*Dacelo novaeguineae*	OW
White-throated Needletail [M]	*Hirundapus caudacutus*	O
Eastern Koel	*Eudynamys orientalis*	OW
Pheasant Coucal	*Centropus phasianinus*	W
Welcome Swallow	*Hirundo neoxena*	OW
Willie Wagtail	*Rhipidura leucophrys*	OW
Leaden Flycatcher	*Myiagra rubecula*	OW
Eastern Yellow Robin	*Eopsaltria australis*	OW

TABLE 3.4 FAUNA RECORDED WITHIN THE SUBJECT SITE		
Common Name	**Scientific Name**	**Observation Type**
Rufous Whistler	*Pachycephala rufiventris*	OW
Magpie-lark	*Grallina cyanoleuca*	OW
Eastern Whipbird	*Psophodes olivaceus*	W
Brown Thornbill	*Acanthiza pusilla*	OW
White-browed Scrubwren	*Sericornis frontalis*	OW
Superb Fairy-wren	*Malurus cyaneus*	OW
Lewin's Honeyeater	*Meliphaga lewinii*	OW
Yellow-faced Honeyeater	*Lichenostomus chrysops*	OW
Noisy Miner	*Manorina melanocephala*	OW
Noisy Friarbird	*Philemon corniculatus*	OW
Double-barred Finch	*Taeniopygia bichenovii*	OW
Red-browed Finch	*Neochmia temporalis*	OW
Pied Currawong	*Strepera graculina*	OW
Pied Butcherbird	*Cracticus nigrogularis*	W
Grey Butcherbird	*Cracticus torquatus*	W
Australian Magpie	*Cracticus tibicen*	OW
Little Wattlebird	*Anthochaera chrysoptera*	OW
Domestic Fowl*	*Gallus gallus domesticus*	OW
Australian Raven	*Corvus coronoides*	OW
Red-whiskered Bulbul*	*Pycnonotus jocosus*	O
Mammals		
Sugar Glider	*Petaurus breviceps*	Q
Brush tailed Possum	*Trichosurus vulpecula*	Q
Brown Antechinus	*Antechinus stuartii*	Q
Bush Rat	*Rattus fuscipes*	T
Rabbit *	*Oryctolagus cuniculus*	P
Cat *	*Felis catus*	O
Grey-headed Flying-fox TS	*Pteropus poliocephalus*	O
Gould's Long-eared Bat	*Nyctophilus gouldi*	U
Gould's Wattled Bat	*Chalinolobus gouldii*	U
Eastern False Pipistrelle TS	*Falsistrellus tasmaniensis*	U
Eastern Bentwing-bat TS	*Miniopterus schreibersii*	U
Southern Myotis TS	*Myotis macropus*	U
		U

Key to Observation Type

E - Nest / Roost	O - Observed
F - Tracks / Scratchings / Chew Marks	OW - Observed and Heard Call
FB - Burrow	P - Scat
G - Crushed Cones	Q - Camera
H - Hair / Feathers / Skin	T - Trapped
K - Dead	U - Ultrasonic Recording
M - Miscellaneous Record	W - Heard

Note: * indicates introduced species. TS indicates threatened species


BAKALI ROAD
CENTRAL COAST HIGHWAY
Legend
Subject Site Boundary
Lot Boundary
Remote Camera Location
Anabat Location
Diurnal Theatened Species Meander Survey
Nocturnal Theatened Species Meander Survey
conacher consulting
N
0 25 50 75 100 m
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 20/01/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2021) Aerial Photo Date: 30 Aug 2021
Figure 3.1
Fauna Survey Details
Central Coast Highway, Forresters Beach

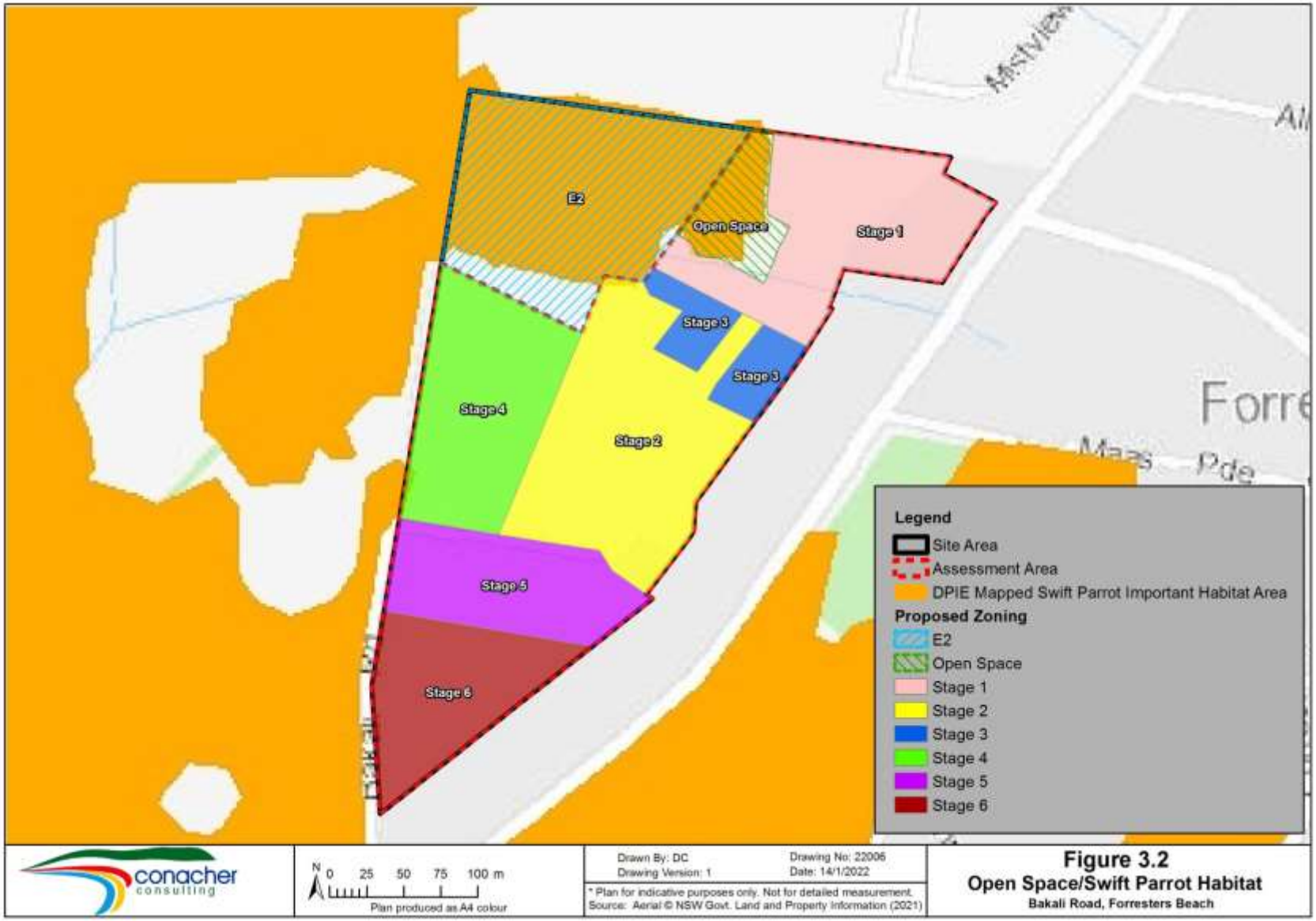


Figure 3.2
Open Space/Swift Parrot Habitat
Bakali Road, Forresters Beach

SECTION 4

ASSESSMENTS AND CONCLUSIONS

4.1 BIODIVERSITY OFFSET SCHEME THRESHOLD ASSESSMENT

The following considerations are provided in relation to the Biodiversity Offset Scheme Threshold and Biodiversity Development Assessment Report:

