Biodiversity Impact Assessment

Proposed subdivision

Part Lot 75 DP1300031

Myall Drive, Forster (Summer Green – Stage 5)

July 2024

Final (Rev 0)

Prepared For

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Licences and Accreditations

Accredited Biodiversity Assessor (BAAS17100)
NSW Scientific Licence (SL102133)
Animal Research Authority (ARA) from the Secretaries Animal Ethics Committee
DPI Certificate of Accreditation as an Animal Research Establishment.

Document Details

File Name: 22053_BIA_Summer Green_Stage 5_Rev0
File No. 22053
Date: July 2024
Revision: Final Rev 0
Prepared for: Winten (No 18) Pty Ltd

Report History

Date	Revision	Comment
July 2024	Final	For DA submission

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1. INTRODUCTION

This Biodiversity Impact Assessment has been prepared in relation to a proposed sixteen-lot residential subdivision on land at Myall Drive, Forster (Summer Green – Stage 5). Development consent is being sought from Mid-Coast Council. This assessment has been prepared to address requirements of the *Biodiversity Conservation Act 2016* (BC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.1 Site Description

The site comprises land described as Part Lot 75 DP1300031, Myall Drive, Forster. The site is in the Mid-Coast Local Government Area and has a combined area of approximately 9.2 hectares.

The site is presently vacant, comprising native vegetation within land zoned C2 – Environmental Conservation and cleared land (subject to previously approved earthworks) within the part of the land zoned R2 – Low Density Residential.

Land to the north and west of the site forms part of the residential development known as 'Summer Green', including the already subdivided Stage 1A and Stage 4 (yet to be registered). Land to the south of the site, on the southern side of The Lakes Way, is occupied by established residential allotments containing dwellings.

Land to the east of the site, within The Lakes Estate, is also occupied by established residential allotments containing dwellings. Developed residential allotments fronting Myall Drive, Smiths Close and The Corso adjoin the south-eastern site boundary.

A site map is shown in **Figure 1.1.** The existing condition of the subject land is shown in **Photo 1.1** to **Photo 1.4** below.

1.2 Proposed Development

The proposed development is for Stage 5 of the 'Summer Green' subdivision and involves the following:

- Subdivision of approximately 3.94 hectares of land within the south-eastern part of Lot 75 DP1300031 into sixteen (16) residential lots including construction of a new public road providing connection of Myall Drive as a through-road.
- Dedication of 3.81 hectares of land as a drainage reserve. The proposed drainage reserve encompasses an area of land zoned C2 Environmental Conservation and R2 Low Density Residential which will be managed for conservation, drainage and Asset Protection Zone (APZ) purposes.
- Dedication of Public Reserve (15m wide) at the southern boundary with The Lakes Way.
- Creation of a 'residue lot' encompassing the northern part of the overall site that is zoned RE2 Public recreation (future sporting fields), E1 Local Centre and SP2 Infrastructure (Community Purpose).

The proposed residential lots will be serviced by an extension of existing underground electricity, reticulated water, sewer and telecommunications. The proposed plan of development is provided in **Figure 1.2.**

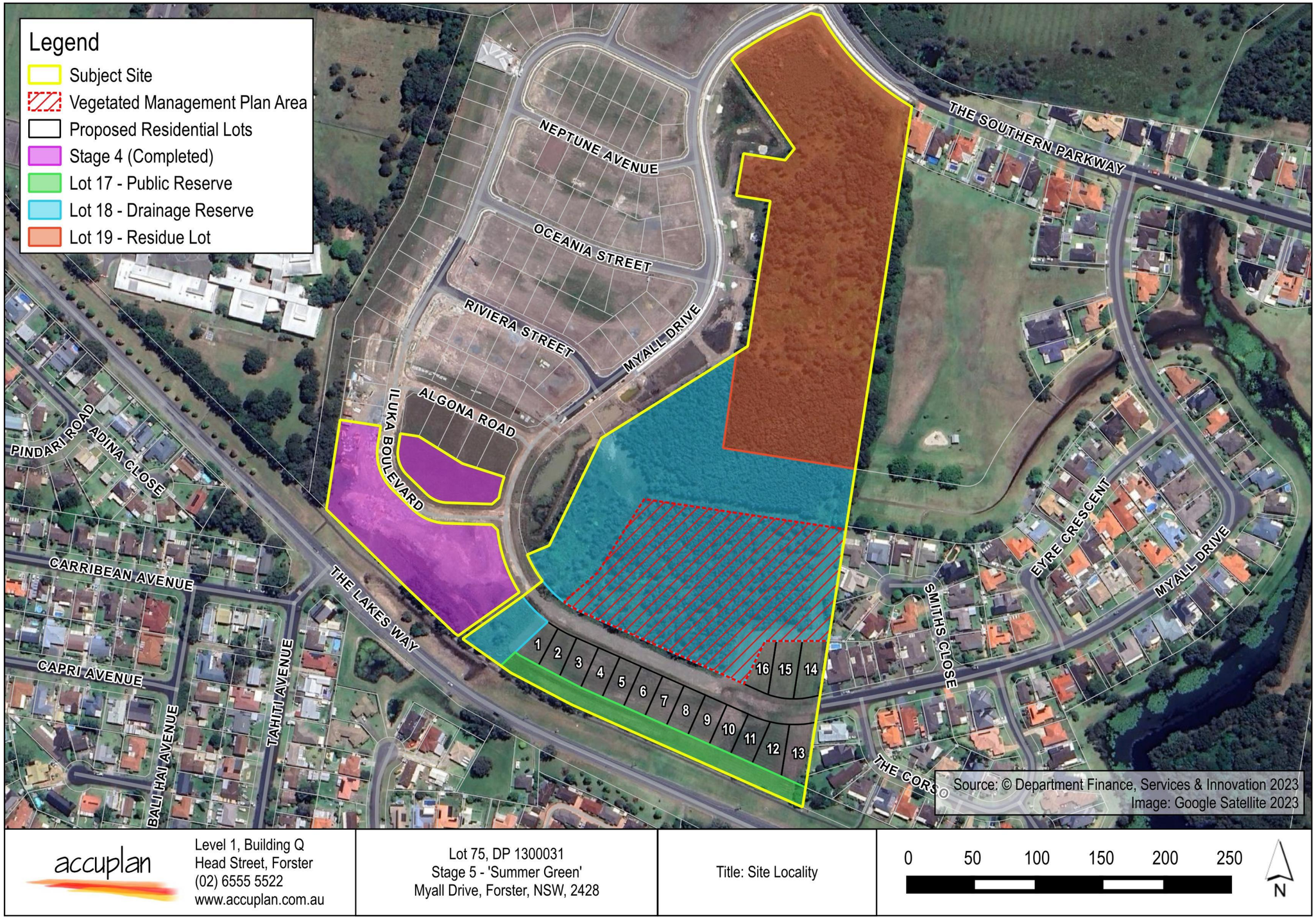

Figure 1.1: Site Locality Map

Photo 1.1: Looking west, showing the interface between the cleared development area and native forest vegetation within the site

Photo 1.2: Looking north, showing the cleared easement located within the eastern part of the site, adjoining The Lakes Estate

Photo 1.3: Looking west, showing the gravel access road (to be an extension of Myall Drive) and the edge of forest vegetation within the site

Photo 1.4: Looking east, showing the managed vegetation within the southern and south-eastern parts of the site, at the interface with forest vegetation to the north

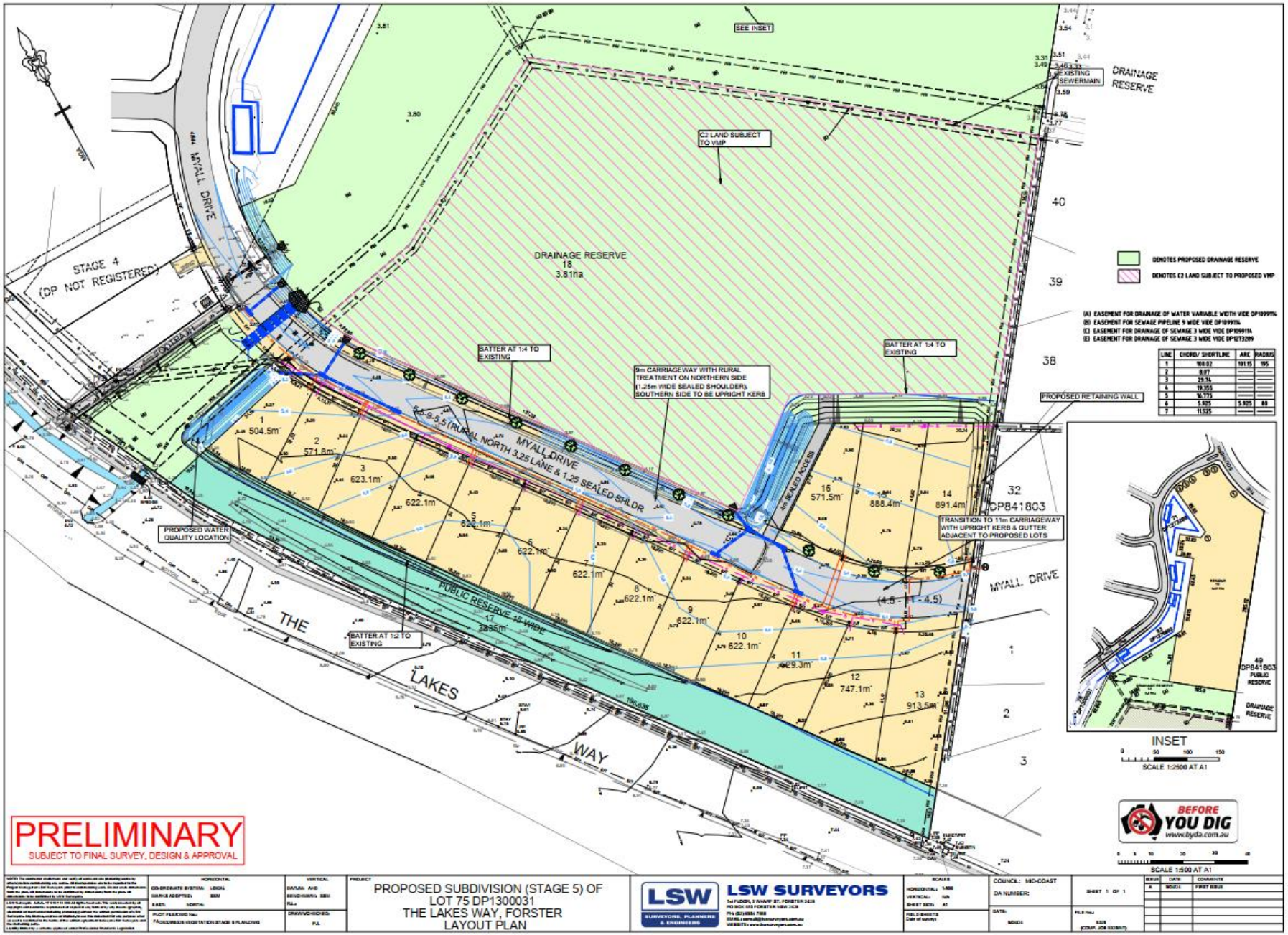

Figure 1.2: Plan of proposed subdivision (Source: LSW Surveyors, 2024)

1.3 Legislative Context

This report presents an assessment of the potential impacts to biodiversity from the proposed development. In particular, this report addresses specific legislative requirements relating to flora and fauna, including:

- Effects on threatened species, populations and ecological communities, as listed under the *Biodiversity Conservation Act 2016* (BC Act);
- Likely impacts on nationally listed threatened species, populations and ecological communities, as listed under the *Environment Protection and Biodiversity Conservation Act 1999*; and
- Effects on potential Koala habitat pursuant to *State Environmental Planning Policy - (Biodiversity and Conservation) 2021 - Koala Habitat Protection 2021*.

1.4 Study Aims

This study aims to assess the potential impacts of the proposed works on the biodiversity values of the local area. Specifically, it aims to:

- Describe the existing environment;
- Determine if the project is likely to result in any significant impacts to threatened species, populations and ecological communities, or their habitats protected under Federal and State legislation; and
- Recommend measures to minimise any potential impacts to protected biodiversity values.

1.5 Applicability of the Biodiversity Assessment Method (BAM)

Under the *Biodiversity Conservation Act 2016,* local development (assessed under Part 4 of the *Environmental Planning and Assessment Act 1979*) that is likely to significantly affect threatened species *or* triggers the Biodiversity Offsets Scheme (BOS) threshold will be subject to the BOS and require assessment by an accredited assessor to apply the Biodiversity Assessment Method (BAM).

As described below, the proposal does not exceed any of the entry thresholds for BOS and consequently does not require assessment in accordance with the BAM.

1.5.1 Area Clearing Threshold

The area clearing threshold, shown in **Table 1.1**, varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The site is subject to a minimum lot size of 450m^2 under the *Great Lakes LEP 2014*. The threshold for clearing of native vegetation, above which the BAM and offsets scheme would apply, is 0.25 hectares. Given the proposed development would only result in the removal or modification of approximately 1100m^2 of native vegetation, the proposal does not exceed the clearing threshold for entry into the BOS.

Table 1.1: Area clearing threshold applicable to the subject site

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	**0.25 ha or more**
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

1.5.2 Biodiversity Values Map Threshold

The Biodiversity Values Map (https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap) identifies land with high biodiversity value, as defined by clause 7.3(3) of the *Biodiversity Conservation Regulation 2017.* The Biodiversity Offsets Scheme applies to all clearing of native vegetation and other biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017 on land identified on the map. As shown in **Figure 1.3**, no mapped biodiversity values occur within the site. The nearest mapped biodiversity values occur approximately 650 metres east of the site, within Lot 307 DP 1240455. The mapped biodiversity values are identified as 'Protected Riparian Land'.

The proposal will not impact any biodiversity values mapped land.

1.5.3 Threatened Species 'Test of Significance' Threshold

The test of significance is intended to provide standardised and transparent consideration of threatened species, ecological communities, and their habitats, through the development assessment process. The proponent must carry out a BAM assessment if the 'test of significance' indicates the proposal is likely to have a significant impact on threatened biodiversity.

This assessment determined that the proposal is unlikely to have a significant impact on any threatened species or EECs under the BC Act and consequently does not trigger the need for a BAM assessment.

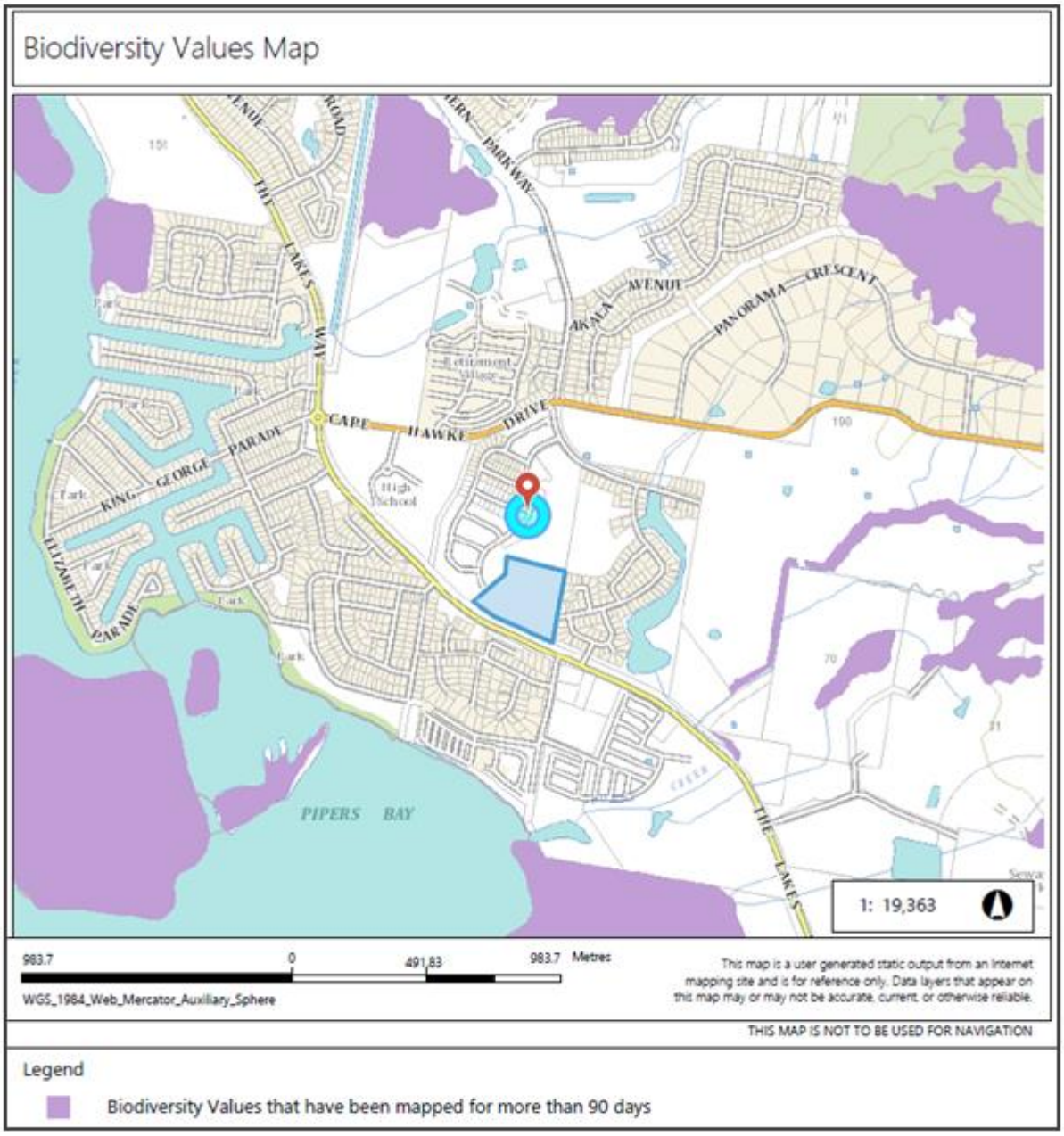

Figure 1.3: Biodiversity Values Threshold Map (last accessed May 2024)

2. METHODOLOGY

2.1 Personnel

Key personnel responsible for this assessment are detailed below in **Table 2.1**.