- A BOSET Report is provided in Appendix 1;
- The proposed development footprint assessed in this Report will impact more than the 0.5 ha native vegetation area clearing threshold that exceeds the Biodiversity Offset Scheme Threshold for this site;
- Part of the subject site is located on the biodiversity values map,
- The proposed development will not be carried out in a declared area of outstanding biodiversity value.

It is considered that the future development application is required to be accompanied by a Biodiversity Development Assessment Report prepared in accordance with the Biodiversity Assessment Method for development applications under Part 4 of the EP&A Act.

4.2 BIODIVERSITY CONSERVATION ACT (2016) ASSESSMENT OF SIGNIFICANCE

A Threatened Species Assessment of Significance has been undertaken for those threatened species observed during surveys or identified have having suitable habitat contained within the site. Full details of this Assessment of Significance are provided in Appendix 2.

The Assessment of Significance has concluded that the future development is not likely to have a significant effect on threatened species, ecological communities or their habitats. However, a Biodiversity Development Assessment Report is required for a development application for this proposal due to the area of vegetation required to be cleared triggering the Biodiversity Offset Scheme Threshold.

4.3 STATE ENVIRONMENTAL PLANNING POLICY (KOALA HABITAT PROTECTION) 2021

The site is located within a local government area listed in Schedule 1 of State Environmental Planning Policy (Koala Habitat Protection) 2021.

Am assessment of koala habitat in accordance with Clause 6 (i) of SEPP (KHP) 2021 is provided in Appendix 5.

This assessment has concluded that the site does not contain core koala habitat and a low impact on koalas or their habitat will result from the proposed development.

4.4 ENVIRONMENTAL PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) SIGNIFICANCE ASSESSMENT

The *Environment Protection and Biodiversity Conservation Act*, (1999) requires that Commonwealth approval be obtained for certain actions. The Act provides an assessment and approvals systems for actions that have a significant impact on matters of National Environment Significance (NES). These may include:-

- Wetlands protected by international treaty (the Ramsar Convention);
- Nationally listed threatened species and Ecological communities;
- Nationally listed migratory species.

Actions are projects, developments, undertakings, activities, series of activities or alteration of any of these. An action that needs Commonwealth approval is known as a controlled action. A controlled

action needs approval where the Commonwealth decides the action would have a significant effect on a NES matter.

Where a proposed activity is located in an area identified to be of NES, or such that it is likely to significantly affect threatened species, Ecological communities, migratory species or their habitats, the matter needs to be referred to the Australian Government Department of Agriculture, Water and the Environment (DAWE).

An assessment in accordance with the EPBC Significant Impact Guidelines is provided in Appendix 3. This assessment has concluded that: "the proposed action is not likely to have a significant impact on nationally listed threatened or migratory species or nationally listed threatened ecological communities". Therefore a referral of the project to the Department of Agriculture, Water and the Environment is not required.

4.5 CONSIDERATION OF MAPPED SWIFT PARROT IMPORTANT HABITAT

Areas mapped as Swift Parrot Important Habitat Areas are present within the northwest areas of the site, as shown in Figure 3.2. These areas are to be included in either an E2-Environmental Protection or RE1-Public Recreation zone. As shown in Appendix 6 no development or native vegetation clearing is proposed in the land mapped as Swift Parrot Important Habitat Areas. The extent of the proposed open space (RE1) land covers approximately 4,000 square metres and was determined by Council and the proponent during ongoing discussions. This area will be classified as Community Land and subject to a VPA and the preparation of a Plan of Management as required for public reserves under the provisions of the Local Government Act.

The exclusion of development and ongoing management of the areas included in the Swift Parrot Important Habitat Area are part of the direct impact avoidance measures proposed for the rezoning outcomes.

4.6 CONCLUSIONS

Based on the detailed field surveys, information provided and assessments completed in this report it is concluded that:

i. No threatened flora were observed during surveys.

ii. The threatened fauna species, (Grey headed Flying Fox, Eastern False Pipistrelle, Large Bentwing-bat and Southern Myotis) listed within the *BC Act* were observed within the subject site.

iii. No threatened populations listed within the *BC Act* (2016) or the *EPBC Act* (1999) were observed within the subject site during surveys.

iv. The endangered ecological community Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, was observed during surveys;

v. The endangered ecological community Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, was observed during surveys;

vi. One migratory species listed within the *EPBC Act* (1999),(White throated Needle tail) was observed within the subject site.

vii .A referral to the Australian Government Department of Agriculture, Water and the Environment is considered unnecessary.

viii. The proposed development is not likely to significantly affect threatened species or their habitats as assessed under Section 7.2 of the Biodiversity Conservation Act (2016);

ix The future stages of the proposed development will trigger the Biodiversity Offset Threshold identified in Part 7 of the Biodiversity Conservation Regulation (2017);

x. A variety of measures are proposed to avoid direct impacts on areas mapped as Swift Parrot Important Habitat Area.

xi. The site does not contain core koala habitat under the provisions of SEPP (Koala Habitat Protection) 2021.

xii. A Biodiversity Development Assessment Report is required for each future development application following rezoning.

REFERENCES

Australian Government Department of the Environment (2013) *EPBC Act Policy Statement 1.1 Significant Impact Guidelines, Matters of National Environmental Significance*, Commonwealth of Australia.

Australian Government Department of the Environment and Energy (2022) Protected Matters Search Tool. [Online]. Available from: http://www.environment.gov.au/epbc/pmst/index.html

Bell, SAJ (2019) A Revised Interim Vegetation Classification of the Central Coast Local Government Area. Unpublished Report to Central Coast Council. East Coast Flora Survey.

Biodiversity Conservation Act (2016), New South Wales Government.

Central Coast Council (2019) Flora and Fauna Guidelines. Central Coast Council.

Environment Protection and Biodiversity Conservation Act (1999). Commonwealth Government.

NSW Office of Environment and Heritage 2022, NSW Bionet, [Online] Available from: http://www.bionet.nsw.gov.au/

APPENDIX 1

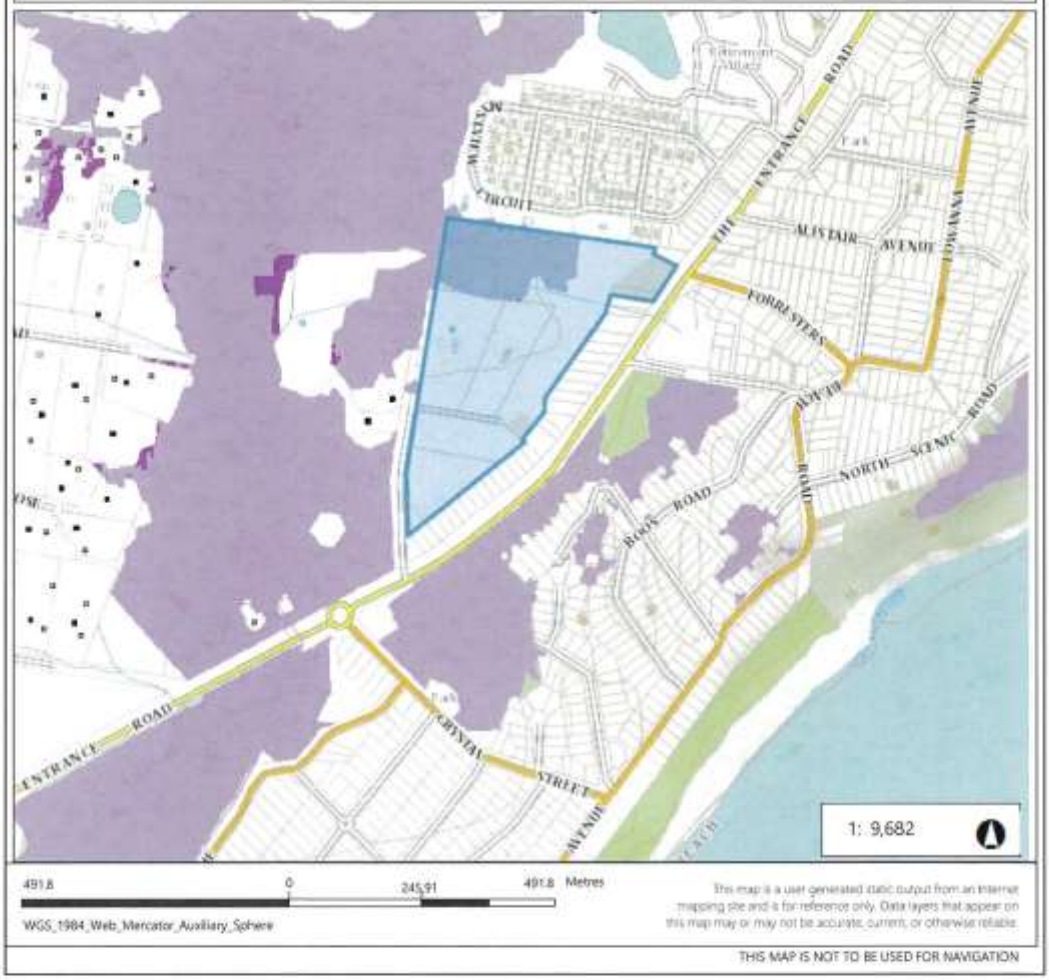
BIODIVERSITY OFFSET SCHEME ENTRY THRESHOLD REPORT

A1.1 BIODIVERSITY OFFSET SCHEME ENTRY THRESHOLD MAP

The following print out from the Biodiversity Offset Scheme Entry Threshold Map Tool is provided for the purposes of establishing that the site is not located on the biodiversity values map and and determining the area clearing threshold which applies to the site.

NSW GOVERNMENT

Biodiversity Offset Scheme (BOS) Entry Threshold Map



Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

© Office of Environment and Heritage | NSW Environment & Heritage

NSW GOVERNMENT

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	04/12/2021 10:22 AM		**BDAR Required***
Total Digitised Area	9.57	ha	
Minimum Lot Size Method	Lot size		
Minimum Lot Size	0.06	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	yes		yes
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date: 04/12/2021 10:22 AM

APPENDIX 2

BIODIVERSITY CONSERVATION ACT (2016) TEST OF SIGNIFICANCE

BIODIVERSITY CONSERVATION ACT (2016) TEST OF SIGNIFICANCE

The following Threatened Species Test of Significance has been undertaken for those threatened species, populations and ecological communities observed during surveys or identified has having suitable habitat contained within the subject site.

The following Test of Significance has been completed in accordance with Section 7.3 of the *Biodiversity Conservation Act* (2016) to determine whether the proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. This Assessment has been completed in accordance with the Threatened Species Test of Significance Guidelines (NSW OEH 2018). Notwithstanding the conclusions provided it is noted that the following species will be subject to further detailed assessment as part of a future BDAR for the development application.

A1.1 ASSESSMENT OF SIGNIFICANCE

For the purposes of the following assessments the definitions of specific terminology and interpretations of the key terms used are as per the NSW OEH (2018) Threatened species assessment guidelines. Further clarification is also provided where deemed appropriate.

a) In the case of a threatened species, whether the action proposed 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,

Threatened Flora Species

Eucalyptus camfieldii
Eucalyptus camfieldii is associated with the boundary of tall heaths in coastal areas and low open woodlands of marginally more fertile inland areas. It is generally associated with sandy soils overlying Hawkesbury Sandstone This species was not observed.

It is therefore considered that the action proposed is not 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.

Maundia triglochinoides
This species grows in freshwater habitats on heavy low nutrient clay soils. Its distribution is coastal from Wyong north to Southern Queensland.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Melaleuca biconvexa
This species is a paperbark shrub or small tree which prefers poorly drained habitats near swamps and along drainage lines. This species occurs in disjunct populations from near Jervis Bay to Port Macquarie with the main concentration of records on the Central Coast in the Gosford and Wyong local government areas.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Threatened Fauna Species

Wallum Froglet (*Crinia tinnula*)
The Wallum Froglet is mainly confined to acid paperbark swamps and wallum areas with poor drainage This species breeds in late winter and is restricted to coastal areas of southern Qld

and NSW (Cogger 2000).