Table 2.1: Staff roles and qualifications

Name	Position / Role	Qualifications	Experience
Shannon Baker	Ecological Consultant Field surveys, GIS mapping, reporting	BA of Environmental Science	3 years
Chloe McAuley	Ecological Consultant Field surveys, GIS mapping, reporting	BA of Environmental Science and Management	1 year
Nathan Hokin	Ecological Consultant GIS mapping	Bachelor of Environmental Science	1 year
Luke Pickett	Senior Ecologist Field surveys, reporting, document review	BA of Environmental Science M.A. of Wildlife Habitat Management BAM Accredited Assessor (No. 17100)	19 years
Matt Clancy	Senior Environmental Planner / Scientist Document review	Registered Planner Bachelor of Environmental Science (Honours) Graduate Certificate in Environmental Management Graduate Certificate in Bushfire Protection	19 years

2.2 Database Searches and Literature Reviews

A desktop assessment included searches of databases and a review of literature relevant to the site and local area, particularly:

- Department of Planning and Environment (DPE) BioNet Atlas of NSW Wildlife database (licenced) for records of threatened species and endangered ecological communities which have been recorded within a 10km radius (locality) of the subject site (May 2024).
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool for Matters of National Environmental Significance (MNES) listed under the EPBC Act within a 10km radius of the site (May 2024).
- NSW Vegetation Information System (VIS) classification database (DPE, 2024).
- NSW State Vegetation Type Map (DPE, 2023).
- Proposed site plan provided by LSW Surveyors (2024).

2.3 Field Survey

Field surveys were conducted on 9 November 2022, 17 January 2023 and 8 February 2023. The surveys targeted vegetation and habitat to be potentially impacted by the proposal. The field surveys undertaken on site are detailed below.

2.3.1 Flora

A terrestrial flora survey was undertaken to identify the vegetation present at the proposal site. Given the small size of the subject site, the entire impact area (Survey Area shown in Figure 3.1) was traversed and all plant species encountered were identified. Targeted searches for threatened flora species recorded in the local area were undertaken as part of the survey. Weed species were also noted during the survey. Survey tracks are shown in **Appendix V.**

A single vegetation plot was undertaken to assess the vegetation type and condition of native vegetation within the proposal area. Data collected within the plot/transect includes:

- Flora diversity and composition;
- Groundcover composition and abundance;
- Vegetation structure (including canopy, sub-canopy, shrub and groundcovers);
- Fauna habitats (including hollow trees, fallen timber);
- Regeneration of canopy species;
- Landscape features (including slope, gully and aspect);
- Soil features (including soil type, rocks, organic matter); and
- Geographical coordinates and a photographic record.

The vegetation plot was based on a 20m × 20m plot (400m²) to assess composition and structure components and a 50m × 20m plot (1000m²) to assess function.

Vegetation communities were determined by comparing the floristic structure and composition of the vegetation on site with vegetation profiles described within the VIS database (DPE, 2023) and community descriptions of endangered ecological communities known to occur in the local area.

A list of all plant species recorded during fieldwork is listed in **Appendix I**.

2.3.2 Fauna

Fauna surveys and methods used to survey fauna are detailed in **Table 2.2**.

Table 2.2: Fauna surveys conducted on site

Fauna Group	Surveys	Methods and Survey Effort
Hollow-dependent fauna	Hollow-bearing tree survey	A search for hollow-bearing trees was undertaken throughout the proposed impact area. No hollow-bearing trees were recorded within the impact area.
Fauna	Search for scats and signs	A search for scats and other signs of animal use (e.g., scratches on trees, echidna and bandicoot diggings) was undertaken during the site survey.
Frogs	Frog call recordings	Any frog calls heard during field surveys were recorded and subsequently reviewed for species identification. Site surveys were undertaken in August after periods of heavy rainfall when low-lying land within the site was temporarily inundated.
All	Opportunistic sightings	Any opportunistic sightings of fauna on site were recorded.

2.4 Habitat Assessment for Significant Species

The availability of habitat on site was assessed considering several factors, including:

- Structural and floral diversity;
- Occurrence and extent of habitat types in the general vicinity;
- Continuity with similar habitat adjacent to the site, or connection with similar habitat off site by way of corridors;
- Key habitat features such as tree hollows, water bodies, crevices and rocky areas;
- Degree of disturbance and degradation; and
- Topographic features such as aspect and slope.

This information was used to evaluate the site as potential habitat for each of the threatened species considered and to assign each species with a rating based on their likelihood to occur within the subject site. The 'likelihood of occurrence' categories are detailed in **Table 2.3**. The habitat assessment is provided in **Appendix III.** Species assigned with a rating of 'Moderate' or higher would be considered further under the relevant legislation should the proposed works impact habitat that would be considered important for the survival of any local populations.

Table 2.3: Likelihood of occurrence criteria

Likelihood	Criteria
Recorded	The species was recorded within the study area during site surveys.
High	It is highly likely that a species inhabits the study area. Criteria for this category includes: • Species recently and/or regularly recorded in contiguous or nearby habitat. • High quality habitat types or resources present within study area. • Species is known or likely to maintain a resident population surrounding the study area. • Species is known or likely to visit during migration or seasonal availability of resources.
Moderate	Potential habitat for a species occurs within the subject site. Criteria for this category includes: • Species previously recorded in contiguous habitat, albeit not recently (>10 years). • Poor quality, depauperate or modified habitat types and/or resources present within study area. • Species has potential to utilise habitat during migration or seasonal availability of resources. • Cryptic flora species with potential habitat available within the subject site that have not been seasonally targeted by surveys.
Low	It is unlikely that the species inhabits the area and would likely be a transient visitor if encountered. Criteria for this category includes: • The subject site or study area lacks specific habitat types or resources required by the species. • The subject site is beyond the current distribution of the species or is isolated from known populations. • Non-cryptic flora species that were found to be absent during targeted surveys. • The subject site only contains common habitat which would not be considered important for the local survival of a threatened species.
Unlikely	Suitable habitat is absent from the proposal area and/or study area.

2.5 Limitations

The effectiveness of a survey detecting a given species will be influenced by a range of factors. For this type of survey, such limitations are generally related to the short period of time in which the fieldwork was carried out during one season. Given the small period of time spent on site, the detection of certain species may be limited by:

- Seasonal migration (particularly migratory birds);
- Seasonal flowering periods (some species are cryptic and are unlikely to be detected outside of the known flowering period);
- Seasonal availability of food such as blossoms;
- Weather conditions during the survey period (some species may go through cycles of activity related to specific weather conditions, e.g., some microchiropteran bats, reptiles and frogs can be inactive during cold weather); and
- Species lifecycle (cycles of activity related to breeding).

These limitations have been overcome by applying the precautionary principle in all cases where the survey methodology may have given a false negative result. All species have been assessed on the basis of the presence of their habitat and the likely significance of that habitat to a viable local population.

3. EXISTING ENVIRONMENT

3.1 Environmental Context

A summary of the environmental context of the site is provided in **Table 3.1.**

Table 3.1: Local landscape context summary

Attribute	Description
LGA	Mid-Coast Council
Zoning	R2 – Low Density Residential
Adjoining Land Use	Land to the north and west of the site, within the remainder of Lot 75 DP 1300031, forms part of the proposed 'Summer Green' residential subdivision. Land within the allotment has been zoned for *R2 – Low Density Residential, RE1 – Public Recreation, SP2 – Community Purposes* and *E1 – Local Centre.* Land to the east of the site is occupied by the existing residential development known as 'The Lakes Estate'. Land to the south of the site, on the opposite side of The Lakes Way, is also occupied by existing residential allotments containing dwellings.
Catchment	Wallamba River
IBRA Bioregion	NSW North Coast
IBRA Subregion	Karuah Manning
Mitchell Landscape	**Myall - Forster Barrier (Mfb)** Includes beaches, dunes, swamps and lagoons, with inner and outer barrier dune and swamp sequences. Located on Quaternary coastal sands, soils range from yellow or white single grain quartz sands to iron and humic podsols. General elevation between 0-50 metres and local relief 10-20 metres.
Connectivity Features	Native forest within the northern part of the site is contiguous with a larger patch of vegetation occupying Lot 75. Land surrounding the site in all directions has been developed for residential purposes, with the nearest patch of native vegetation occurring to the north-west of the site, adjoining Cape Hawke Drive and The Southern Parkway. The Lakes Way forms a significant barrier between the site and larger areas of forest to the south.
Wetlands	No mapped wetlands occur within the site. The nearest area of mapped Biodiversity Values Coastal Management Act Wetlands are located approximately 600 metres south-west of the site within Tonys Point Island.
Rivers and Streams	No mapped streams, rivers or watercourses occur within the subject site. One first order stream is located to the east of the site, within Lot 50 DP 841803, which adjoins Dunns Creek to the south.
Areas of Outstanding Biodiversity Value	No areas of outstanding biodiversity value occur on or near the site.
Nearest DPE Park	Booti Booti National Park is located approximately 1.6 kilometres east of the site at its nearest point.

3.2 Flora

3.2.1 Plant Community Types

The NSW State Vegetation Type Map (DPE, 2023) identifies two native plant communities occurring within the subject site: Plant Community Type (PCT) *4028 – Estuarine Swamp Oak Twig-rush Forest*; and *PCT 4004 – Northern Melaleuca quinquenervia Swamp Forest.*

The canopy within the forested areas of the site is dominated by *Casuarina glauca,* with *Melaleuca quinquenervia* also a common component throughout. The mid-stratum is sparse, and the understorey is dominated by sedges, grasses and ferns including *Hypolepis muelleri* (Harsh Ground Fern), *Telmatoblechnum indicum* (Swamp Water Fern), *Machaerina juncea* (Bare Twig-rush) and *Isachne globosa* (Swamp Millet). The vegetation within the northern part of the site is largely consistent throughout and, given the high coverage of Swamp Oak, the community has been assessed as being most consistent with *PCT 4048 – Northern Swamp Oak – Paperbark Forest.* A description of the PCT occurring within the site is provided in **Table 3.2**.

Land within the southern part of the proposal area was previously subject to bulk earthworks and is largely comprised of non-native grasses and herbaceous weeds and is subject to regular management (slashing).

The distribution of plant communities identified within the site is shown in **Figure 3.1.** Examples of the vegetation recorded on site are shown in **Photos 3.1** to **3.4**. A full list of species recorded during the field survey is provided in **Appendix I**.

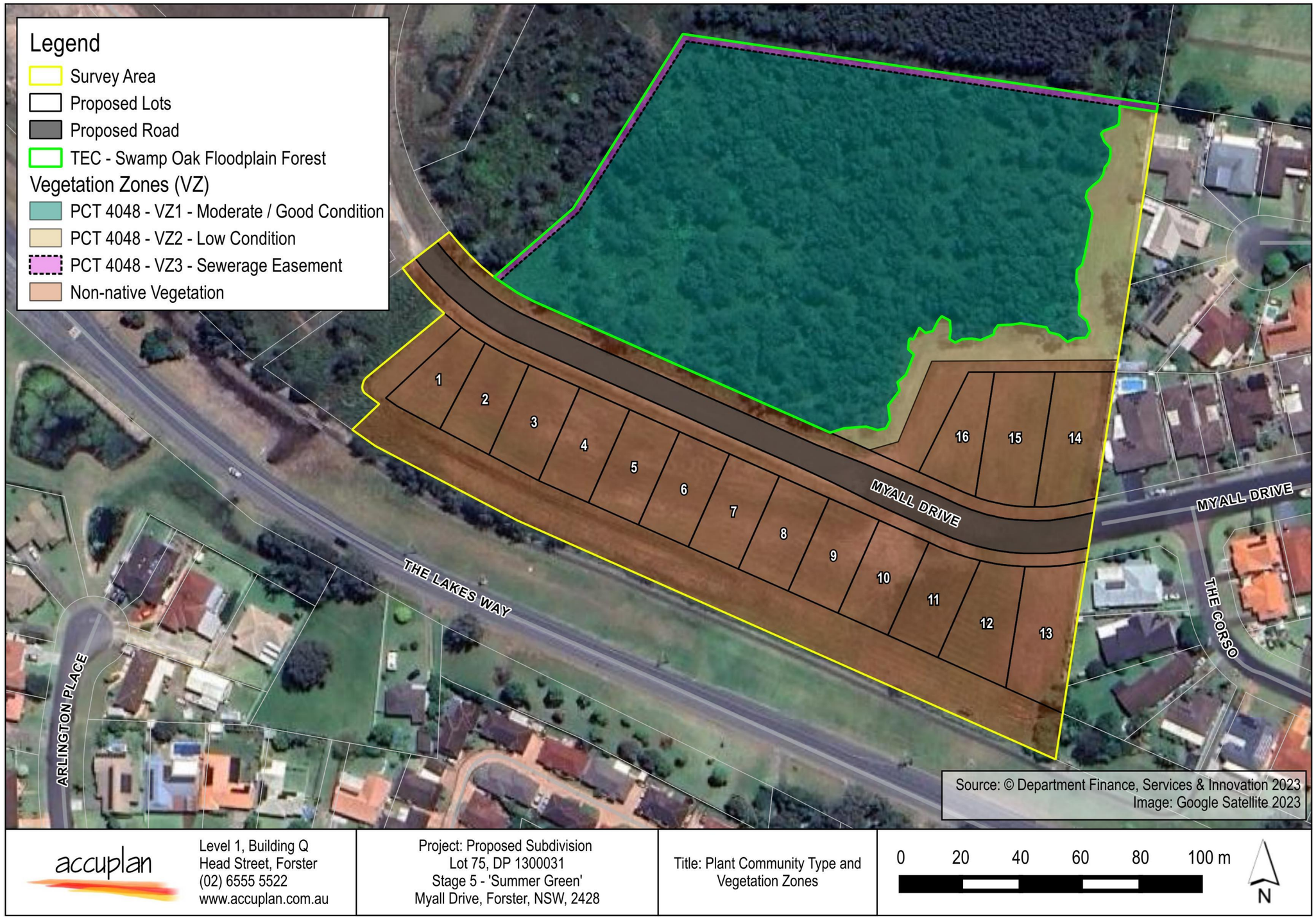

Figure 3.1: Vegetation zones and TECs identified within the site

Table 3.2: Description of PCT 4048 within the subject site

PCT ID	PCT 4048 – Northern Swamp Oak-Paperbark Forest
BC Act Status	Associated with Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions
EPBC Act Status	Associated with Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales
Vegetation Formation	Forested Wetlands
Vegetation Class	Coastal Floodplain Wetlands
PCT Description	Tall to very tall, sparse to dense forest of *Casuarina glauca* and *Melaleuca quinquenervia*, which occurs on alluvial and estuarine flats on coastal lowlands between Coffs Harbour and Macksville, with outliers near Port Macquarie, Forster and Kurnell. The tree canopy almost always includes *Casuarina glauca* and *Melaleuca quinquenervia*, often with a high cover, very frequently *Callistemon salignus* and the vine *Parsonsia straminea*. Rarely, *Eucalyptus robusta* occurs as an emergent or a sparse canopy. The sparse to dense ground layer is comprised of sedges, grasses, ferns and forbs. Areas of impeded drainage are inundated during wet periods and species such as *Machaerina juncea*, *Azolla filicula* and *Cladium procerum* may sometimes be locally abundant in such areas.
Occurrence on Site	Occupies the northern part of the site.
Trees (to 20 m)	*Casuarina glauca* (Swamp Oak), *Melaleuca quinquenervia* (Broad-leaved Paperbark)
Shrubs (0.2-2m)	*Breynia oblongifolia* (Coffee Bush), *Acacia longifolia* (Coastal Wattle), *Glochidion ferdinandi* (Cheese Tree), *Notelaea longifolia* (Mock Olive)
Native Goundcover (0-0.5m)	*Machaerina juncea* (Bare Twig-rush), *Machaerina rubiginosa, Lindernia alsinoides* (Noah's False Chickweed), *Hypolepis muelleri* (Harsh Ground Fern), *Telmatoblechnum indicum* (Swamp Water Fern), *Imperata cylindrica* (Blady Grass), *Isachne globosa* (Swamp Millet)
Other	*Parsonsia straminea* (Common Silk Pod), *Hibbertia scandens* (Climbing Guinea Flower), *Stephania japonica* (Snake Vine)
Weeds	*Cinnamomum camphora* (Camphor Laurel), *Bidens pilosa* (Cobbler's Pegs), *Ageratina adenophora* (Crofton Weed), *Asparagus aethiopicus* (Asparagus Fern), *Cyperus eragrostis* (Umbrella Sedge), *Paspalum spp., Conyza bonariensis* (Tall Fleabane), *Hydrocotyle bonariensis* (Largeleaf Pennywort), *Setaria sphacelata* (South African Pigeon Grass)
Condition	Three condition classes were identified within the project area: • **Zone 1 (VZ1 – Moderate / Good Condition)**: This zone comprises the higher condition vegetation present throughout the northern part of the site. This zone has a mostly intact canopy, shrub and ground layers and has relatively low weed coverage. • **Zone 2 (VZ2 – Low Condition)**: Areas of VZ2 include the managed area adjoining the eastern site boundary and disturbed edges at the base of the batter adjoining proposed Lots 14-16. These areas are largely dominated by exotics and lack native trees and shrubs. This zone is not consistent with the Swamp Oak EECs given the dominance of weeds and existing management. • **Zone 3 (VZ3 – Sewerage Easement)**: Consists of the managed sewerage easement that follows the northern and western site boundaries. The zone is lacking a canopy but is generally dominated by native species and has a relatively low coverage of weeds.