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Green-thighed Frog (*Litoria brevipalmata*)
The Green-thighed frog utilises a variety of habitats including rainforest, moist eucalypt forest, dry eucalypt forest, heath, coastal swamp Forest and the perimeter of paddocks, particularly in areas where surface water gathers after rain. This species breeds in late spring or summer, with individuals aggregating around the margins of grassy semi-permanent and permanent ponds and flood-prone grassy areas.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Black-necked Stork (*Ephippiorhynchus asiaticus*)
This species prefers still and permanent, shallow freshwater floodplain habitats including wetlands, swamps, watercourses, farm dams and shallow floodwaters and adjacent areas of grasslands, heathlands, paddocks, and woodlands. This species also forages around estuaries and along intertidal shorelines.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Square-tailed Kite (*Lophoictinia isura*)
The Square-tailed Kite inhabits the coastal forested and wooded lands of tropical and temperate Australia. The Square-tailed Kite is a specialist hunter of passerines, especially honeyeaters, and insects in the tree canopy, picking most prey items from the outer foliage.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Little Eagle (*Hieraaetus morphnoides*)
This species forages in a variety of habitats including woodland open forest, partially cleared areas, along watercourses and around wetlands, avoiding large areas of dense forest. This species nests in mature living trees in open forest, woodland and remnant areas including farmland and areas close to urban development.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Bush Stone-curlew (*Burhinus grallarius*)
The Bush Stone-curlew occurs in open woodland with fallen branches, leaf-litter, sparse grass, timber along dry watercourses, sand plains with spinifex and mallee, sandy scrub near beaches, mangrove-fringes, country golf courses, timber remnants on roadsides, plantations and urban areas.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Gang-gang Cockatoo (*Callocephalon fimbriatum*)
The Gang-gang Cockatoo is associated with a variety of woodland and forest habitats, and occasionally more open areas in south–eastern New South Wales and Victoria. This species utilises eucalypt forests and exotic trees, and is known to feed on the seeds of native shrubs and trees, in addition to some exotic species such as the Hawthorn and Cupressus species.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Glossy Black-Cockatoo (*Calyptorhynchus lathami*)
The Glossy Black-Cockatoo inhabits woodlands and open sclerophyll forests dominated by or with a middle stratum of Allocasuarina. They choose trees with larger cone crops, concentrating foraging in trees with a high ratio of total seed weight to cone weight. They breed in hollow trees or stumps usually in Eucalypts.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Swift Parrot (*Lathamus discolor*)
This species feeds mainly on nectar and lerp from eucalypt flowers, particularly Blue Gum (Eucalyptus globulus). On the mainland, the Swift Parrot congregates where winter flowering species such as Yellow Gum, Red Ironbark, Mugga Ironbark, Box Gums and Swamp Gum. This species also occurs within Blackbutt, Forest Red Gum, Swamp Mahogany and Spotted Gum dominated communities along the coast. The Swift Parrot is a migratory species that breeds in Tasmania and its offshore islands in summer. In late March almost the entire population migrates to mainland Australia spreading from Victoria through to central and coastal NSW and south east Queensland.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Little Lorikeet (*Glossopsitta pusilla*)
Little Lorikeets are distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Lorikeets are gregarious, usually foraging in small flocks, often with other species of lorikeet. They feed primarily on nectar and pollen in the tree canopy, particularly on profusely-flowering eucalypts, but also on a variety of other species including, melaleucas and mistletoes.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Barking Owl (*Ninox connivens*)
The Barking Owl utilises dry sclerophyll forests and woodlands of tropical, temperate and semi-arid zones, particularly those associated with watercourses, wetlands and forest edges. Nests in large hollows in live eucalypts, often near open country.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Powerful Owl (*Ninox strenua*)
The Powerful Owl breeds in open or closed sclerophyll forests and woodlands, including wet sclerophyll forest and dry sclerophyll forest and woodlands. They nest in hollows in large old trees; usually living Eucalyptus, within or below canopy in stumps or broken-off trunks. Powerful Owls are sedentary within home ranges of about 1,000 hectares within open eucalypt, casuarina or Callitris pine forest and woodlands, though they often roost in denser vegetation, including rainforest or exotic pine plantations. Powerful Owls feed mainly on medium-sized arboreal marsupials.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Masked Owl (*Tyto novaehollandiae*)
The Masked Owl is widespread through forests and woodlands. The Masked Owl is known to utilise forest margins and isolated stands of trees within agricultural land. This species is often found in heavily disturbed forest where its prey of small and medium sized mammals can be readily obtained. The Masked Owl is dependent upon hollow bearing trees all year round requiring old mature trees with large hollows for breeding and as diurnal roosting sites.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Regent Honeyeater (*Xanthomyza phrygia*)
The Regent Honeyeater inhabits mostly dry eucalypt woodlands and forests dominated by box ironbark eucalypts; on inland slopes of Great Divide, especially associations in moister more fertile sites, along creeks, broad river valleys and on lower slopes of foothills. Nectar is the principle food but sugary exudates from insects are also used. The Regent Honeyeater is known to breed along the western Slopes of the Great Dividing Range in New South Wales.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Varied Sittella (*Daphoenositta chrysoptera*)
This species inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Scarlet Robin (*Petroica boodang*)
This species inhabits mainly dry eucalypt forest and woodlands with open shrubby and grassy understorey on ridges and slopes during the spring-summer breeding season, dispersing during autumn–winter into open habitats including urban areas.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Spotted-tailed Quoll (*Dasyurus maculatus*)
The Spotted-tailed Quoll inhabits a range of forest communities including wet and dry open forest and rainforest. It appears to prefer moist forest types and riparian habitat. It has been

recorded from dry sclerophyll forest, open woodland and coastal heathland, and despite its occurrence in inland riparian areas, it also ranges over dry ridges.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Koala (*Phascolarctos cinereus*)
Koalas inhabit forested areas with acceptable Eucalypt food trees, also utilising some other non-Eucalypt species as a food source. Koalas inhabit both wet and dry eucalypt forests that contain a canopy cover of between 10 and 70% as well as suitable feed trees.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Eastern Pygmy Possum (*Cercartetus nanus*)
The Eastern Pygmy-possum is found from rainforest through sclerophyll forest to tree heath. Banksia and myrtaceous shrubs and trees are favoured. Eastern Pygmy-possums usually shelter alone in tree cavities, rotten stumps, holes in the ground, disused bird nests and possum dreys and in vegetation thickets. The home ranges of males, about 0.65 hectares are larger than those of females, about 0.35 hectares and not exclusive with home ranges broadly overlapping. Apart from females with young in the nest, individuals may utilise a number of nest sites within the home range.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Squirrel Glider (*Petaurus norfolcensis*)
The Squirrel Glider inhabits dry sclerophyll forest and woodland nesting in small tree hollows. The presence of mature, hollow-bearing eucalypts is a critical characteristic of habitat occupied by Squirrel Gliders as they are utilised for nesting and breeding.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Long-nosed Potoroo (*Potorus tridactylus*)
The Long-nosed Potoroo occupies a wide range of habitats, from heath to dry and moist hardwood forests. It requires thick groundcover and may be commoner on light sandy soils. Home ranges have been found to vary considerably, from 1.5 to 19 hectares, and may depend upon suitable habitat availability.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*)
In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not likely to have an adverse effect on the life cycle of the species such that a

viable local population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox (*Pteropus poliocephalus*)
Grey-headed Flying-foxes roost in camps during the day, which may contain tens of thousands of individuals, and then disperse to surrounding areas to forage at night. This species inhabits a wide range of habitats including rainforest, mangroves, paperbark forests, wet and dry sclerophyll forests and urbanised and agricultural areas. Camps are commonly formed in gullies, typically not far from water and usually in vegetation with a dense canopy. Camps may also be formed in urban parkland areas.

This species was observed flying over the subject site during surveys, however this species was not observed foraging or roosting within subject site during surveys. It is therefore considered that the action proposed is not 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.

Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)
The Yellow-bellied Sheathtail-bat inhabits a wide variety of habitats from wet and dry sclerophyll forest, to open woodland, shrubland, mallee, grassland and desert. They fly fast and straight usually over the canopy, and lower over open spaces and at forest edges. This species roosts in large tree hollows.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Eastern Freetail Bat (*Mormopterus norfolkensis*)
The Eastern Freetail-bat utilises dry eucalypt forest and woodland on the coastal side of the Great Dividing Range. They show a preference for open spaces in woodland or forest, and are more active in the upper slopes of forest areas rather than in riparian zones. They also forage over large waterways. This species roosts in hollow trees (usually in hollow spouts), under exfoliating bark and in various man-made structures.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Large-eared Pied Bat (*Chalinolobus dwyeri*)
In the Sydney Basin this species is most commonly recorded in areas of high fertility soils in wet sclerophyll forest along the edges of sandstone escarpments. This species is also recorded in dry sclerophyll forest and woodlands, sub-alpine woodland, at the edges of rainforest, Callitris forest and within sandstone outcrop country. Large-eared Pied Bats roost in clusters in fairy martin nests and on the ceilings of caves, crevices in cliffs and mines in twilight areas.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
The Eastern False Pipistrelle inhabits wet sclerophyll forest, open forest, rainforest and coastal mallee. They generally prefer tall and wet forests where the trees are more than 20 metres high and the understorey is dense. This species predominantly roosts in hollow trunks of eucalypts, however have also been reported to roost in caves and old building.

It is considered that suitable habitat for this species is present on the subject site and was observed within the subject site during surveys. Approximately 2.7ha of suitable habitat are proposed to be retained within the site. It is considered that the action proposed is not likely to

have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Little Bentwing-bat (*Miniopterus australis*)
The Little Bentwing-bat forages below the canopy within well-timbered areas including rainforest, vine thicket, wet and dry melaleuca swamps and coastal forests. This species is a cave dweller with individuals congregating during the summer months in maternity colonies and disperse during the winter. Other roost sites used by this species include abandoned mines, tunnels, stormwater drains and occasionally in buildings, banana trees and tree hollows.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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.

Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*)
Preferred habitats for this species include rainforest, wet and dry sclerophyll forest, open woodland, Melaleuca forests and open grassland. The Eastern Bentwing-bat forages high in forested areas from just above canopy height to many times canopy height. In more open areas such as grasslands, flight may be within a few metres of the ground. Eastern Bentwing-bats are cave dwellers, but will also roost in man-made structures such as road culverts and mines.

It is considered that suitable habitat for this species is present on the subject site and was observed within the subject site during surveys. .Approximately 2.7ha of suitable habitat are proposed to be retained within the site. It is considered that the action proposed is not 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.

Southern Myotis (*Myotis macropus*)
This species has a strong association with streams and permanent waterways, most commonly within vegetated areas at lower elevations and in flat undulating country. This species forages over water for small insects, fish and invertebrates and have a preference for large pools rather than flowing streams. Roost habitats for this species are near water and include caves, tree hollows, abandoned fairy martin nests, among vegetation, in clumps of Pandanus, and man-made structures including under bridges, in mines, tunnels, road culverts and stormwater drains.

It is considered that suitable habitat for this species is present on the subject site and it was observed within the subject site during surveys. The constructed dam present where this species was recorded is proposed to be retained. It is considered that the action proposed is not 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.

Greater Broad-nosed Bat (*Scoteanax rueppellii*)
A wide variety of habitats are utilised by this species including moist gullies in mature coastal forest, rainforest, open woodland, Melaleuca swamp woodland, wet and dry sclerophyll forest, cleared areas with remnant trees and tree-lined creeks in open areas. The Greater Broad-nosed Bat forages about 5m from the edge of isolated trees, forest remnants or along forest crowns with a slow direct flight pattern. This species is known to roost in tree hollows, cracks and fissures in trunks and dead branches, under exfoliating bark, as well as in man-made structures including roofs of old buildings.

It is considered that suitable habitat for this species is present on the subject site, however this species was not observed within the subject site during surveys. It is considered that the action proposed is not 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 proposal is predominantly confined to the existing disturbed areas of the site and the majority of the suitable habitats present for this species within the site will be retained outside of the proposed development footprint. There are also larger areas of suitable habitats present offsite within the locality which will not be impacted by the proposal.

It is considered that the proposed action will not have an adverse effect on the life cycle of any of the above threatened species such that a viable local population is likely to be placed at risk of extinction.

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

i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

This matter will be assessed in more detail as part of the BDAR to be completed for any future development application.

ii. Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

This matter will be assessed in more detail as part of the BDAR to be completed for any future development application.

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

This matter will be assessed in more detail as part of the BDAR to be completed for any future development application.

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

This matter will be assessed in more detail as part of the BDAR to be completed for any future development application.

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

This matter will be assessed in more detail as part of the BDAR to be completed for any future development application.

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 subject site has not been listed as a declared area of outstanding biodiversity value. The proposed development is not likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

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

The proposal is likely to increase the impact of the key threatening processes 'Clearing of native vegetation'. It is considered that the proposal is unlikely to increase the operation of this key threatening process to the extent that a significant effect on threatened biodiversity will occur.

BC ACT (2016) TEST OF SIGNIFICANCE CONCLUSION

Based on the ecological surveys completed and assessments undertaken above it is concluded that the proposed development is not likely to have a significant effect on threatened species, ecological communities or their habitats as listed within the *BC Act* (2016).

Notwithstanding, the above matters and threatened species will be subjected to detailed surveys and assessments to be completed for the Biodiversity Development Assessment Report fro any future development application.

.

APPENDIX 3

EPBC SIGNIFICANT IMPACT ASSESSMENT

ENVIRONMENTAL PROTECTION & BIODIVERSITY CONSERVATION ACT (1999) ASSESSMENT

The following assessment in accordance with the EP&BC Act Policy Statement 1.1 *Significant Impact Guidelines* (AGDE 2013) is provided:

i. Are there any Matters of National Environmental Significance located in the area of the proposed action?

A search of the Protected Matters Search Tool (AGDE 2014) was conducted for EPBC Listed threatened and migratory species recorded within 5 km of the subject site.