Photo 3.1: Looking west, showing Plot 1 in PCT 4048 - VZ1

Photo 3.2: Looking east, showing VZ1 near the easement at the eastern boundary

Photo 3.3: Looking east along the proposed new section of Myall Drive, showing the disturbed edge along southern boundary of VZ1

Photo 3.4: Looking west along the northern boundary showing the existing sewerage easement (VZ3)

Photo 3.5: Looking south, showing the managed easement adjoining the eastern site boundary identified as VZ2

3.2.2 Weeds

A total of thirty-five (35) exotic species were recorded within the proposal area, including fifteen (15) BAM-listed high threat weeds. Weed coverage was highest along the disturbed road edges, with fewer species inhabiting the intact areas of vegetation within VZ1. All weeds recorded on site are listed in **Appendix I.**

3.2.3 Threatened Ecological Communities

PCT 4048 is associated with the EEC Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions listed under the BC Act; and the moderate to good condition vegetation (VZ1 and VZ3) areas identified within the site are consistent with the EEC final determination description. Low condition vegetation (VZ2) is not consistent with the Swamp Oak EEC given the dominance of weeds and existing management. The proposal would impact about 210m^2 of this community, within the proposed Asset Protection Zone to the north of the proposed allotments. An assessment of significance for this EEC is provided in **Appendix IV**.

PCT 4048 is also associated with the EEC Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales listed under the EPBC Act. The occurrence of this EEC was assessed against the key diagnostics and condition threshold criteria outlined in the Conservation Advice (DCCEEW, 2023) and is provided in **Table 3.3** and **Table 3.4.**

Based on key diagnostics and condition threshold criteria assessment, the vegetation community occurring within the site is consistent with the EPBC listing of Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales. Consequently, further consideration of the MNES significant impact guidelines addressing impacts to this TEC is provided in **Appendix IV.**

No other TECs occur within the proposal area.

Table 3.3: Assessment of PCT 4048 occurring within the proposal area against key diagnostic criteria for Coastal Swamp Oak (*Casuarina glauca*) Forest of SEQ and NSW EEC

Key Diagnostic Criteria for Coastal Swamp Oak Forest EEC listing	Does the vegetation occurring on site meet the EEC listing criteria?
Occurs from South-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin or South East Corner bioregions.	Yes The proposal area occurs within the NSW North Coast Bioregion.
Occurs in coastal catchments on elevations up to 50m ASL, typically less than 20m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetland and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. There are also minor occurrences on coastal dune swales or flats, particularly deflated dunes and dune soaks.	Yes The proposal area occurs below 20m ASL within the Wallis Lake catchment. There is evidence of at least occasional inundation within the site.
Occurs on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organosols (peaty soils). It may occur in transitional soils (or catenas) where shallow unconsolidated sediments border lithic substrates.	Likely The site is subject to intermittent or episodic inundation and was partially inundated at the time of the site survey. The site is therefore likely to contain hydric soils, although soil investigations have not been completed.
Has an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover of at least 10 per cent.	Yes The vegetation structure within the site is forest, with a tree canopy cover exceeding 10 per cent.
Has a canopy of trees dominated by *Casuarina glauca* (Swamp-oak, Swamp She-oak).	Yes The extent of the PCT 4048 occurring within the proposal area was determined by the dominance of *Casuarina glauca* and the occasional occurrence of *Melaleuca quinquenervia.*

Table 3.4: Condition classes and thresholds for Coastal Swamp Oak Forest EEC EPBC listing

Condition thresholds Patch size classes➔ 🡻 Vegetation quality classes	**Large patch** The patch is at least 5 ha	**Medium patch** The patch is at least 2 ha and less than 5 ha	**Small contiguous** patch** The patch is at least 0.5 ha and less than 2 ha, and is connected to a larger area of native vegetation of at least 5 ha	**Small patch** The patch is at least 0.5 ha and less than 2 ha
HIGH QUALITY **Predominantly native understorey** Non-native species comprise **less than 20%** of total understorey vegetation cover*	CATEGORY A A large patch that meets **key diagnostics** and has a predominantly native understorey	CATEGORY B A medium patch that meets **key diagnostics** and has a predominantly native understorey OR A small patch that meets **key diagnostics** and has a predominantly native understorey and is contiguous** with another large area of native vegetation		CATEGORY C A small patch that meets **key diagnostics** and has a predominantly native understorey
GOOD QUALITY **Mostly native understorey** Non-native species comprise **less than 50%** of total understorey vegetation cover* AND transformer species*** comprise **less than 30%** of total understorey vegetation cover*	CATEGORY B A large patch that meets **key diagnostics** and has a mostly native understorey	CATEGORY C A medium patch that meets **key diagnostics** and has a mostly native understorey OR A small patch that meets **key diagnostics** and has a mostly native understorey and is contiguous** with another large area of native vegetation		
MODERATE QUALITY **Some native understorey** Non-native species comprise **less than 80%** of total understorey vegetation cover* AND transformer species*** comprise **less than 50%** of total understorey vegetation cover*	CATEGORY C A large or medium patch that meets **key diagnostics** and has some native understorey			

*Refers to total perennial understorey vegetation cover for the patch of the ecological community. Includes vascular plant species of all layers below the canopy with a life-cycle of more than two growing seasons. It includes herbs (graminoids and forbs), grasses, shrubs and juvenile plants of canopy species, but does not include annual plants, cryptogams, plant litter or exposed soil. Areas of little to no understorey vegetation cover (e.g. plant litter) are included if key diagnostics are met and non-native species are below thresholds.
**Contiguous means the patch is connected or in close proximity (within 30 m) to another area of native vegetation.
***Transformer species (e.g. *Chrysanthemoides monilifera, Asparagus* spp, *Pennisetum* spp, *Ipomoea* spp. etc.) are non-native plant species with the potential to permanently change the character, condition, form or nature of patches of the ecological community. See p. 43 for further information on weeds, including transformer species. Annual weeds, such as *Symphyotrichum subulatum* (saltmarsh aster), may be seasonally very abundant and temporarily restrict the development of native species, but would not be counted as transformer weeds in determining condition.

Vegetation Zones 1 and 3 of PCT 4048 meet the Category A condition threshold and are protected under the EPBC Act. Vegetation Zone 2 is largely comprised of weeds (including transformer weeds *Cenchrus clandestinus* (Kikuyu), *Paspalum* sp., *Ipomea* sp., and *Lantana camara* (Lantana) and does not meet the minimum condition threshold and does not form part of this EEC.

3.2.4 Threatened Flora

Database searches identified 24 threatened flora species with the potential to occur within the locality of the subject site. A habitat assessment determining the likelihood of these species to be impacted by the proposed works is provided in **Appendix III.**

One threatened flora species, *Lindernia alsinoides* (Noah's False Chickweed), was recorded on site during targeted surveys. This species was a common component of the understorey within parts of VZ2, occurring within a predominantly grassy area that appears to be managed (slashing or mowing) between the margins of intact swamp forest (VZ1) and the previously approved bulk earthworks in the south. The plant also occurs more sporadically throughout VZ1 and was generally recorded in small openings where sufficient light was available (e.g., wildlife tracks, canopy gaps). This plant has been previously recorded within the site with twenty (20) individuals recorded by Eco Logical Australia during 2017 surveys, and 337 being recorded during 2018 surveys. **Figure 3.2** below illustrates *L. alsinoides* individuals recorded during targeted surveys and high-density areas where recording individual plants was not practical (**Photo 3.6**).

The plants recorded on site form part of a local population that occurs in the South Forster area. The species is known to occur throughout the adjoining patch of regrowth Swamp Oak Forest covering an area of approximately 8 hectares that extends towards The Southern Parkway to the north of the proposal area (Accuplan, 2023; ELA, 2019). During the same survey period, 18 *L. alsinoides* specimens were also recorded at the northern limit of the adjoining patch (at the corner of Myall Drive and The Southern Parkway) and the patch provides similar habitat throughout. The relatively small area of habitat occurring within the proposed APZ represents a minor proportion (approximately 2.7%) of the habitat to be retained within the proposed drainage reserve.

The species is also known to occur at Goldens Road Reserve located approximately 700m to the north-west and near Dunns Creek approximately 1.1 km to the south-east (BioNet).

Impacts to *Lindernia alsinoides* occurring within the APZ will be avoided and minimised through mitigation measures detailed in **Section 5** and these measures would be implemented in accordance with the VMP for the conservation zoned land. An assessment of significance addressing potential impacts to this species is provided in **Appendix IV**.

No other threatened flora species were recorded or considered likely to be impacted by the proposal.

Photo 3.6: Photo showing example of high coverage area of *Lindernia alsinoides* (see Figure 3.2)

Photo 3.7: High coverage of *Lindernia alsinoides* within VZ2

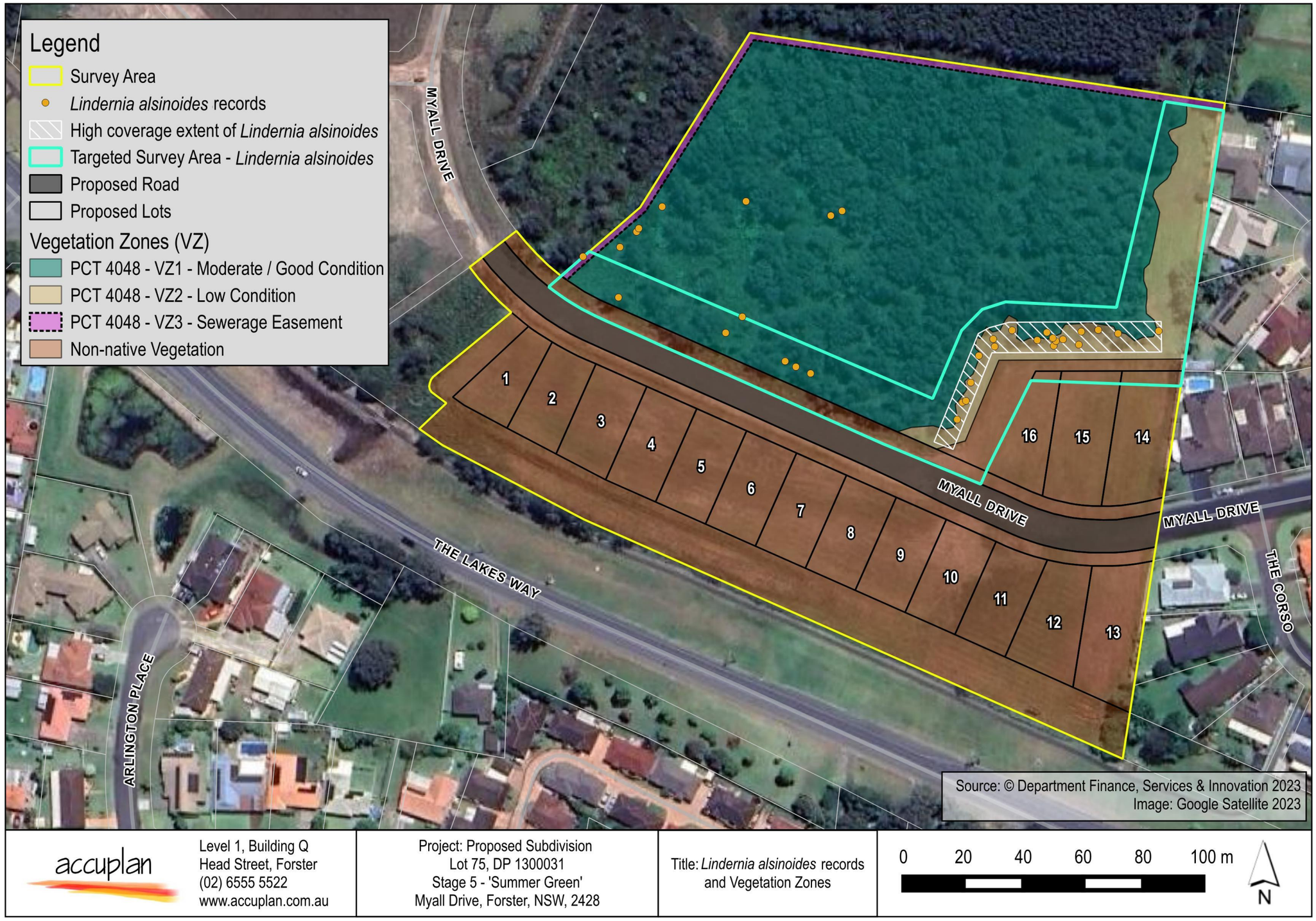

Figure 3.2: *Lindernia alsinoides* records and targeted survey area

3.3 Fauna

3.3.1 Fauna Habitat

Habitat condition within the proposed impact area has been influenced by historical clearing and residential development of the surrounding area. The proposal area is situated within a highly cleared landscape, and connectivity with other habitat areas is largely dependent on street trees and trees present within drainage reserves.

The following key habitat features were recorded within the site:

- Mature *Casuarina* and *Melaleuca* trees - may provide seasonal roosting and/or nesting, and/or foraging and/or breeding habitat for a range of birds, mammals, reptiles and frogs.
- Seasonally inundated land may provide a temporary / seasonal freshwater resource for local fauna and may provide habitat for a range of frogs, reptiles and wetland birds.
- Ground cover – leaf litter and fallen timber may provide habitat and cover for a range of small terrestrial species.
- No hollow-bearing trees or raptor nests were recorded within the site.

3.4 Threatened Species and Populations

The database searches for the survey area identified 98 threatened flora and fauna species with the potential to occur within the locality of the proposal area. A habitat assessment determining the likelihood of these species to be impacted by the proposed works is provided in **Appendix IV**. A summary of the habitat assessment is provided in **Table 3.5**. Pelagic birds and marine species were excluded as suitable habitat would not be affected by the proposal.