Threatened Species
Suitable habitat is present for the following nationally listed threatened species recorded from the Protected Matters Search:

- *Eucalyptus camfieldii*
- *Melaleuca biconvexa*
- Swift Parrot
- Regent Honeyeater
- Spotted-tailed Quoll
- Koala
- Long-nosed Potoroo
- Grey-headed Flying-fox
- Large-eared Pied Bat

Two hybrid tree specimens between *Eucalyptus camfieldii* and *Eucalyptus capitellata* (*Eucalyptus camfieldii* x *capitellata*) were observed during surveys. Hybrid specimens are not included as threatened species under the *EPBC Act* (1999).

One nationally listed threatened fauna species, the Grey-headed Flying-fox, was observed during surveys.

Threatened Ecological Communities
No nationally listed threatened ecological communities were observed during surveys.

Migratory Species
Suitable habitat is present for the following nationally listed threatened species recorded from the Protected Matters Search:

- White-bellied Sea-Eagle (*Haliaeetus leucogaster*)
- Rainbow Bee-eater *(Merops ornatus*)
- White-throated Needletail (*Hirundapus caudacutus*)
- Fork-tailed Swift (*Apus pacificus*)
- Satin Flycatcher (*Myiagra cyanoleuca*)
- Cattle Egret (*Ardea ibis*)

The migratory species, White-throated Needletail, was observed flying over the subject site during surveys.

ii. Considering the proposed action at its broadest scope, is there potential for impacts on Matters of National Environmental Significance?

The proposal will require the modification of a relatively small area of highly disturbed suitable habitat for nationally listed locally occurring threatened and migratory species, including the Grey-headed Flying-fox and the White-throated Needletail, which were observed during surveys.

iii. Are there any proposed measures to avoid or reduce impacts on Matters of National Environmental Significance?

The majority of intact habitats will be retained within the north-western section of the site under an environmental conservation zoning.

iv. Are any impacts of the proposed action on Matters of National Environmental Significance likely to be significant impacts?

With regard to nationally listed threatened species it is considered that the proposal is not likely to:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a threatened species becoming established in the threatened species' habitat;
- introduce disease that may cause a species to decline; or
- interfere with the recovery of the species.

The following reasons are provided:

- There are larger areas of higher quality habitat for locally occurring nationally listed threatened and migratory species present within the locality, including lands reserved for conservation such as Wyrrabalong National Park and Gosford Councils Coastal Open Space System; and
- The area of proposed habitat loss is highly disturbed and relatively small in area.

With regard to nationally listed migratory species it is considered that the proposal is not likely to:

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

The following reasons are provided:

- The subject site does not contain important habitat for a nationally listed migratory species;
- The area of proposed habitat loss is highly disturbed and relatively small in area; and
- The nationally listed migratory species observed flying over the site, the White-throated Needletail, forages widely throughout the region.

CONCLUSION

It is considered that the proposed action is not likely to have a significant impact on nationally listed threatened or migratory species.

APPENDIX 4

ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT (1999)
PROTECTED MATTERS SEARCH REPORT

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 04-Dec-2021

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	88
Listed Migratory Species:	76

Other Matters Protected by the EPBC Act

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

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 Lands:	5
Commonwealth Heritage Places:	None
Listed Marine Species:	98
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	4
Regional Forest Agreements:	1
Nationally Important Wetlands:	4
EPBC Act Referrals:	9
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thinornis cucullatus cucullatus Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Mixophyes iteratus			
Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae			
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petauroides volans			
Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area	In feature 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	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area	In feature area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat may occur within area	In feature area
Prostanthera askania Tranquillity Mintbush, Tranquility Mintbush [64958]	Endangered	Species or species habitat known to occur within area	In buffer area only
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat may occur within area	In feature area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tetratheca juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

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

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Corporation [11771]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11752]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11753]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11754]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16419]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pluvialis squatarola Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius skua as Catharacta skua Great Skua [823]		Species or species habitat may occur within area	In buffer area only
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thinornis cucullatus cucullatus as Thinornis rubricollis rubricollis Eastern Hooded Plover, Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Xenus cinereus Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Fish			
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

Whales and Other Cetaceans		[Resource Information]	
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area	In feature area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Gosford Coastal Open Space System	NRS Addition - Gazettal in Progress	NSW	In buffer area only
Wamberal Lagoon	Nature Reserve	NSW	In buffer area only
Wambina	Nature Reserve	NSW	In buffer area only
Wyrrabalong	National Park	NSW	In feature area

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

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

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Avoca Lagoon	NSW	In buffer area only
Terrigal Lagoon	NSW	In buffer area only
Tuggerah Lake	NSW	In buffer area only
Wamberal Lagoon	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Stages 6-16 of a retirement village/Bellevue Road, Forresters Beach	2003/946	Controlled Action	Post-Approval	In feature area
Not controlled action				
Central Coast Highway Upgrade from Ocean View Dve to Matcham Rd	2009/4815	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In buffer area only
development of stages 1 - 5 of a retirement village	2003/945	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Terrigal Sewer Pumping Station Upgrade	2001/128	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Repair and Upgrade of North Avoca Sewerage System	2010/5740	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Residential Development	2002/711	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In feature area

Biologically Important Areas

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Seabirds			
Ardenna pacifica			
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In feature area
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In feature area
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Foraging	Known to occur	In feature area

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status

SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

© Commonwealth of Australia
Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

APPENDIX 5

SEPP (KOALA HABITAT PROTECTION) 2021 ASSESSMENT

ASSESSMENT REPORT

STATE ENVIRONMENTAL PLANNING POLICY

(KOALA HABITAT PROTECTION) 2021

BAKALI ROAD
FORRESTERS BEACH

NOVEMBER 2021
REF: 21078/K

ASSESSMENT REPORT

STATE ENVIRONMENTAL PLANNING POLICY

(KOALA HABITAT PROTECTION) 2021

BAKALI ROAD
FORRESTERS BEACH

NOVEMBER 2021

Conacher Consulting Pty Ltd

Environmental and Land Management Consultants

PO Box 4082, East Gosford NSW
Phone: 02 4324 7888
conacherconsulting@gmail.com

This document is copyright ©
Conacher Consulting P.L. ABN 62 166 920 869

PREFACE

This Assessment Report has been prepared by Conacher Consulting for a proposed rezoning of land at Bakali Road, Forresters Beach.

This Report provides details of the flora characteristics of the site in relation to the application of State Environmental Planning Policy (Koala Habitat Protection) 2021.

Site Assessment and Report completed by

PHILLIP ANTHONY CONACHER B.Sc.(Hons), Dip.Urb Reg Planning, M.Nat.Res.
NPWS Scientific Licence Number: SL100361
Project Director

1. INTRODUCTION

This Report is an assessment of the proposal in relation to State Environmental Planning Policy (Koala Habitat Protection) 2021, (SEPP (KHP) 2021). The subject site has an area of more than 1 hectare in size and is located in a local government area listed in Schedule 1 of the SEPP, therefore this SEPP applies. Details of the subject site are provided in Table 1.

TABLE 1.1 SITE DETAILS	
Location	Bakali Road, Forresters Beach
Allotment Area	Exceeds 1 hectare.
Local Government Area	Central Coast Council
Proposed Development	Rezoning for residential, open space, drainage and conservation.

For the purposes of this Report the following definitions, as provided in SEPP (Koala Habitat Protection) 2021, have been used.

Highly suitable Koala habitat – Highly suitable koala habitat is where 15% or greater of the total number of trees within any Plant Community Type (PCT) are the regionally relevant species of those listed in Schedule 2 of the SEPP (NSW Government 2021).

Core koala habitat –
(a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or

(b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

Suitably qualified and experienced person means a person who has:

- *a) a tertiary qualification in ecology, environmental management, forestry or other equivalent qualifications, and*
- *b) experience in flora and fauna identification, survey and management, including experience in conducting koala surveys.*

Koala Use Tree Species
Those trees listed in Schedule 2 of SEPP (KHP) 2021 for the Central Coast Koala Management Area, are provided in Table 2.

TABLE 2 KOALA USE TREE SPECIES Central Coast Koala Management Area – Schedule 2 Koala use trees species	
Scientific name	**Common name(s)**
Allocasuarina littoralis	Black She-oak
Allocasuarina torulosa	Forest Oak
Angophora bakeri	Narrow-leaved Apple
Angophora costata	Smooth-barked Apple
Angophora floribunda	Rough-barked Apple
Casuarina glauca	Swamp Oak
Corymbia eximia	Yellow Bloodwood
Corymbia gummifera	Red Bloodwood
Corymbia maculata	Spotted Gum
Eucalyptus acmenoides	White Mahogany
Eucalyptus agglomerata	Blue-leaved Stringybark

Eucalyptus albens	White Box
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus beyeriana	Beyer's Ironbark
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bosistoana	Coast Grey Box
Eucalyptus botryoides	Bangalay
Eucalyptus camaldulensis	River Red Gum
Eucalyptus camfieldii	Camfield's Stringybark
Eucalyptus canaliculata	Large-fruited Grey Gum
Eucalyptus capitellata	Brown Stringybark
Eucalyptus carnea	Thick-leaved Mahogany
Eucalyptus consideniana	Yertchuk
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus cypellocarpa	Monkey Gum
Eucalyptus deanei	Mountain Blue Gum
Eucalyptus eugenioides	Narrow-leaved Stringybark
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus glaucina	Slaty Red Gum
Eucalyptus globoidea	White Stringybark
Eucalyptus grandis	Flooded Gum
Eucalyptus haemastoma	Broad-leaved Scribbly Gum
Eucalyptus imitans	Eucalyptus imitans
Eucalyptus largeana	Craven Grey Box
Eucalyptus longifolia	Woollybutt
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus melliodora	Yellow Box
Eucalyptus michaeliana	Brittle Gum
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Grey Box
Eucalyptus oblonga	Stringybark
Eucalyptus paniculata	Grey Ironbark
Eucalyptus parramattensis	Parramatta Red Gum
Eucalyptus pilularis	Blackbutt
Eucalyptus piperita	Sydney Peppermint
Eucalyptus propinqua	Small-fruited Grey Gum
Eucalyptus punctata	Grey Gum
Eucalyptus quadrangulata	White-topped Box
Eucalyptus racemosa	Narrow-leaved Scribbly Gum
Eucalyptus resinifera	Red Mahogany
Eucalyptus robusta	Swamp Mahogany
Eucalyptus saligna	Sydney Blue Gum
Eucalyptus scias	Large-fruited Red Mahogany
Eucalyptus sclerophylla	Hard-leaved Scribbly Gum
Eucalyptus siderophloia	Grey Ironbark
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus sieberi	Silvertop Ash
Eucalyptus signata	Scribbly Gum
Eucalyptus sparsifolia	Narrow-leaved Stringybark
Eucalyptus squamosa	Scaly Bark
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus umbra	Bastard White Mahogany
Eucalyptus viminalis	Ribbon Gum
Melaleuca quinquenervia	Broad-leaved Paperbark
Syncarpia glomulifera	Turpentine
Note - Tree species present on site (highlighted).	

2. SITE VEGETATION

The vegetation present on the site consists of:

- Cleared land with occasional remnant native trees,
- Areas of extensive lawns, landscaped gardens,
- Planted ornamental exotic trees including jacaranda, conifers, citrus, olive and mulberry trees,
- Areas of open forest and eucalypt dominated woodland.

A full description of the vegetation present and plant community types is included in the Ecological Assessment Report.

An aerial photograph of the site and adjoining locality is provided in Figure 1. Species of koala use trees present are identified in Table 2.

3. SEPP (KOALA HABITAT PROTECTION) 2021 ASSESSMENT

The subject site was assessed for activity by koalas using the following methods:

i. A search of the BioNet Atlas of NSW Wildlife (NSW OEH 2021) was undertaken to identify records of for the site or local area (within 2.5km);

ii. A general walkover inspection was completed with any species of koala use trees being inspected for signs of koala usage. Trees were inspected, identified and assessed for presence of koalas and koala use such as scratch and claw marks on the trunk and scats around the base of trees;

iii. Koalas were also searched for during daytime surveys;

iv. Identification and assessment of the tree species listed as Koala use trees in Schedule 2 of State Environmental Planning Policy (Koala Habitat Protection) 2021, was undertaken. Koala use tree species observed on the site are identified in Table 2.

Presence of Highly Suitable Koala Habitat
The koala use tree species present on the site exceed more than 15% of the total native tree species present. Therefore on this basis the site is classified as containing highly suitable koala habitat.

Koala Records
There are not on-site or local area records for Koalas.

Determination of Core Koala Habitat
The subject site has been determined as not containing core koala habitat for the following reasons:

1. No field evidence of prior koala use such as:
    - koala scratch marks on tree trunks
    - scats under the tree canopy
    - no koala sightings during visual surveys
2. No previous records of koalas within the site or local areas.

Therefore the site does not meet the criteria of SEPP (KHP) 2021 (Clause 4(i)) for core koala habitat.

Potential Impacts

Caluse ii of SEPP (KHP) 2021 identified the following three levels of impact on Koalas or Koala Habitat:

i) No impact
ii) Low impact
iii) Higher level of impact

Clause ii(3) identifies that..."if Council is satisfied that the development is likely to have low or no impact on Kolas or Koala habitat, the Council may grant consent to the development application.

The potential impact of the proposed development on a population of koala, if a population is present in the area is considered low impact due to:

i) Extent of trees to be retained within the site
ii) Type of development proposed
iii) Absence of evidence of Koalas using the trees on the site
iv) Absence of records for the Koala on the site or in the locality.