Table 3.5: Threatened species habitat assessment summary

Scientific Name	Common Name	Status		BioNet Records[1]	Potential Occurrence	Potential for Impact	AoS?
		BC Act	EPBC Act				
Flora							
Cynanchum elegans	White-flowered Wax Plant	E	E	14	Low	Unlikely	No
Tylophora woollsii			E	0	Unlikely	Unlikely	No
Senecio spathulatus	Coast Groundsel	E		4	Unlikely	Unlikely	No
Allocasuarina defungens	Dwarf Heath Casuarina	E	E	76	Unlikely	Unlikely	No
Allocasuarina simulans	Nabiac Casuarina	V	V	173	Unlikely	Unlikely	No
Tetratheca juncea	Black-eyed Susan	V	V	0	Unlikely	Unlikely	No
Chamaesyce psammogeton	Sand Spurge	E		6	Unlikely	Unlikely	No
Senna acclinis	Rainforest Cassia	E		3	Low	Unlikely	No
Lindernia alsinoides	Noah's False Chickweed	E		187	Present	Yes	**Yes**
Eucalyptus glaucina	Slaty Red Gum	V	V	0	Unlikely	Unlikely	No
Rhodamnia rubescens	Scrub Turpentine	CE	CE	16	Low	Unlikely	No
Rhodomyrtus psidioides	Native Guava	CE	CE	20	Low	Unlikely	No
Syzygium paniculatum	Magenta Lilly Pilly	E	V	38	Low	Unlikely	No
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	0	Unlikely	Unlikely	No
Diuris praecox	Rough Doubletail	V	V	0	Unlikely	Unlikely	No

Scientific Name	Common Name	Status		BioNet Records[1]	Potential Occurrence	Potential for Impact	AoS?
		BC Act	EPBC Act				
Genoplesium littorale	Tuncurry Midge Orchid	CE	CE	61	Unlikely	Unlikely	No
Phaius australis	Lesser Swamp-orchid	E	E	0	Unlikely	Unlikely	No
Rhizanthella slateri	Eastern Underground Orchid	V	E	0	Unlikely	Unlikely	No
Euphrasia arguta		CE	CE	0	Unlikely	Unlikely	No
Arthraxon hispidus	Hairy-joint Grass	V	V	0	Low	Unlikely	No
Persicaria elatior	Tall Knotweed	V	V	0	Low	Unlikely	No
Macadamia integrifolia	Smooth-shelled Macadamia		V	0	Unlikely	Unlikely	No
Asperula asthenes	Trailing Woodruff	V	V	42	Low	Unlikely	No
Thesium australe	Austral toadflax	V	V	0	Unlikely	Unlikely	No
Amphibians							
Litoria aurea	Green and Golden Bell Frog	E	V	0	Unlikely	Unlikely	No
Litoria brevipalmata	Green-thighed Frog	V		1	Low	Unlikely	No
Crinia tinnula	Wallum Froglet	V		4	Low	Minimal	No
Mixophyes balbus	Stuttering Frog	E	V	0	Unlikely	Unlikely	No
Mixophyes iteratus	Giant Barred Frog	V	V	0	Unlikely	Unlikely	No
Reptiles							
Hoplocephalus stephensii	Stephen's Banded Snake	V		5	Unlikely	Unlikely	No
Birds							
Pycnoptilus floccosus	Pilotbird		V	0	Low	Unlikely	No
Circus assimilis	Spotted Harrier	V		6	Low	Unlikely	No
Erythrotriorchis radiatus	Red Goshawk	CE	V	0	Unlikely	Unlikely	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		453	Moderate	Unlikely	No
Falco hypoleucos	Grey Falcon	E	V	0	Unlikely	Unlikely	No
Hieraaetus morphnoides	Little Eagle	V		11	Moderate	Unlikely	No
Lophoictinia isura	Square-tailed Kite	V		24	Moderate	Unlikely	No
Pandion cristatus	Eastern Osprey	V		300	Moderate	Unlikely	No
Hirundapus caudacutus	White-throated Needletail	V	V	180	Previously Recorded	Unlikely	No
Botaurus poiciloptilus	Australasian Bittern	E	E	2	Unlikely	Unlikely	No
Ixobrychus flavicollis	Black Bittern	V		3	Low	Unlikely	No
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		150	Moderate	Unlikely	No
Burhinus grallarius	Bush Stone-curlew	E		1	Unlikely	Unlikely	No
Esacus magnirostris	Beach Stone-curlew	CE		4	Unlikely	Unlikely	No
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	2	Low	Unlikely	No
Calyptorhynchus lathami	Glossy Black-Cockatoo	V		15	Low	Unlikely	No
Charadrius leschenaultii	Greater Sand-plover	V	V	0	Unlikely	Unlikely	No
Charadrius mongolus	Lesser Sand-plover	V	E	1	Unlikely	Unlikely	No
Ephippiorhynchus asiaticus	Black-necked Stork	E		26	Unlikely	Unlikely	No
Ptilinopus magnificus	Wompoo Fruit-Dove	V		12	Low	Unlikely	No
Ptilinopus regina	Rose-crowned Fruit-Dove	V		2	Low	Unlikely	No
Ptilinopus superbus	Rose-crowned Fruit-Dove	V		2	Low	Unlikely	No
Haematopus fuliginosus	Sooty Oystercatcher	V		50	Unlikely	Unlikely	No
Haematopus longirostris	Pied Oystercatcher	E		267	Unlikely	Unlikely	No

Scientific Name	Common Name	Status		BioNet Records[1]	Potential Occurrence	Potential for Impact	AoS?
		BC Act	EPBC Act				
Sternula albifrons	Little Tern	E		445	Unlikely	Unlikely	No
Sternula nereis nereis	Australian Fairy Tern		V	0	Unlikely	Unlikely	No
Anthochaera phrygia	Regent Honeyeater	CE	CE	0	Low	Unlikely	No
Climacteris picumnus victoriae	Brown Treecreeper	V	V	1	Unlikely	Unlikely	No
Epthianura albifrons	White-fronted Chat	V		30	Unlikely	Unlikely	No
Grantiella picta	Painted Honeyeater	V	V	0	Unlikely	Unlikely	No
Daphoenositta chrysoptera	Varied Sittella	V		28	Low	Minimal	No
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V		1	Unlikely	Unlikely	No
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V		1	Unlikely	Unlikely	No
Petroica boodang	Scarlet Robin	V		1	Low	Unlikely	No
Petroica phoenicea	Flame Robin	V		1	Low	Unlikely	No
Glossopsitta pusilla	Little Lorikeet	V		62	Low	Minimal	No
Lathamus discolor	Swift Parrot	E	CE	14	Low	Minimal	No
Pezoporus wallicus wallicus	Eastern Ground Parrot	V		2	Unlikely	Unlikely	No
Rostratula australis	Australian Painted Snipe	E	E	0	Unlikely	Unlikely	No
Calidris canutus	Red Knot	P	E	5	Unlikely	Unlikely	No
Calidris ferruginea	Curlew Sandpiper		CE	6	Unlikely	Unlikely	No
Calidris tenuirostris	Great Knot	V	CE	1	Unlikely	Unlikely	No
Limosa limosa	Black-tailed Godwit	V		2	Unlikely	Unlikely	No
Numenius madagascariensis	Eastern Curlew	P	CE	77	Unlikely	Unlikely	No
Xenus cinereus	Terek Sandpiper	V		2	Unlikely	Unlikely	No
Ninox connivens	Barking Owl	V		2	Low	Unlikely	No
Ninox strenua	Powerful Owl	V		9	Low	Unlikely	No
Tyto longimembris	Eastern Grass Owl	V		4	Low	Unlikely	No
Tyto novaehollandiae	Masked Owl	V		15	Low	Unlikely	No
Tyto tenebricosa	Sooty Owl	V		2	Low	Unlikely	No
Mammals							
Dasyurus maculatus	Spotted-tailed Quoll	V	E	21	Low	Unlikely	No
Phascolarctos cinereus	Koala	E	E	48	Low	Unlikely	No
Phascogale tapoatafa	Brush-tailed Phascogale	V		20	Unlikely	Unlikely	No
Petaurus australis australis	Yellow-bellied Glider	V	V	3	Unlikely	Unlikely	No
Petaurus norfolcensis	Squirrel Glider	V		130	Moderate	Minimal	No
Petauroides volans	Greater Glider	E	E	1	Unlikely	Unlikely	No
Potorous tridactylus	Long-nosed Potoroo	V	V	5	Unlikely	Unlikely	No
Notamacropus parma	Parma Wallaby	V	V	1	Unlikely	Unlikely	No
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	77	High	Minimal	No
Syconycteris australis	Common Blossom-bat	V		4	Low	Minimal	No
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	0	Low	Unlikely	No
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		6	Low	Unlikely	No
Myotis macropus	Southern Myotis	V		9	Low	Unlikely	No
Scoteanax rueppellii	Greater Broad-nosed Bat	V		7	Low	Unlikely	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		6	Low	Unlikely	No

Scientific Name	Common Name	Status		BioNet Records[1]	Potential Occurrence	Potential for Impact	AoS?
		BC Act	EPBC Act				
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		9	Low	Unlikely	No
Miniopterus australis	Little Bent-winged Bat	V		26	Low	Unlikely	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		9	Low	Unlikely	No
Vespadelus troughtoni	Eastern Cave Bat	V		1	Low	Unlikely	No
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V		5	Low	Minimal	No
Pseudomys novaehollandiae	New Holland Mouse	P	V	93	Low	Minimal	No
Invertebrates							
Petalura gigantea	Giant Dragonfly	E		0	Low	Unlikely	No

[1] Number of DPE wildlife atlas records in selected area [North: -32.17 West: 152.48 East: 152.58 South: -32.27]. Report generated on 16/05/2024.

Status Abbreviations

V – Vulnerable
P – Protected
E – Endangered
CE – Critically Endangered
E2 – Endangered Population

Targeted surveys are typically undertaken for threatened fauna species identified as having a moderate to high chance of occurring. When targeted surveys are not completed, then the species must be presumed to occur, unless sufficient evidence can be provided to show that it would not. Threatened fauna have been assumed to be present and subject to further assessment when:

- They have a moderate or high potential to occur within the proposal area as detailed in the habitat assessment provided in **Appendix IV**; and
- The proposal is likely to impact important breeding habitat or habitat features (e.g., suitably sized hollows, Flying-fox roosts, wetland habitat, important or seasonal food resources).

The assessments of significance for species potentially impacted by the proposal are provided in **Appendix IV.**

4. DESCRIPTION OF POTENTIAL IMPACTS

The potential impacts discussed in this section are based on a desktop assessment of the study area and field investigations.

4.1 Avoid and Minimise Potential Impacts

The design of the proposed subdivision has implemented the following measures to avoid and minimise impacts to biodiversity:

- The proposed subdivision footprint occupies an existing cleared and filled area, which is presently managed as slashed grass.
- The proposed APZ and conservation area will be managed under a Vegetation Management Plan (VMP). The VMP includes management actions to encourage the persistence of *Lindernia alsinoides* within the area and avoid inappropriate disturbance regimes that present a risk to the local population (i.e., slashing too frequently or during flowering periods).

Mitigation measures to further minimise impacts to biodiversity are provided in Section 5.

4.2 Loss of Native Vegetation

Impacts to native vegetation would be limited to an area totalling 0.11 hectares to form the proposed APZs extending from proposed Lots 14, 15 and 16. A summary of the vegetation to be impacted is provided in **Table 4.1.** The location of the proposed APZ and associated vegetation impacts are illustrated in Figure 4.1 below.

Table 4.1: Summary of vegetation to be impacted by the proposed works

Plant Community Type	Status		Direct Impact (ha)	Extent within site (ha)	% Impacted within site	% of EEC[1] impacted within 5km of the site
	BC Act	EPBC Act				
PCT 4048 Northern Swamp Oak – Paperbark Forest (VZ1 – Moderate / Good Condition)	EEC	EEC	0.021	1.68	1.25%	0.005%
PCT 4048 Northern Swamp Oak – Paperbark Forest (VZ2 – Low Condition)	N/A	N/A	0.088	N/A	N/A	N/A

Note[1]: Likely areas of EEC are indicative only and have been estimated using the NSW State Vegetation Type Map (DPE, 2023). The area was calculated using all other areas of vegetation within 5km of the site identified as being associated with the BC Act EEC Swamp Oak Floodplain Forest and the EPBC Act EEC Coastal Swamp Oak (*Casuarina glauca*) Forest. Data interrogation using GIS returned a value of 397ha of Coastal Floodplain Wetlands vegetation associated with the identified EECs

Figure 4.1: Vegetation zones and associated TECs to be impacted by proposed APZ

4.3 Removal of Threatened Ecological Communities

The proposed subdivision will result in the removal of TECs which are associated with *PCT 4048*. These are:

- EEC Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions listed under the BC Act, and
- EEC Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales listed under the EPBC Act.

The assessments of significance pursuant to the BC Act (Five-Part Test) and the EPBC Act (Significant Impact Criteria) for these TECs are provided in **Appendix IV**. These assessments concluded that potential direct and indirect impacts to these communities are unlikely to be significant given the small area of native vegetation to be impacted.

4.4 Removal or Disturbance of Threatened Fauna Habitat

The proposal may result in relatively minor vegetation clearing and construction works which may impact the following fauna habitat:

- The removal of several native trees along the edge of an existing clearing that may provide seasonal foraging and/or roosting habitat for birds, reptiles, small mammals and frogs.
- The clearing/removal of shelter associated with shrubs, ground cover and leaf litter present within the proposed APZ.

An assessment of significance for threatened species with the potential to be impacted by the proposal is provided in **Appendix IV** and these are summarised in **Section 4.8**. No threatened fauna is likely to be significantly impacted by the proposed subdivision.

4.5 Threatened Flora Species

One threatened flora species was recorded within the site – *Lindernia alsinoides* (Noah's False Chickweed). An assessment of significance for the species is provided in **Appendix IV**. This assessment concluded that potential direct and indirect impacts to this species are unlikely to be significant given the small area of habitat to be affected. Retained areas would be managed under a vegetation management plan with measures to avoid and minimise impacts to the local population.

4.6 Wildlife Connectivity and Habitat Fragmentation

Wildlife connectivity within the south Forster area is already relatively poor as a result of large physical barriers between remnant patches of forest vegetation, including The Lakes Way, The Southern Parkway and a number of large residential estates. The proposal will contribute to the incremental fragmentation of forest vegetation in the local area but is unlikely to isolate any populations dependent on habitats within the site.

4.7 Weeds

The proposal would involve clearing, minor earthworks and APZ maintenance in areas where weeds were observed. The movement and disturbance of soil by machinery and the opening of the canopy can lead to increased weed infestation within the study area. Increased weed growth has the potential to result in decreased native species diversity and can further degrade local native flora and fauna habitats.

4.8 Assessment of Significance Summary

A summary of the Assessment of Significance under the BC Act is provided in **Table 4.2** and a summary of the Significant Impact Assessment Criteria under the EPBC Act is provided in **Table 4.3.**

Table 4.2: Assessment of significance summary (BC Act)

Threatened species or communities	Significance assessment question[1]					Likely significant impact?
	a	b	c	d	e	
Lindernia alsinoides (Noah's False Chickweed)	Y	X	Y	X	Y	No
Swamp Oak Floodplain Forest EEC	X	Y	Y	X	Y	No

Key: Y= Yes (negative impact), N= No (no or positive impact), X= not applicable, ?= unknown impact.

Note 1 - Significance Assessment Questions as set out in the Biodiversity Conservation Act 2016

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

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

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

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

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

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

   ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

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

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),

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.

Table 4.3: Significant Impact Criteria Assessment summary (EPBC Act)

Threatened species, or communities	Important population*	Likely significant impact?
Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales	Y	N

Notes: Y = Yes (negative impact), N = No (no or positive impact), X = not applicable, ? = unknown impact.

* Significant Impact Guidelines 1.1 (DoE 2013)

4.9 Other Relevant Legislation or Planning Policies

4.9.1 SEPP (Biodiversity and Conservation) 2021 - Koala Habitat Protection 2021

Chapter 4 of State Environmental Planning Policy (Biodiversity and Conservation) 2021, Koala Habitat Protection 2021 (referred to hereafter as the Koala SEPP 2021), seeks to address the declining status of Koalas in NSW through better conservation and management of Koala habitat as part of the planning and assessment process. The Koala Habitat Protection Guideline (2020) outlines the development control provisions of the SEPP which applicants and consent authorities must address when preparing and assessing development applications in areas of Koala habitat. The control provisions apply to proposals within core habitat areas that have an area of more than 1 hectare under the same ownership. The definition of core Koala habitat under the Koala SEPP 2021 is:

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.

The definition of core Koala habitat under the Koala SEPP 2021 includes a reference to highly suitable habitat. Highly suitable 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 3 of the SEPP. Only one Koala use tree species was recorded within the study area (*Melaleuca quinquenervia*). Although this species occurs frequently throughout the community, few individuals would be impacted by the proposal. No other Koala use trees listed in Schedule 3 of the SEPP occur within the proposal area.

Additionally, no indicators of Koala presence (scratches on trees, Koala scats) were recorded on site and no Koala records occur within 1 km of the proposal area. The nearest Koala record is located more than 1.6 km to the south of the site, on the western side of The Lakes Way.

Given the paucity of Koala use trees and lack of local Koala records, the proposal area does not constitute 'Core Koala Habitat' as defined by the SEPP and no further provisions of this policy apply to the site.

4.9.2 Matters of National Environmental Significance

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) requires approval by the Commonwealth Minister representing the Department of Climate Change, Energy, the Environment and Water, for actions that may have a significant impact on Matters of National Environmental Significance (MNES). MNES protected under the EPBC Act relevant to the proposal include:

- Threatened species or ecological communities listed in the EPBC Act; and
- Migratory species listed in the EPBC Act.

4.9.2.1 Threatened Ecological Communities

Six (6) TECs were identified in the EPBC protected matters search as having potential to occur within the local area:

- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South-East Queensland;
- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia;
- *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion;
- Lowland Rainforest of Subtropical Australia;
- Subtropical and Temperate Coastal Saltmarsh; and
- Coastal Swamp Sclerophyll Forest of New South Wales and South-east Queensland

The areas of *PCT 4048 – Northern Swamp Oak – Paperbark Forest* occurring within the site are associated with the endangered ecological community Coastal Swamp Oak (*Casuarina glauca*) Forest of South-east Queensland and New South Wales. Further consideration of the MNES significant impact guidelines addressing impacts to this TEC is provided in **Appendix IV**.

No other TECs occur within the proposal area.

4.9.2.2 Threatened Species

No listed flora or fauna species or populations listed under the EPBC Act were recorded within or near the proposal site during surveys and none were considered likely to be impacted by the proposal.

5. MITIGATION MEASURES

The following mitigation measures are recommended to minimise the ecological impact of the proposed works. These should be embedded in the project consent (if approved) and implemented through a Construction Environmental Management Plan (CEMP) to be developed for the construction phase of the project or Vegetation Management Plan (VMP) to be developed for the ongoing management of the conservation lands.

Table 5.1: Mitigation measures

Item	Environmental safeguards	Responsibility	Timing
Threatened Flora	The following measure would apply to the works to avoid and minimise impacts to *Lindernia alsinoides*: • The establishment and ongoing management of the proposed APZ should be undertaken outside of the flowering and subsequent seeding period of *Lindernia alsinoides*. The flowering period typically occurs from November to February. Ideally fuel management activities would be undertaken during August to ensure that fuel reduction occurs ahead of the bushfire season and allows growth of Lindernia prior to the flowering period. • Should any vegetation management be required during this time, any slashing should be undertaken at a height where impacts to specimens would be avoided (e.g., >20 cm). • Tree removal shall be restricted to hand-removal methods to minimise impacts to the existing soil profile and adjoining vegetation. • Camphor Laurel (*Cinnamomum camphora*) trees and other high threat weeds should be targeted for removal throughout the APZ and C2 zoned lands. High threat weeds can cause significant shadowing and smothering of the understorey with leaf litter and reduce the availability of *Lindernia alsinoides* habitat.	Proponent / Contractor / Council	Pre-construction Construction / Post-construction
Vegetation Clearing	Vegetation clearing will be limited to the identified APZ. The selection of trees and shrubs to be retained within the APZ areas is to be undertaken in consultation with a supervising ecologist and bushfire specialist.	Proponent / Contractor	Pre-construction / Construction
Exclusion zones	The limits of clearing within the construction site and vegetation to be retained will be delineated using appropriate signage and barriers and identified on site construction drawings.	Proponent / Contractor	Pre-construction / construction

Item	Environmental safeguards	Responsibility	Timing
Unexpected Fauna	If unexpected fauna (e.g., nesting birds, transient Koalas) are discovered and have the potential to be impacted, works are to stop immediately and the project manager notified.	Proponent / Contractor	Pre-construction / construction
Weed and Pathogen Management	Implement protocols to prevent the spread of weeds and pathogens within the site and between the site and off-site areas.	Proponent / Contractor	Pre-construction / construction
Water Quality	Appropriate sedimentation and erosion controls must be installed prior to, and maintained during, vegetation clearing and construction operations.	Proponent / Contractor	Construction

6. CONCLUSION

A biodiversity assessment has been undertaken to identify and assess the potential impacts to biodiversity relating to a proposed subdivision on land at Part Lot 75 DP1300031, Myall Drive, Forster.

The assessment identified that the proposal would result in some clearing of native vegetation (0.11 ha) which has the potential to impact habitat suitable for the following Endangered Ecological Communities (EECs) and threatened species known to occur in the local area:

- *Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions EEC* (BC Act) and *Swamp Oak* (*Casuarina glauca*) *Forest of New South Wales and South-east Queensland* EEC (EPBC Act);
- *Lindernia alsinoides* (Noah's False Chickweed) – Vulnerable (BC Act).

Given the relatively small area to be impacted by the proposed works, this assessment has determined that the proposed subdivision is unlikely to have a significant impact on any EEC or threatened species listed under State (BC Act) or Federal (EPBC Act) legislation.

A number of mitigation measures, listed in **Section 5**, have been provided to minimise the impact of the proposed works on habitat within the proposal area.

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Appendix I Flora Species List

Flora Species List

The following is a list of all flora species previously recorded within the site. It should be noted that such a list cannot be considered comprehensive, but rather indicative of the flora. A period of some years is often required to identify all species present in an area, particularly for cryptic or seasonally detectable species (such as orchids, some grasses and grass-like herbs).

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Amaryllidaceae	*Agapanthus spp.*	Exotic	African Lily	✓		
Apiaceae	*Centella asiatica*	Forb (FG)	Indian Pennywort	✓		
Apiaceae	*Hydrocotyle hirta*	Forb (FG)	Hairy Pennywort	✓		
Apiaceae	*Hydrocotyle sibthorpioides*	Forb (FG)			✓	0.1
Apocynaceae	*Gomphocarpus fruticosus*	Exotic	Narrow-leaved Cotton Bush		✓	
Apocynaceae	*Parsonsia straminea*	Other (OG)	Monkey Rope	✓	✓	1
Araceae	*Monstera deliciosa*	Exotic	Fruit Salad Plant		✓	
Araliaceae	*Hydrocotyle bonariensis*	Exotic	Largeleaf Pennywort		✓	
Arecaceae	*Archontophoenix cunninghamiana*	Other (OG)	Bangalow Palm	✓	✓	
Arecaceae	*Livistona australis*	Other (OG)	Cabbage Tree Palm		✓	
Asparagaceae	*Asparagus aethiopicus*	HTE	Asparagus Fern	✓	✓	
Asteraceae	*Ageratina adenophora*	HTE	Crofton Weed	✓	✓	
Asteraceae	*Bidens pilosa*	HTE	Cobbler's Pegs	✓	✓	
Asteraceae	*Cirsium vulgare*	Exotic	Spear Thistle		✓	
Asteraceae	*Conyza bonariensis*	Exotic	Tall Fleabane	✓	✓	
Asteraceae	*Eclipta platyglossa*	Forb (FG)			✓	
Asteraceae	*Enydra woollsii*	Forb (FG)		✓		

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Asteraceae	*Erechtites valerianifolius*	Exotic	Brazilian Fireweed		✓	
Asteraceae	*Hypochaeris radicata*	Exotic	Catsear		✓	
Asteraceae	*Senecio madagascariensis*	HTE	Fireweed	✓	✓	
Asteraceae	*Sonchus spp.*	Exotic		✓		
Blechnaceae	*Telmatoblechnum indicum*	Fern (EG)	Swamp Water Fern	✓	✓	10
Casuarinaceae	*Casuarina glauca*	Tree (TG)	Swamp Oak	✓	✓	30
Commelinaceae	*Commelina cyanea*	Forb (FG)	Scurvy Weed		✓	
Convolvulaceae	*Convolvulus erubescens*	Other (OG)	Blushing Bindweed	✓		
Convolvulaceae	*Polymeria calycina*	Other (OG)			✓	
Cyatheaceae	*Cyathea spp.*	Other (OG)		✓	✓	2
Cyperaceae	*Carex longebrachiata*	Grass & grasslike (GG)		✓		
Cyperaceae	*Carex spp.*	Grass & grasslike (GG)		✓		
Cyperaceae	*Chorizandra cymbaria*	Grass & grasslike (GG)			✓	2
Cyperaceae	*Cyperus brevifolius*	Exotic	Mullumbimby Couch	✓		
Cyperaceae	*Cyperus eragrostis*	HTE	Umbrella Sedge		✓	
Cyperaceae	*Cyperus imbecillis*	Grass & grasslike (GG)		✓		
Cyperaceae	*Cyperus polystachyos*	Grass & grasslike (GG)		✓		
Cyperaceae	*Fimbristylis dichotoma*	Grass & grasslike (GG)	Common Fringe-sedge	✓		
Cyperaceae	*Gahnia clarkei*	Grass & grasslike (GG)	Tall Saw-sedge	✓		
Cyperaceae	*Lepidosperma neesii*	Grass & grasslike (GG)		✓		
Cyperaceae	*Lepidosperma spp.*	Grass & grasslike (GG)		✓		
Cyperaceae	*Machaerina articulata*	Grass & grasslike (GG)	Jointed Twig-rush	✓		

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Cyperaceae	*Machaerina juncea*	Grass & grasslike (GG)	Bare Twig-rush		✓	2
Cyperaceae	*Machaerina rubiginosa*	Grass & grasslike (GG)			✓	10
Cyperaceae	*Rhynchospora brownii*	Grass & grasslike (GG)	Grassy Beak-sedge		✓	0.1
Cyperaceae	*Schoenoplectiella mucronata*	Grass & grasslike (GG)			✓	
Dennstaedtiaceae	*Hypolepis muelleri*	Fern (EG)	Harsh Ground Fern	✓	✓	85
Dilleniaceae	*Hibbertia scandens*	Other (OG)			✓	
Fabaceae (Caesalpinioideae)	*Senna pendula var. galbrata*	HTE	Senna		✓	
Fabaceae (Faboideae)	*Hardenbergia violacea*	Other (OG)	False Sarsaparilla	✓		
Fabaceae (Faboideae)	*Kennedia rubicunda*	Other (OG)			✓	
Fabaceae (Mimosoideae)	*Acacia longifolia subsp. sophorae*	Shrub (SG)	Coastal Wattle		✓	
Goodeniaceae	*Goodenia paniculata*	Forb (FG)	Branched Goodenia		✓	
Haloragaceae	*Gonocarpus chinensis subsp. verrucosus*	Forb (FG)			✓	
Juncaceae	*Juncus continuus*	Grass & grasslike (GG)		✓	✓	
Juncaceae	*Juncus planifolius*	Grass & grasslike (GG)			✓	
Juncaceae	*Juncus spp.*	Grass & grasslike (GG)		✓		
Juncaceae	*Juncus usitatus*	Grass & grasslike (GG)		✓		
Lauraceae	*Cinnamomum camphora*	HTE	Camphor Laurel	✓	✓	0.1
Linderniaceae	*Lindernia alsinoides*	Forb (FG)	Noah's False Chickweed	✓		
Lobeliaceae	*Lobelia anceps*	Forb (FG)		✓	✓	0.1
Lobeliaceae	*Lobelia purpurascens*	Forb (FG)	Whiteroot	✓	✓	0.1
Lythraceae	*Cuphea carthagenensis*	Exotic			✓	

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Malvaceae	*Brachychiton populneus*	Tree (TG)	Kurrajong		✓	
Menispermaceae	*Stephania japonica*	Other (OG)	Snake Vine		✓	
Menyanthaceae	*Liparophyllum exaltatum*	Forb (FG)		✓		
Myrtaceae	*Leptospermum juniperinum*	Shrub (SG)			✓	0.5
Myrtaceae	*Melaleuca ericifolia*	Shrub (SG)	Swamp Paperbark		✓	
Myrtaceae	*Melaleuca quinquenervia*	Tree (TG)	Broad-leaved Paperbark	✓	✓	20
Oleaceae	*Notelaea longifolia*	Tree (TG)	Mock Olive		✓	
Philydraceae	*Philydrum lanuginosum*	Forb (FG)			✓	
Phormiaceae	*Dianella caerulea*	Forb (FG)	Blue Flax-lily	✓		
Phyllanthaceae	*Breynia oblongifolia*	Shrub (SG)	Coffee Bush	✓		
Phyllanthaceae	*Glochidion ferdinandi*	Tree (TG)	Cheese Tree		✓	
Plantaginaceae	*Plantago lanceolata*	Exotic	Lamb's Tongues	✓		
Poaceae	*Andropogon virginicus*	HTE	Whiskey Grass	✓		
Poaceae	*Briza maxima*	Exotic	Giant Shivery Grass	✓		
Poaceae	*Briza minor*	Exotic	Small Shivery Grass	✓		
Poaceae	*Briza subaristata*	HTE		✓		
Poaceae	*Cenchrus clandestinus*	HTE	Kikuyu	✓	✓	
Poaceae	*Cynodon dactylon*	Grass & grasslike (GG)	Couch	✓		
Poaceae	*Echinochloa crusgalli*	Exotic	Barnyard Grass		✓	
Poaceae	*Echinopogon ovatus*	Grass & grasslike (GG)	Forest Hedgehog Grass	✓		
Poaceae	*Entolasia marginata*	Grass & grasslike (GG)	Bordered Panic	✓	✓	
Poaceae	*Imperata cylindrica*	Grass & grasslike (GG)	Blady Grass		✓	

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Poaceae	*Isachne globosa*	Grass & grasslike (GG)	Swamp Millet	✓	✓	
Poaceae	*Ischaemum australe*	Grass & grasslike (GG)		✓		
Poaceae	*Paspalum dilatatum*	HTE	Paspalum	✓	✓	
Poaceae	*Sacciolepis indica*	Grass & grasslike (GG)	Indian Cupscale Grass	✓		
Poaceae	*Setaria pumila*	Exotic	Pale Pigeon Grass		✓	
Poaceae	*Setaria sphacelata*	HTE	South African Pigeon Grass		✓	2
Poaceae	*Sporobolus spp.*	Grass & grasslike (GG)		✓		
Polygonaceae	*Persicaria decipiens*	Forb (FG)	Slender Knotweed		✓	
Polygonaceae	*Persicaria praetermissa*	Forb (FG)			✓	0.1
Polygonaceae	*Persicaria strigosa*	Forb (FG)	Spotted Knotweed	✓	✓	
Primulaceae	*Ardisia crenata*	Exotic	Coralberry		✓	
Primulaceae	*Lysimachia arvensis*	Exotic	Scarlet Pimpernel	✓	✓	
Primulaceae	*Myrsine variabilis*	Shrub (SG)		✓		
Proteaceae	*Grevillea robusta*	Tree (TG)	Silky Oak	✓		
Ranunculaceae	*Ranunculus inundatus*	Forb (FG)	River Buttercup	✓	✓	0.1
Ranunculaceae	*Ranunculus plebeius*	Forb (FG)	Forest Buttercup	✓		
Ranunculaceae	*Ranunculus repens*	HTE	Creeping Buttercup	✓		
Restionaceae	*Empodisma minus*	Grass & grasslike (GG)	Spreading Rope-rush	✓		
Rosaceae	*Rubus ulmifolius*	HTE	Blackberry	✓	✓	
Scrophulariaceae	*Bacopa monnieri*	Forb (FG)	Bacopa		✓	
Solanaceae	*Solanum mauritianum*	Exotic	Wild Tobacco Bush		✓	
Sparganiaceae	*Sparganium subglobosum*	Grass & grasslike (GG)			✓	

Family	Scientific Name	Growth Form Group	Common Name	EcoLogical	Accuplan	Plot 1
Typhaceae	*Typha orientalis*	Grass & grasslike (GG)	Broadleaf Cumbungi		✓	
Verbenaceae	*Lantana camara*	HTE	Lantana	✓	✓	
Verbenaceae	*Verbena bonariensis*	Exotic	Purpletop Verbena	✓	✓	
Verbenaceae	*Verbena rigida*	Exotic	Veined Verbena	✓	✓	
Violaceae	*Viola banksii*	Forb (FG)	Wild Violet	✓		
Violaceae	*Viola hederacea*	Forb (FG)	Native Violet		✓	0.1

APPENDIX II Fauna Species List

Fauna Species List

The following is a list of all fauna species recorded within the site during the survey period.

Observation Type:

O – Observed	**B** - Burnt	**F** - Tracks/scratchings
T - Trapped or netted	**H** - Hair, feathers, or skin	**Y** - Bone or teeth
R - Road kill	**P** - Scat	**D** - Dog kill
W - Heard call	**C** - Cat kill	**Z** - In raptor/owl pellet
V - Fox kill	**E** - Nest/roost	**K** - Dead
M - Miscellaneous	**X** - In scat	**U** – Bat Recording
WC – Wildlife Cam		

Notes

Threatened species appear in **bold** font.

? – Indicates a species identified without certainty or to a Genus level only.

* – Indicates an introduced species.