4. CONCLUSIONS

The site does not contain core koala habitat as defined by the SEPP. No koalas were observed during the koala survey and no evidence of koala habitation, such as scats, claw and scratch marks, were located on the site. Therefore, it is considered that:

i) The subject site does not form core koala habitat as defined by SEPP (Koala Habitat Protection) 2021.
ii) No impact on Koalas or their habitat will result from the proposed development.

It is concluded that a more detailed Koala Assessment Report under the provisions of Clause ii(6) of SEPP (KHP) 2021 is not required for this proposed development.

5. REFERENCES

NSW Department of Planning, Industry and Environment 2021(a), NSW Bionet, [Online] Available from: http://www.bionet.nsw.gov.au/

NSW Department of Planning, Industry and Environment 2021(b), Koala SEPP 2021 Fact Sheet – Development Applications.

SEPP (KHP) 2021 State Environmental Planning Policy (Koala Habitat Protection) 2021 NSW Government

APPENDIX 6

SWIFT PARROT IMPORTANT HABITAT AREA

Vegetation mapped by the Department of Primary Industries and Environment as Swift Parrot Important Habitat Area is located in the north-west part of the site, as shown in Figure A. Council have requested that the eastern part of this habitat area be included in an area zoned RE1-Public Recreation.

The extent of this area of proposed RE1 land has been surveyed and pegged by registered surveyors, Bannister and Hunter Pty Ltd, as shown in Figure B

This area of proposed RE1 land is included within the land mapped as Direct Impact Avoidance Areas.

Vegetation within the Direct Impact avoidance Area will be subject to various vegetation and reserve area management plans, specific to the location, zoning and vegetation condition of the sites.

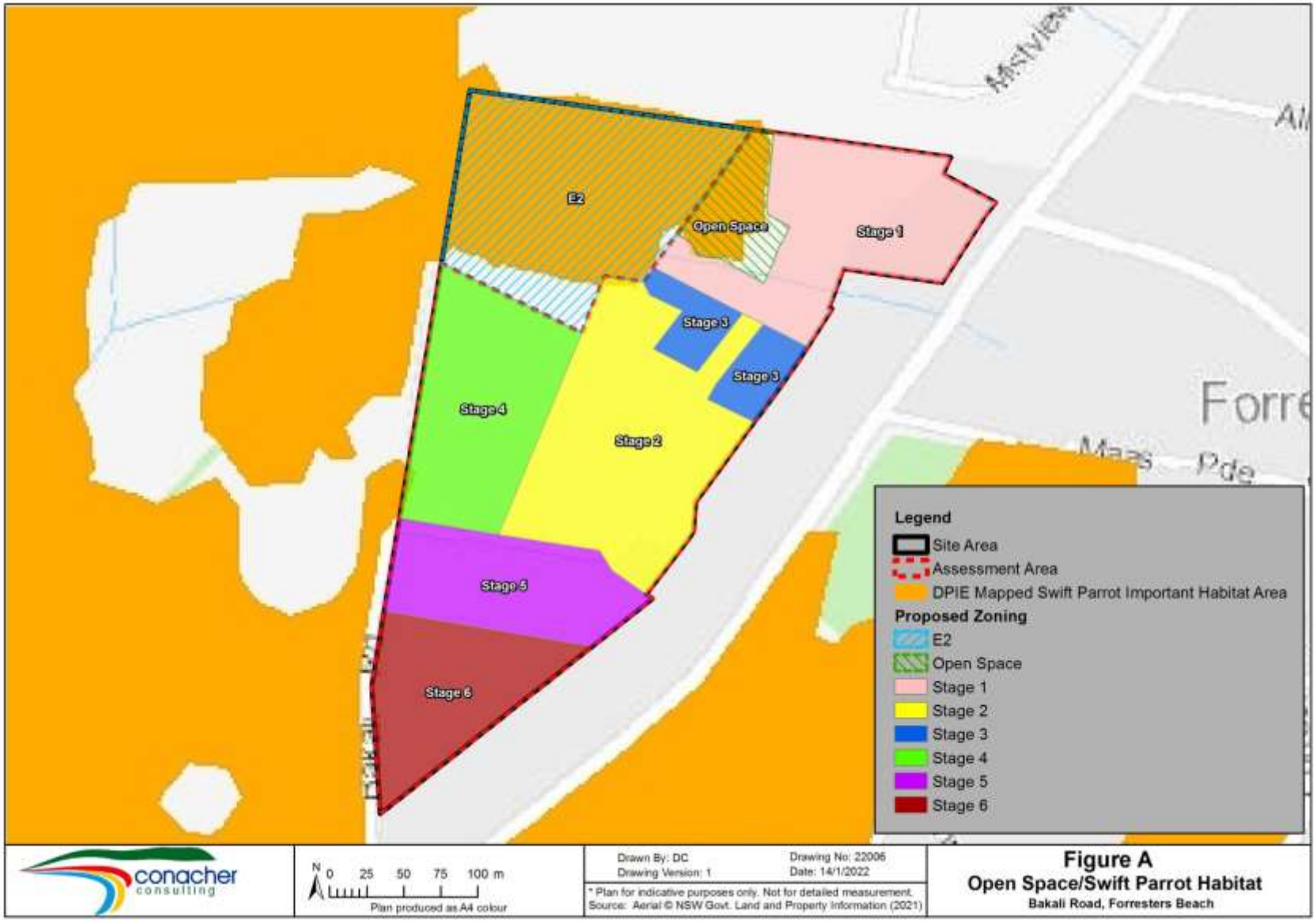

E2
Open Space
Stage 1
Stage 3
Stage 3
Stage 4
Stage 2
Stage 5
Stage 6
Bakali Rd
Legend
Site Area
Assessment Area
DPIE Mapped Swift Parrot Important Habitat Area
Proposed Zoning
E2
Open Space
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Stage 6
conacher consulting
N
0 25 50 75 100 m
Plan produced as A4 colour
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 14/1/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © NSW Govt. Land and Property Information (2021)
Figure A
Open Space/Swift Parrot Habitat
Bakali Road, Forresters Beach

Figure B
Open Space Area
Bakali Road, Forresters Beach


E2
Open Space
Stage 1
Stage 3
Stage 3
Stage 4
Stage 2
Stage 5
Stage 6
BAKALI ROAD
CENTRAL COAST HIGHWAY
Legend
Subject Site Boundary
Lot Boundary
E2 Environmental Conservation
RE1 Public Recreation
Stage 1 R2
Stage 2 R2
Stage 3 R2
Stage 4 R2
Stage 5 R2
Stage 6 R2
conacher consulting
N
0 25 50 75 100 m
Plan produced as A4 colour
Drawn By: DC
Drawing Version: 1
Drawing No: 22006
Date: 14/1/2022
* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2021) Aerial Photo Date: 30 Aug 2021
Figure C
Proposed Zoning on Air Photo
Bakali Road, Forresters Beach