Family	Scientific Name	Common Name	Observation Type	Accuplan 2022/23	EcoLogical 2018	EcoLogical 2007
Frogs						
Hylidae	*Litoria caerulea*	Green Tree Frog				✓
Hylidae	*Litoria dentata*	Bleating Tree Frog				✓
Hylidae	*Litoria fallax*	Eastern Dwarf Tree Frog	W	✓	✓	✓
Limnodynastidae	*Limnodynastes peronii*	Brown-striped Frog				✓
Myobatrachidae	*Crinia signifera*	Common Eastern Froglet				✓
Birds						
Acanthizidae	*Gerygone mouki*	Brown Gerygone				✓
Acanthizidae	*Sericornis frontalis*	White-browed Scrubwren			✓	
Accipitridae	*Elanus axillaris*	Black-shouldered Kite				✓
Acrocephalidae	*Acrocephalus australis*	Australian Reed-Warbler			✓	
Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra			✓	✓
Anatidae	*Anas superciliosa*	Pacific Black Duck				✓
Anatidae	*Chenonetta jubata*	Australian Wood Duck			✓	
Anhingidae	*Anhinga melanogaster*	Darter				✓
Apodidae	*Hirundapus caudacutus*	White-throated Needletail				✓
Ardeidae	*Egretta novaehollandiae*	White-faced Heron				✓
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird				✓
Artamidae	*Cracticus torquatus*	Grey Butcherbird			✓	✓
Artamidae	*Gymnorhina tibicen*	Australian Magpie	0		✓	✓
Artamidae	*Strepera graculina*	Pied Currawong			✓	✓

Family	Scientific Name	Common Name	Observation Type	Accuplan 2022/23	EcoLogical 2018	EcoLogical 2007
Cacatuidae	*Cacatua sanguinea*	Little Corella	O, W	✓		✓
Cacatuidae	*Eolophus roseicapilla*	Galah	O		✓	✓
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike				✓
Charadriidae	*Vanellus miles*	Masked Lapwing	0			✓
Columbidae	*Geopelia humeralis*	Bar-shouldered Dove			✓	
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	0			✓
Corvidae	*Corvus coronoides*	Australian Raven	O		✓	
Corvidae	*Corvus orru*	Torresian Crow				✓
Cuculidae	*Centropus phasianinus*	Pheasant Coucal				✓
Cuculidae	*Eudynamys orientalis*	Eastern Koel			✓	✓
Cuculidae	*Scythrops novaehollandiae*	Channel-billed Cuckoo			✓	✓
Estrildidae	*Neochmia temporalis*	Red-browed Finch			✓	
Hirundinidae	*Hirundo neoxena*	Welcome Swallow				✓
Maluridae	*Malurus cyaneus*	Superb Fairy-wren	O		✓	✓
Maluridae	*Malurus sp.*	Unidentified Fairy-wren		✓		
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird				✓
Meliphagidae	*Anthochaera chrysoptera*	Little Wattlebird			✓	✓
Meliphagidae	*Caligavis chrysops*	Yellow-faced Honeyeater			✓	
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater				✓
Meliphagidae	*Manorina melanocephala*	Noisy Miner				✓
Meliphagidae	*Meliphaga lewinii*	Lewin's Honeyeater			✓	

Family	Scientific Name	Common Name	Observation Type	Accuplan 2022/23	EcoLogical 2018	EcoLogical 2007
Meliphagidae	*Phylidonyris niger*	White-cheeked Honeyeater				✓
Meliphagidae	*Plectorhyncha lanceolata*	Striped Honeyeater			✓	
Monarchidae	*Grallina cyanoleuca*	Magpie-lark			✓	✓
Oriolidae	*Oriolus sagittatus*	Olive-backed Oriole			✓	✓
Oriolidae	*Sphecotheres vieilloti*	Australasian Figbird	O	✓		
Oriolidae	*Sphecotheres vieilloti*	Australasian Figbird				✓
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush				✓
Pardalotidae	*Acanthiza pusilla*	Brown Thornbill	O			
Pardalotidae	*Pardalotus striatus*	Striated Pardalote				✓
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler	O			
Phalacrocoracidae	*Phalacrocorax sulcirostris*	Little Black Cormorant				✓
Phalacrocoracidae	*Phalacrocorax varius*	Pied Cormorant				✓
Psittacidae	*Platycercus elegans*	Crimson Rosella				✓
Psittacidae	*Platycercus eximius*	Eastern Rosella	O			
Psittacidae	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet			✓	
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet			✓	
Rallidae	*Porphyrio porphyrio*	Purple Swamphen				✓
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	O			✓
Sturnidae	*Acridotheres tristis**	Common Myna				✓
Threskiornithidae	*Threskiornis moluccus*	Australian White Ibis	O	✓		
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis				✓

Family	Scientific Name	Common Name	Observation Type	Accuplan 2022/23	EcoLogical 2018	EcoLogical 2007
Zosteropidae	*Zosterops lateralis*	Silvereye			✓	✓
Fish						
Aguillidae	*Anguilla australisq*	Short Finned Eel			✓	
Mammals						
Canidae	*Canis familiaris**	Dog			✓	
Canidae	*Vulpes vulpes**	Fox				✓
Cervidae	*Cervus sp.**	Unidentified Deer	F	✓		
Cervidae	*Cervus timorensis**	Rusa Deer			✓	
Leporidae	*Oryctolagus cuniculus**	Rabbit				✓
Muridae	*Mus musculus**	House Mouse				✓
Muridae	*Rattus lutreolus*	Swamp Rat				✓
Muridae	*Rattus rattus**	Black Rat				✓
Reptiles						
Elapidae	*Hemiaspis signata*	Black-bellied Swamp Snake				✓
Elapidae	*Pseudechis porphyriacus*	Red-bellied Black Snake			✓	✓
Scincidae	*Lampropholis guichenoti*	Pale-flecked Garden Sunskink				✓

APPENDIX III Threatened Species Habitat Assessment Table

Likelihood of occurrence criteria

Likelihood	Criteria
Recorded	The species was recorded within the study area during site surveys.
High	It is highly likely that a species inhabits the study area. Criteria for this category includes: • Species recently and/or regularly recorded in contiguous or nearby habitat; • High quality habitat types or resources present within study area; • Species is known or likely to maintain a resident population surrounding the study area; and • Species is known or likely to visit during migration or seasonal availability of resources.
Moderate	Potential habitat for a species occurs within the subject site. Criteria for this category includes: • Species previously recorded in contiguous habitat albeit not recently (>10 years); • Poor quality, depauperate or modified habitat types and/or resources present within study area; • Species has potential to utilise habitat during migration or seasonal availability of resources; and • Cryptic flora species with potential habitat available within the subject site that have not been seasonally targeted by surveys.
Low	It is unlikely that the species inhabits the area and would likely be a transient visitor if encountered. Criteria for this category includes: • The subject site or study area lacks specific habitat types or resources required by the species; • The subject site is beyond the current distribution of the species or is isolated from known populations; • Non cryptic flora species that were found to be absent during targeted surveys; and • The subject site only contains common habitat which would not be considered important for the local survival of a threatened species.
Unlikely	Suitable habitat is absent from the proposal area and/or study area.

Threatened species habitat assessment table

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Habitat Description and Locally Known Populations	BioNet Records[1]	EPBC Act Protected Matters Report[2]	Potential SAII	Likelihood of occurrence	Potential for Impact and Importance of Habitat Present	Considered further within Assessment of Significance
Flora										
Cynanchum elegans	White-flowered Wax Plant	E	E	Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The species has been recorded as far west as Merriwa in the upper Hunter River valley. Usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; coastal scrub; *Eucalyptus tereticornis* aligned open forest and woodland; Spotted Gum aligned open forest and woodland; and Bracelet Honeymyrtle scrub to open scrub.	14	Species or species habitat known to occur within area	No	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No
Tylophora woollsii	Cryptic Forest Twiner	E	E	The Cryptic Forest Twiner is found from the NSW north coast and New England Tablelands to southern Queensland but is very rare within that range. Known on the Tablelands from the Bald Rock and Boonoo Boonoo areas north of Tenterfield. This species grows in moist eucalypt forest, moist sites in dry eucalypt forest and rainforest margins.	0	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Senecio spathulatus	Coast Groundsel	E		A frontal dune daisy with a fragmented east coast distribution, limited to within 500 metres of the coastline. Recorded between Kurnell and Myall Lakes National Park NSW, in Nadgee Nature Reserve NSW, and between Wilsons Promontory National Park Victoria and the NSW border.	4	N/A	No	Unlikely	Preferred coastal dune habitat is absent from the subject site.	No
Allocasuarina defungens	Dwarf Heath Casuarina	*E*	*E*	Dwarf Heath Casuarina is found only in NSW from the Nabiac area to Byron Bay. The species mainly occurs in tall heath on sand but may also grow on clay soils and sandstone. The species also extends onto exposed nearby-coastal hills or headlands adjacent to sandplains.	76	N/A	No	Unlikely	Preferred sandy heath habitat is absent from the proposal area.	No
Allocasuarina simulans	Nabiac Casuarina	*V*	*V*	The Nabiac Casuarina is restricted to the mid-north coast of NSW, from Nabiac to Forster and is very rare. The species grows in heathland on coastal sands.	173	Species or species habitat known to occur within area	Yes	Unlikely	Preferred sandy heath habitat is absent from the proposal area.	No
Tetratheca juncea	Black-eyed Susan	V	V	A low shrub characteristically found in low open forest and woodland communities, however, has also been found in heathland and moist forests. Prefers well-drained and low nutrient sandy skeletal, sandy-loam and clayey soils. Restricted distributed within the northern portion of the Sydney Basin Bioregion and southern portion of the North Coast bioregion, including the local government areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock.	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Chamaesyce psammogeton	Sand Spurge	E		Found on fore-dunes, exposed headlands and pebbly strandlines and is often associated with *Spinifex sericeus* and *Zoysia macrantha*. Flowers in spring and summer with the potential for seed dispersal between beaches via water. Sparse records along the coastline between Queensland to south of Jervis Bay, NSW. Populations recorded in Myall Lakes National Park, Wamberal Lagoon Nature Reserve, Moonee Beach Nature Reserve and Bundjalung National Park.	6	N/A	No	Unlikely	Preferred coastal dune habitat is absent from the subject site.	No
Senna acclinis	Rainforest Cassia	E		Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland. Grows on the margins of subtropical, littoral and dry rainforests.	3	N/A	No	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No

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Lindernia alsinoides	Noah's False Chickweed	E		Grows in swamp forests and wetlands along coastal and hinterland creeks. Occurs north from Bulahdelah. Known population exists at Shannon Creek (near Grafton) and the Forster / Tuncurry area where it occurs in damp paperbark swamp with Melaleuca alternifolia (Tea Tree) and Melaleuca quinquenervia (Broad-leafed Paperbark).	187	N/A	No	Present	The species was recorded during targeted surveys.	Yes
Eucalyptus glaucina	Slaty Red Gum		V	Found only on the north coast of NSW and in separate districts (Casino, and from Taree to Broke, west of Maitland), the species grows in grassy woodlands as well as dry eucalypt forest. It is found on deep and moderately fertile soils that are well-watered.	0	Species or species habitat may occur within area	No	Unlikely	Preferred habitat is absent. No *Eucalyptus* spp. were identified within the proposal area.	No
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Known to occur in coastal districts north from Batemans Bay in NSW to areas inland of Bundaberg in Queensland. Grows in coastal rainforests, wet sclerophyll associations in rainforest transition zones and creek side riparian vegetation. Severely threatened by infection from the exotic rust fungus *Austropuccinia psidii* (Myrtle Rust).	16	N/A	Yes	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No
Rhodomyrtus psidioides	Native Guava	CE	CE	Occurs from Broken Bay to Maryborough in Queensland. Typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to 120km inland in the Hunter and Clarence River catchments. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. Extremely susceptible to Myrtle Rust.	20	Species or species habitat known to occur within area	Yes	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No
Syzygium paniculatum	Magenta Lilly Pilly	E	V	Found only in NSW, the Magenta Lilly Pilly occurs from Upper Lansdowne to Conjola State Forest. It occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	105	Species or species habitat known to occur within area	No	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*) often in association with the Large Tongue Orchid (*C. subulata*) and the Tartan Tongue Orchid (*C. erecta*).	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Diuris praecox	Rough Doubletail	V	V	Occurs on hills and slopes of open forests as a subterranean tuber until the winter flowering period. Known distribution limited to near coastal districts between Smiths Lake and Bateau Bay, NSW.	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Genoplesium littorale	Tuncurry Midge Orchid	CE	CE	The Tuncurry Midge Orchid is only known to inhabit a small area in the Great Lakes Local Government Area just north of Tuncurry on the NSW Mid-North Coast. The species grows in coastal heath close to the ocean in deep, well-drained sandy soils. Associated vegetation includes: *Leptospermum laevigatum, Monotoca elliptica, Ochrosperma lineare* and *Banksia spp.* Lichens and various graminoides are often present alongside the orchids.	1085	Species or species habitat known to occur within area	Yes	Unlikely	Preferred species habitat is absent from the proposal area.	No
Phaius australis	Lesser Swamp Orchid	E	E	Grows in swampy grassland or swampy forest including rainforest, eucalypt, or paperbark forest, mostly in coastal areas. Occurs in Queensland and north-east NSW as far south as Coffs Harbour. Historically, it extended farther south, to Port Macquarie.	0	Species or species habitat may occur within area	No	Unlikely	The swamp forest occurring on site may provide some marginal habitat. The species is unlikely to occur given the sites' disturbance history and proximity to known populations.	No

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Rhizanthella slateri	Eastern Underground Orchid	V	E	The species occurs from south-east Queensland to south-east NSW. In the Great Lakes LGA, a large population has been identified near Bulahdelah. Apparently prefers sclerophyll forest with a reasonably deep layer of leaf litter, though little else is known about habitat preferences.	0	Species or species habitat may occur within area	Yes	Unlikely	Preferred species habitat is absent from the proposal area.	No
Euphrasia arguta		CE	CE	Rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Plants from the Nundle area have been reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance	0	Species or species habitat may occur within area	Yes	Unlikely	Preferred species habitat is absent from the proposal area.	No
Arthraxon hispidus	Hairy Jointgrass	V	V	Occurs over a wide area in south-east Queensland, and on the northern tablelands and north coast of NSW but is never common. Moisture and shade-loving, often found in or on the edges of rainforest and in wet eucalyptus forest, often near creeks or swamps.	0	Species or species habitat likely to occur within area	No	Low	The proposed conservation area may provide some marginal habitat. No individuals were recorded during site surveys.	No
Persicaria elatior	Tall Knotweed	V	V	Tall Knotweed has been recorded in south-eastern NSW, Moruya State Forest, the Upper Avon River catchment, and Picton Lakes. In northern NSW it is known from Raymond Terrace and the Grafton area. The species usually occurs in damp places, particularly beside streams and lakes. It also occasionally occurs in swamp forest and is sometimes associated with disturbance.	0	Species or species habitat may occur within area	No	Low	Periodically inundated areas may provide some marginal habitat. This species was not recorded during site surveys.	No
Macadamia integrifolia	Smooth-shelled Macadamia		V	Occurs from Mt Bauple, near Gympie, to Currumbin Valley in the Gold Coast hinterland, south-east Queensland. Many records, particularly those further south, are thought to be propagated. Found in subtropical rainforest.	0	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Asperula asthenes	Trailing Woodruff	V	V	Occurs in damp sites, often along riverbanks. It is found in scattered locations from Bulahdelah north to near Kempsey, with several records from the Port Stephens/Wallis Lakes area.	42	Species or species habitat known to occur within area	No	Low	Suitable habitat is available within the subject site. Recommended survey period is between October to March as flowers and fruits are required to separate the genera *Asperula* and *Galium*. No *Asperula* or *Galium* specimens were recorded within proposal area and therefore targeted surveys during the required period are not considered necessary.	No
Thesium australe	Austral toadflax	V	V	Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. A root parasite that takes water and some nutrients from other plants, especially Kangaroo Grass.	0	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No

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Amphibians										
Litoria aurea	Green and Golden Bell Frog	E	V	Formally distributed along the NSW coast. Since 1990, there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (Typha spp.) or spikerushes (Eleocharis spp.).	0	Species or species habitat known to occur within area.	No	Unlikely	This species is unlikely to occur given the proximity of the proposal area to known populations. Connectivity to the site is poor and the site lacks waterbodies suitable for breeding. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Litoria brevipalmata	Green-thighed Frog	V		The Green-thighed Frog occurs in isolated coastal localities ranging from north of Wollongong to south-east Queensland. The species occurs in a range of habitats including rainforest, moist eucalypt forest, dry eucalypt forest and heath, typically in areas where surface water gathers after rain. The species preferentially inhabits wetter forests. Suitable breeding habitat is any semi-permanent or ephemeral waterbody of >25 square metres in surface area located within native vegetation or immediately adjacent to or within 10 metres of native vegetation. Non-breeding habitat is native vegetation adjacent to the breeding habitat (DPIE, 2020).	1	N/A	No	Low	This species has been recorded approximately 1.7 km to the northwest of the site. Connectivity to the site is poor and the site lacks waterbodies suitable for breeding. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Crinia tinnula	Wallum Froglet	V		Occupies a variety of habitats, including sedgelands, wet heathlands, swamp sclerophyll forests and along drainage lines, however, is typically associated with acidic swamps on coastal sand plains. Distributed within the coastal margin between south eastern Queensland and Kurnell, NSW. Breeds in swamps with permanent water as well as shallow ephemeral pools and drainage ditches. Breeding is thought to peak in the colder months but can occur throughout the year following rain. Shelter under leaf litter, vegetation, other debris or in burrows of other species. Shelter sites are wet or very damp and often located near the water's edge. Males may call throughout the year and at any time of day, peaking following rain.	4	N/A	No	Low	No individuals were identified during site surveys. This species has been recorded approximately 1.1 km to the southeast of the site near Dunns Creek. Connectivity to the site is poor and the site lacks waterbodies suitable for breeding. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Mixophyes balbus	Stuttering Frog	E	V	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor.	0	Species or species habitat likely to occur within area.	Yes	Unlikely	Preferred species habitat is absent from the proposal area.	No
Mixophyes iteratus	Giant Barred Frog	V	V	Distributed along the coast and ranges from Eumundi in south-east Queensland to Warrimoo in the Blue Mountains. Declines appear to have occurred at the margins of the species' range, with no recent records south of the Hawkesbury River and disappearances from a number of streams in QLD. Northern NSW, particularly the Coffs Harbour-Dorrigo area is a stronghold. Found along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation. Riparian habitats such as rainforest or wet sclerophyll forest are favoured, but the species may also occur in other riparian habitats such as in drier forest, degraded riparian remnants, and even occasionally around dams. Breeding takes place from late spring to summer.	0	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No

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Reptiles										
Hoplocephalus stephensii	Stephen's Banded Snake	V		Occupies old, primary eucalypt forest, rainforest, and rocky habitats up to 950m in altitude. Nocturnal and semi-arboreal, the species utilises loose bark, vines, tree hollows, fallen or standing dead timber, rock crevices and slabs to shelter during the day. Emerges at night to hunt amphibians, other reptiles, birds and mammals. Requires habitat that is well connected and of large spatial extent. Distributed from southern Queensland to Gosford, NSW.	5	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area. The site lacks and large trees with hollows and connectivity to intact habitats.	No
Birds										
Pycnoptilus floccosus	Pilotbird		V	Occupies wet and dry sclerophyll forests and woodlands, preferring habitats with a dense understorey. Forages within the ground stratum primarily for insects, however, will occasionally eat fruits and seeds. Distributed in south eastern Australia, approximately south from Newcastle, NSW to Dandenong, Victoria.	0	Species or species habitat may occur within area	No	Low	This species has not been recorded locally. Marginal habitat is available within forest on site.	No
Circus assimilis	Spotted Harrier	V		The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely occurs in Tasmania. The species typically occurs in grassy open woodland including *Acacia* and mallee remnants, inland riparian woodland, grassland and shrub steppe. Most commonly found in native grassland but may also occur in agricultural land.	6	N/A	No	Low	May rarely hunt or rest within the subject site. No raptor nests were observed within the site. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Erythrotriorchis radiatus	Red Goshawk	CE	V	Inhabits open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and riparian *Eucalyptus f*orest of coastal rivers.	0	Species or species habitat may occur within area	Yes	Unlikely	The site is not within the typical range of this species, which has not been recorded locally.	No
Falco hypoleucos	Grey Falcon	E	V	The Grey Falcon is a rarely sighted species with a broad distribution, spanning much of Australia. Although occasionally found in open woodlands near the coast, the species predominantly inhabits shrubland, grassland and wooded watercourses of arid and semi-arid regions.	0	Species or species habitat may occur within area	No	Unlikely	The site is not within the typical range of this species, which has not been recorded locally.	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		Distributed around the Australian coastline. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	453	N/A	No	Moderate	Suitable hunting habitat is available in the surrounding areas, including Wallis Lake and the species may rest within trees on site. No raptor nests were observed on site. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Hieraaetus morphnoides	Little Eagle	V		Occupies open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used.	11	N/A	No	Moderate	May occasionally hunt or rest within the subject site. No raptor nests were observed within the site. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Lophoictinia isura	Square-tailed Kite	V		Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	24	N/A	No	Moderate	May occasionally hunt or rest within the subject site. No raptor nests were observed within the site. The proposal will not impact any habitat important for the survival of the species in the local area.	No

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Pandion cristatus	Eastern Osprey	V		Open and swamp forest adjacent to the coast or estuaries, fishing mainly in brackish or saltwater. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	300	N/A	No	Moderate	Suitable hunting habitat is available in the surrounding areas, including Wallis Lake and the species may rest within trees on site. No raptor nests were observed on site. The proposal will not impact any habitat important for the survival of the species in the local area.	No
Hirundapus caudacutus	White-throated Needletail	V	V	The White-throated Needletail is distributed throughout all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Dividing Range and occasionally onto the adjacent inland plains. The species is almost exclusively aerial, from heights of less than 1m up to more than 1000m above the ground. Although they are recorded to occur in a broad range of habitat, the species is most often recorded above open forest, rainforest and heathland and may also fly between trees or in clearings but are less commonly recorded above woodland and treeless areas. In coastal areas they have been recorded above sandy beaches, mudflats and around coastal cliffs, ridges, and sand-dunes. Breeding habitat consists of wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests.	180	Species or species habitat known to occur within area	No	Previously Recorded	An aerial species that may forage within the airspace above the proposal area. No breeding habitat is likely to occur within the proposal area. The proposal would not impact any habitat important for the local survival of this species.	No
Botaurus poiciloptilus	Australasian Bittern	E	E	Lives alone or in loose groups and favours permanent fresh-waters dominated by sedges, rushes, reeds or cutting grasses (eg., *Phragmites, Scirpus, Eleocharis, Juncus, Typha, Baumea* and *Gahnia* sp.).	2	Species or species habitat known to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Ixobrychus flavicollis	Black Bittern	V		The Black Bittern has a wide distribution, from southern NSW north to Cape York, along the north coast to the Kimberley region and in the south-west of Western Australia. Inhabits terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest, and mangroves.	3	N/A	No	Low	Preferred species habitat is absent from the proposal area. The swamp forest on site may provide some seasonal marginal / transitional habitat.	No
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		In New South Wales, this species is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. Inhabits woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Generally, the understorey is open with sparse eucalypt saplings, acacias, and other shrubs, including heath.	173	N/A	No	Moderate	The proposed conservation area may provide some marginal habitat.	No
Burhinus grallarius	Bush Stone-curlew	E		Found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Still common in northern Australia. Rare or extinct throughout its former range in the south-east. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	1	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No

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Esacus magnirostris	Beach Stone-curlew	CE		The Beach Stone-curlew is distributed along northern Australian coastlines, from the Pilbara region in Western Australia to north-eastern NSW. The south-eastern limit is typically around the Manning River, however the species has been recorded along the far south coast of NSW and into Victoria. The species is exclusively coastal, foraging habitat preferences include intertidal zones of estuaries, mangroves and beaches. Nesting habitats include sand or gravel above tidal zone of beaches, sandbanks and mangroves.	4	N/A	Yes	Unlikely	Preferred species habitat is absent from the proposal area.	No
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	The Gang-gang Cockatoo is distributed from southern Victoria through south and central-eastern New South Wales. In NSW, the species is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. The species generally inhabits tall mountain forest and woodlands during summer. In autumn and winter, the species often moves to lower altitudes in drier, more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas. It is also often found in urban areas.	2	Species or species habitat likely to occur within area	No	Low	The proposed conservation area may provide some marginal foraging habitat. No trees with hollows suitable for breeding habitat would be impacted by the proposal.	No
Calyptorhynchus lathami	Glossy Black-Cockatoo	V		Inhabits open forest and woodlands of the coast and the Great Dividing Range up to 1000 m in which stands of She-oak species, particularly Black She-oak (*Allocasuarina littoralis*), Forest She-oak (*A. torulosa*) or Drooping She-oak (*A. verticillata*) occur.	15	Species or species habitat known to occur within area	No	Low	The proposed conservation area may provide some marginal foraging habitat. No trees with hollows suitable for breeding habitat would be impacted by the proposal.	No
Charadrius leschenaultii	Greater Sand-plover	V	V	A migratory species arriving in Australia during winter to forage after breeding in central Asia. The species is rare in NSW, with most records occurring in the Clarence and Richmond estuaries. Habitat is restricted to coastal areas, and typically includes sheltered beaches, and large intertidal mudflats associated with estuaries and sandbanks.	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Charadrius mongolus	Lesser Sand-plover	V	E	The Greater Sand-plover breeds in central Asia from Armenia to Mongolia, moving further south for winter. In Australia the species is commonly recorded in parties of 10-20 on the west coast, with the far northwest being the stronghold of the population. The species is apparently rare on the east coast, usually found singly. In NSW, the species has been recorded between the northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries. Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Roosts during high tide on sandy beaches and rocky shores; begin foraging activity on wet ground at low tide, usually away from the edge of the water; individuals may forage and roost with other waders. Diet includes insects, crustaceans, polychaete worms and molluscs. Prey is detected visually by running a short distance, stopping to look, then running to collect the prey.	1	Roosting known to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Ephippiorhynchus asiaticus	Black-necked Stork	E		Inhabits swamps associated with river systems and large permanent pools but sometimes appears on the coast or in estuaries. It has also been recorded on farm dams and sewage treatment ponds.	26	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Ptilinopus magnificus	Wompoo Fruit-Dove	V		This species occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula, but it is rarely found south of Coffs Harbour. Habitat occurs in or near rainforest, low elevation moist eucalypt forest and brush box forests. Most often seen in mature forests, but also found in remnant and regenerating rainforest.	12	N/A	No	Low	Preferred species habitat is absent from the proposal area. The forest on site may provide some marginal / transitional habitat.	No

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Ptilinopus regina	Rose-crowned Fruit-Dove	V		Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist Eucalypt forest and swamp forest, where fruit is plentiful. The species' distribution consists of coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York. Vagrants are occasionally found further south to Victoria.	2	N/A	No	Low	Preferred species habitat is absent from the proposal area. The forest on site may provide some marginal / transitional habitat.	No
Ptilinopus superbus	Superb Fruit-Dove	V		Occurs principally from north-eastern Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. There are records of vagrants as far south as eastern Victoria and Tasmania. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	2	N/A	No	Low	Preferred species habitat is absent from the proposal area. The forest on site may provide some marginal / transitional habitat.	No
Haematopus fuliginosus	Sooty Oystercatcher	V		Sooty Oystercatchers are found around the entire Australian coast, including offshore islands. Habitat includes rocky headlands, rocky shelves, exposed reefs with rock pools, beaches, and muddy estuaries. Forages on exposed rock or coral at low tide.	50	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Haematopus longirostris	Pied Oystercatcher	E		The species is distributed around the entire Australian coastline, although it is most common in coastal Tasmania and parts of Victoria, such as Corner Inlet. Favours intertidal flats of inlets and bays, open beaches, and sandbanks. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas.	267	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Sternula albifrons	Little Tern	E		A migratory species arriving from September to November in NSW, the species occurs almost exclusively in coastal sheltered environments, nesting in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands.	445	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Sternula nereis nereis	Australian Fairy Tern		V	Nests on sheltered sandy beaches below vegetation. Forages on oceanic fish. Distributed along the coastlines of Southern Australia, north to the Dampier Archipelago in the Pilbara, WA. Historically known in NSW, however, it is unknown if the species persists in the state.	0	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Anthochaera phrygia	Regent Honeyeater	CE	CE	Inhabits eucalypt open forests and woodlands, predominantly box-ironbark types, but also Spotted Gum and Swamp Mahogany on the coast. The species also inhabits River She-oak gallery forest with *Amyema cambagei* (Needle-leaf Mistletoe). There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region.	0	Foraging, feeding or related behaviour likely to occur within area	Yes	Low	May rarely forage within the vegetation on site but is not known to occur locally. The proposal would not impact any habitat important for the survival of this species in the local area. The proposal area is not mapped as important habitat for this species.	No
Climacteris picumnus victoriae	Brown Treecreeper	V	V	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. Mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	1	Species or species habitat may occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Habitat Description and Locally Known Populations	BioNet Records[1]	EPBC Act Protected Matters Report[2]	Potential SAII	Likelihood of occurrence	Potential for Impact and Importance of Habitat Present	Considered further within Assessment of Significance
Epthianura albifrons	White-fronted Chat	V		Inhabits open communities adjacent to watercourses, wetlands, coastlines, including saltmarshes and grassland. Forages for insects on bare or grassy ground. Distributed across temperate to arid regions of southern Australia up to 1000 metres in altitude.	31	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Grantiella picta	Painted Honeyeater	V	V	The Painted Honeyeater is a nomadic species but occurs mostly on the inland slopes of the Great Dividing Range in NSW, Victoria, and southern Queensland. The species habitat includes Boree/Weeping Myall (*Acacia pendula),* Brigalow (*A. harpophylla),* Box-Gum Woodlands and Box-Ironbark Forests. The species preferentially feeds on *Amyema* genus mistletoes and insects.	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Daphoenositta chrysoptera	Varied Sittella	V		Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy.	28	N/A	No	Low	The proposed conservation area may provide some marginal foraging habitat.	No
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V		Prefers lightly wooded country, usually open Eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature Eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	1	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V		Forages primarily in the canopy of open Eucalypt forest and woodland, yet also forages on Angophoras, Melaleucas and other tree species. Riparian habitats are often utilised. Isolated flowering trees in open country, e.g., paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	1	N/A	No	Unlikely	Preferred species habitat is absent from the proposal area.	No
Petroica boodang	Scarlet Robin	V		The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with a few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Abundant logs and fallen timber are important components of the species' habitat.	1	N/A	No	Low	The proposed conservation area may provide some marginal habitat.	No
Petroica phoenicea	Flame Robin	V		Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter, birds migrate to drier more open habitats in the lowlands. Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration.	1	N/A	No	Low	The proposed conservation area may provide some marginal habitat.	No
Glossopsitta pusilla	Little Lorikeet	V		Forages primarily in the canopy of open Eucalypt forest and woodland, yet also forages on Angophoras, Melaleucas and other tree species. Riparian habitats are often utilised. Isolated flowering trees in open country, e.g., paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	62	N/A	No	Moderate	The proposed conservation area may provide some seasonal foraging habitat. No nesting habitat is present on site.	Yes
Lathamus discolor	Swift Parrot	E	CE	Migrates to the Australian south-east mainland between March and October. Generally, occur in areas where eucalypts are flowering profusely or where there are abundant lerp infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Mugga Ironbark and White Box.	14	Species or species habitat known to occur within area	Yes	Low	The proposal area is not located within an area mapped as important habitat for this species. The proposed conservation area may provide some seasonal foraging habitat.	No

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Habitat Description and Locally Known Populations	BioNet Records[1]	EPBC Act Protected Matters Report[2]	Potential SAII	Likelihood of occurrence	Potential for Impact and Importance of Habitat Present	Considered further within Assessment of Significance
Pezoporus wallicus wallicus	Eastern Ground Parrot	V		In NSW populations have declined and contracted to islands of coastal or subcoastal heathland and sedgeland habitats. The species is found in relatively large numbers on the north coast (Broadwater, Bundjalung, Yuraygir and Limeburners Creek NPs) and in smaller numbers at Myall Lakes on the central coast. There are also large populations on the NSW south coast, particularly Barren Grounds NR, Budderoo NP, the Jervis Bay area and Nadgee NR. Small numbers are recorded at Morton and Ben Boyd NP and other areas on the south coast. Estimated population size is about 2000 birds. Occurs in high rainfall coastal and near coastal low heathlands and sedgelands, generally below one metre in height and very dense (up to 90% projected foliage cover). These habitats provide a high abundance and diversity of food, adequate cover and suitable roosting and nesting opportunities for the Ground Parrot, which spends most of its time on or near the ground. The coastal and subcoastal heathland and sedgeland habitats of the Ground Parrot are particularly fire-prone.	2	N/A	No	Unlikely	Preferred habitat is absent from the proposal area.	No
Rostratula australis	Australian Painted Snipe	E	E	Most records are from the southeast, particularly the Murray Darling Basin, but also wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams, and nearby marshy areas where there is a cover of grasses, lignum, low scrub, or open timber.	0	Species or species habitat likely to occur within area	No	Unlikely	Preferred habitat is absent from the proposal area.	No
Calidris canutus	Red Knot		E	The migratory species arrives between September and October to occupy major river estuaries and sheltered embayments of the NSW coastline, in particular Hunter River estuary. Predominantly occurs in small numbers on intertidal mudflats, estuaries, bays, inlets, lagoons, harbours and sandflats and sandy beaches of sheltered coasts.	5	Species or species habitat known to occur within area	No	Unlikely	Preferred habitat is absent from the proposal area.	No
Calidris ferruginea	Curlew Sandpiper	E	CE	The migratory species occurs in Australia between August and mid-April, occupying littoral and estuarine habitats within intertidal mudflats of sheltered coasts. The species also occasionally occurs in non-tidal swamps, lakes, and lagoons on the coast and sometimes inland.	6	Species or species habitat known to occur within area	Yes	Unlikely	Preferred habitat is absent from the proposal area.	No
Calidris tenuirostris	Great Knot	V	CE	In NSW, the species has been recorded at scattered sites along the coast down to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms. Migrates to Australia from late August to early September, although juveniles may not arrive until October-November. Most birds return north in March and April; however, some individuals may stay over winter in Australia. Forages for food by methodically thrusting its bill deep into the mud to search for invertebrates, such as bivalve molluscs, gastropods, polychaete worms and crustaceans.	1	N/A	Yes	Unlikely	Preferred habitat is absent from the proposal area.	No
Limosa limosa	Black-tailed Godwit	V		A migratory species occurring in Australia between August and March. Typically found in coastal habitats such as sheltered bays, estuaries and intertidal mudflats or sandflats of lagoons. Forages for arthropods, molluscs, worms, fish and frog eggs and larvae in mud or shallow water. Most commonly recorded at Kooragang Island in NSW, with infrequent records along the NSW coastline, the Murray Darling Basin and western Slopes of the Northern Tablelands.	2	N/A	No	Unlikely	Preferred habitat is absent from the proposal area.	No

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Habitat Description and Locally Known Populations	BioNet Records[1]	EPBC Act Protected Matters Report[2]	Potential SAII	Likelihood of occurrence	Potential for Impact and Importance of Habitat Present	Considered further within Assessment of Significance
Numenius madagascariensis	Eastern Curlew	P	CE	A primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast.	77	Species or species habitat known to occur within area	Yes	Unlikely	Preferred habitat is absent from the proposal area.	No
Xenus cinereus	Terek Sandpiper	V		A rare migrant to the eastern and southern Australian coasts, being most common in northern Australia, and extending its distribution south to the NSW coast in the east. The two main sites for the species in NSW are the Richmond River estuary and the Hunter River estuary. The latter has been identified as nationally and internationally important for the species. In Australia, it has been recorded on coastal mudflats, lagoons, creeks and estuaries. Favours mudbanks and sandbanks located near mangroves but may also be observed on rocky pools and reefs, and occasionally up to 10km inland around brackish pools. Generally, roosts communally amongst mangroves or dead trees, often with related wader species.	2	N/A	No	Unlikely	Preferred habitat is absent from the proposal area.	No
Ninox connivens	Barking Owl	V		The Barking Owl is found throughout continental Australia, except for the central arid regions. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. The species is flexible in its habitat use and may breed along timbered watercourses in heavily cleared habitats. Roosts in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums.	2	N/A	No	Low	May occasionally hunt within the site as part of a larger home range. Hollow bearing trees suitable for nesting are absent	No
Ninox strenua	Powerful Owl	V		Inhabits a wide range of vegetation types from wet eucalypt forests with a rainforest understorey to dry open forests and woodlands. Requires large hollow-bearing trees for nesting and dense canopy vegetation for roosting.	9	N/A	No	Low	May occasionally hunt within the site as part of a larger home range. Hollow bearing trees suitable for nesting are absent	No
Tyto longimembris	Eastern Grass Owl	V		Eastern Grass Owls have been recorded occasionally in all mainland states of Australia but are most common in northern and north-eastern Australia. In NSW they are more likely to be resident in the north-east. Eastern Grass Owl numbers can fluctuate greatly, increasing especially during rodent plagues. Eastern Grass Owls are found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on flood plains.	4	N/A	No	Low	Dense ground cover present within the proposed conservation area may provide suitable habitat. The proposal would not impact any habitat important for the local survival of this species.	No
Tyto novaehollandiae	Masked Owl	V		Lives in dry eucalypt forests and woodlands from sea level to 1100 m and often hunts along the edges of forests, including roadsides. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	15	Species or species habitat may occur within area	No	Low	May occasionally hunt within the site as part of a larger home range. Hollow bearing trees suitable for nesting are absent	No
Tyto tenebricosa	Sooty Owl	V		Occurring on the coast, coastal escarpment and eastern tablelands of NSW. Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Nests in very large tree-hollows.	2	N/A	No	Low	May occasionally hunt within the site as part of a larger home range. Hollow bearing trees suitable for nesting are absent	

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Habitat Description and Locally Known Populations	BioNet Records[1]	EPBC Act Protected Matters Report[2]	Potential SAII	Likelihood of occurrence	Potential for Impact and Importance of Habitat Present	Considered further within Assessment of Significance
Mammals										
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath, and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites with basking and latrine sites often nearby.	21	Species or species habitat known to occur within area	No	Low	No potential breeding habitat or latrine sites were observed within the proposal area. The species may occasionally traverse the site as part of a larger home range. Hunting habitat is marginal given the disturbed and isolated nature of the site.	No
Phascogale tapoatafa	Brush-tailed Phascogale	V		Prefers dry sclerophyll open forest with a sparse groundcover of herbs, grasses, shrubs, or leaf litter but is also known to inhabit heath, swamps, rainforest, and wet sclerophyll forest. Nests and shelters in tree hollows with entrances 2.5 – 4 cm wide and uses many different hollows over a short time span.	20	N/A	No	Unlikely	This species is unlikely to occur given the lack of connectivity to other habitat areas and hollow bearing trees required for nesting are absent.	No
Phascolarctos cinereus	Koala	E	E	Inhabits eucalypt woodland and forest containing suitable food trees. Key food trees in the local area include *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus microcorys* (Tallowwood) and *Eucalyptus punctata* (Grey Gum).	48	Species or species habitat known to occur within area	No	Low	Forest areas may provide some cover and foraging habitat for transient Koalas. Habitat is highly marginal given the paucity of food trees and poor connectivity to other habitat areas and source populations.	No
Cercartetus nanus	Eastern Pygmy-possum	V		Occupies a variety of habitats, including rainforest, sclerophyll forest, woodland, and heath, with a preference for rainforest in north-eastern NSW. Utilises tree hollows, rotten stumps, abandoned bird nests, vegetation thickets and holes in the ground for shelter. Feeds primarily on nectar and pollen, however diet also includes soft fruits and insects. Distributed across south-eastern Australia, from the coast to west of the Great Dividing Range, including the Pilliga, Dubbo and Wagga Wagga, NSW.	3	N/A	No	Unlikely	This species is unlikely to occur given the disturbed nature of the site and surrounds and poor connectivity to other habitat areas and source populations.	No
Petaurus australis australis	Yellow-bellied Glider	V	V	Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Den, often in family groups, in hollows of large trees. This species is very mobile and occupy large home ranges (20 to 85 ha) to encompass dispersed and seasonally variable food resources.	3	Species or species habitat known to occur within area	No	Unlikely	No hollows suitable for refuge or nesting were observed within the site. This species is unlikely to occur given the sites' proximity to known populations and poor connectivity to other habitat areas and source populations.	No
Petaurus norfolcensis	Squirrel Glider	V		Inhabits dry sclerophyll forests and woodlands preferably with a canopy composed of multiple species, a shrub or Acacia mid-storey and a heath understorey. Requires abundant tree hollows for refuge and nest sites.	130	N/A	No	Moderate	No hollows suitable for refuge or nesting were observed within the site. The site may provide some seasonal foraging habitat although this is marginalised by poor connectivity.	No
Petauroides volans	Greater Glider	E	E	Distributed along the ranges and coastal plain of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Presence and density of Greater Gliders is related to soil fertility, eucalypt tree species, disturbance history and density of suitable tree hollows. Home ranges are typically small (1-4 ha) but are larger in lower productivity forests and more open woodlands, and larger for males than for females, with male home ranges being largely non-overlapping.	1	Species or species habitat known to occur within area.	No	Unlikely	No hollows suitable for refuge or nesting were observed within the site. This species is unlikely to occur given the sites' proximity to known populations and poor connectivity to other habitat areas and source populations.	No
Potorous tridactylus	Long-nosed Potoroo	V	V	Known from a variety of habitats, including Rainforest, Open Forests and Woodlands with dense groundcover and shrub layer, and dense, wet coastal heathlands. Soft (often sandy) substrates are preferred by this species.	5	Species or species habitat likely to occur within area.	No	Unlikely	Species is unlikely to occur given the small size of the remnant and poor connectivity to other habitat areas.	No

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Notamacropus parma	Parma Wallaby	V	V	Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	1	N/A	No	Unlikely	Species is unlikely to occur given the small size of the remnant and poor connectivity to other habitat areas.	No
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths, and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water and in vegetation with a dense canopy.	77	Roosting known to occur within area	No	High	The species may seasonally forage within the study area. No roosts or important breeding habitat was observed within the site.	No
Syconycteris australis	Common Blossom-bat	V		The Common Blossom-bat is distributed throughout coastal areas of eastern Australia from Hawks Nest in NSW to Cape York peninsula in Queensland. The species often roosts in littoral rainforest and feeds on nectar and pollen from flowers in heathland and paperbark swamps.	4	N/A	No	Low	The species may seasonally forage within the study area. Preferred roosting habitat is absent.	No
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Occupies dry sclerophyll forest and woodland. Roosts in caves, abandoned mud-nests of Fairy Martins and mine tunnels.	0	Species or species habitat likely to occur within area	Yes	Low	The species may forage above the site. Roosting habitat is absent from the study area.	No
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		Found in moist, tall forest habitats (tree height>20 metres). Primarily relies on eucalypt hollows as roosting sites, however, may also utilise loose bark and buildings. Forages on flying insects at canopy height. Hibernates during the winter months in hollow bearing eucalypts. Distributed across the south-east of Australia, occupying coastal and range areas between Southern Queensland and Tasmania.	8	N/A	No	Low	The species may forage above the site. Roosting habitat is absent from the study area.	No
Myotis macropus	Southern Myotis	V		Found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	9	N/A	No	Low	Preferred foraging habitat and potential breeding habitat is absent.	No
Scoteanax rueppellii	Greater Broad-nosed Bat	V		Occupies gullies and river systems of woodlands, moist and dry sclerophyll forests, and rainforests. Most common in tall wet forest. Predominately roosts in tree hollows, however, will use building. Females congregate at maternity sites (tree hollows) to give birth and raise young. Forages for flying insects and occasionally other bats along riparian corridors. Distributed from north-eastern Victoria to the Atherton Tablelands, along the Great Dividing Range and often extending to the coast. Widespread on the New England Tableland at altitudes below 500 m.	12	N/A	No	Low	Suitable foraging habitat is available throughout the surrounding area. Hollow-bearing trees occur within the proposal footprint and may provide potential roosting habitat for this species.	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		Occupies a variety of habitats, from forest to grassland. Roosts in tree hollows, buildings, and burrows in treeless areas. Insectivorous, the species adjusts foraging behaviour with habitat. Widespread distribution across northern and eastern Australia, with scattered occurrences in the New England Tablelands and North West Slopes.	6	N/A	No	Low	The species may forage above the site. Roosting habitat is absent from the study area.	No
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.	12	N/A	No	Low	The species may forage above the site. Roosting habitat is absent from the proposal area.	No

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Miniopterus australis	Little Bent-winged Bat	V		Inhabits a range of generally well-timbered habitats including but not restricted to rainforest, vine thickets, wet and dry sclerophyll forest coastal forests and Banksia scrub. Requires caves for breeding but has been recorded roosting within tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings.	37	N/A	Yes	Low	The species may forage above the site. Roosting habitat is absent from the proposal area.	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		Inhabits a range of timbered habitats. Caves are the primary roosting habitat, but may also use derelict mines, storm-water tunnels, buildings, and other man-made structures.	14	N/A	Yes	Low	The species may forage above the site. Roosting habitat is absent from the proposal area.	No
Vespadelus troughtoni	Eastern Cave Bat	V		A cave-roosting species, occurring near cliff lines, rocky escarpments, outcrops overhangs and crevices, as well as boulder piles. Typically found in dry open forest and woodlands and occasionally in wet eucalypt forest and rainforest. May also use disused mine shafts and tunnels, or buildings as roosting sites. Primarily distributed along the western and eastern sides of the Great Dividing Range, south form Cape York, QLD to Kempsey, NSW. Some occurrences in the New England Tablelands and upper North Coast of NSW. A single occurrence in southern NSW.	1	N/A	Yes	Low	The species may forage above the site. Roosting habitat is absent from the proposal area.	No
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V		In NSW the species is most commonly found in vigorously regenerating, dense, swampy heathlands. Within the tropical range of its distribution, the species occupies grassy woodland habitats. The species has a seasonally variable diet of grass, invertebrates, fungi, and seeds, foraging through the grassy and sedge understory at night. The NSW distribution is scattered, and generally restricted to areas north of the Hawkesbury River, between the coastline and eastern fall of the Great Dividing Range.	5	N/A	No	Low	Habitat is considered to be marginal given the disturbed and isolated nature of the site and surrounds.	No
Pseudomys novaehollandiae	New Holland Mouse	P	V	Is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	93	Species or species habitat known to occur within area	No	Low	Habitat is considered to be marginal given the disturbed and isolated nature of the site and surrounds.	No
Invertebrates										
Petalura gigantea	Giant Dragonfly	E		Occurs in permanent coastal swamps and bogs with open vegetation, hunts flying insects over swamps and swamp margins. Avoids standing open water wetlands, however, may utilise bog and swamp habitat adjacent to wetlands. Distributed east of the Great Dividing Range along the east coast of NSW, south of Coffs Harbour to Nadgee.	0	N/A	Yes	Low	May occur in nearby swamp habitats. The proposal would not impact any habitat important for the survival of this species in the local area.	No

[1] Number of DPE wildlife atlas records in selected area [North: -32.12 West: 152.43 East: 152.63 South: -32.32]. Report generated on 16/05/2024 9:00 AM.

APPENDIX IV Assessment Of Significance

CONSIDERATIONS UNDER THE BIODIVERSITY CONSERVATION ACT 2016 (FIVE PART TEST)

Endangered Ecological Communities and threatened species that have the potential to be impacted by the proposed works have been assessed under the guidelines of Section 7.3 of the *Biodiversity Conservation Ac*t (2016) and this is provided below in the form of a five-part test.

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

Lindernia alsinoides (Noah's False Chickweed)

Lindernia alsinoides was identified within the proposal area during targeted surveys by Accuplan (2022/23) and Eco Logical Australia (2019). Previous surveys conducted by ELA (2008) identified 20 individuals, with further ELA surveys conducted in 2017 & 2018 identifying 337 individuals.

During the current survey, a high coverage of *L. alsinoides* was recorded within the existing disturbed area (VZ2) located between the intact areas of Swamp Oak Forest in the northern part of the site (VZ1) and the existing filled land comprising proposed Lots 14 to 16. The plant was also recorded sporadically throughout VZ1 and was generally found in small openings where sufficient light was available (e.g., wildlife tracks, canopy gaps).

The plants recorded on site form part of a local population that occurs in the South Forster area. The species is known to occur throughout the adjoining patch of regrowth Swamp Oak Forest covering an area of approximately 8 hectares that extends towards The Southern Parkway to the north of the proposal area (Accuplan, 2023; ELA, 2019). During the same survey period, 18 *L. alsinoides* specimens were also recorded at the northern limit of the adjoining patch (at the corner of Myall Drive and The Southern Parkway) and the patch provides similar habitat throughout. The relatively small area of habitat occurring within the proposed APZ represents a minor proportion (approximately 2.7%) of the habitat to be retained within the proposed drainage reserve.

The species is also known to occur at Goldens Road Reserve located approximately 700m to the north-west and near Dunns Creek approximately 1.1 km to the south-east (BioNet).

The proposal has the potential to impact individuals located within the proposed APZ. This species requires light and is susceptible to shading and other plants regenerating (Bionet, 2023) and the existing management regime, which includes occasional slashing, appears to encourage the growth of this species.

The proposed APZ and conservation area will be managed under a Vegetation Management Plan (VMP). The VMP includes management actions to encourage the persistence of *Lindernia alsinoides* within the area and avoid inappropriate disturbance regimes that present a risk to the local population (i.e., slashing too frequently or during flowering periods). Mitigation and management measures would include:

- The establishment and ongoing management of the proposed APZ should be undertaken outside of the flowering and subsequent seeding period of *Lindernia alsinoides*. The flowering period typically occurs from November to February. Ideally fuel management activities would be undertaken during August to ensure that fuel reduction occurs ahead of the bushfire season and allows growth of Lindernia prior to the flowering period.
- Should any vegetation management be required during this time, any slashing should be undertaken at a height where impacts to specimens would be avoided (e.g., >20 cm).
- Tree removal shall be restricted to hand-removal methods to minimise impacts to the existing soil profile and adjoining vegetation.

***Lindernia alsinoides* (Noah's False Chickweed)**

- Camphor Laurel (*Cinnamomum camphora*) trees and other high threat weeds should be targeted for removal throughout the APZ and C2 zoned lands. High threat weeds can cause significant shadowing and smothering of the understorey with leaf litter and reduce the availability of *Lindernia alsinoides* habitat.
- Vegetation clearing will be limited to the identified APZ. The selection of trees and shrubs to be retained within the APZ areas is to be undertaken in consultation with a supervising ecologist and bushfire specialist.
- The limits of clearing within the construction site and vegetation to be retained will be delineated using appropriate signage and barriers and identified on site construction drawings.

Provided the above mitigation and management measures are implemented and considering that the majority of habitat within the site would be retained and managed under a VMP, the proposed works are unlikely to have an adverse effect on the life cycle of this species such that a viable local population is placed at risk of extinction.

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

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

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

Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions EEC

The areas of *PCT 4048 – Northern Swamp Oak – Paperbark Forest* identified within the site are consistent with the EEC *Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions* (NSW Scientific Committee - final determination 2011).

The proposed subdivision would result in the removal of up to 210m^2 of this community from the local area. The proposed impacts would be restricted to the proposed APZ required as part of the subdivision works.

The NSW State Vegetation Type Map (DPE, 2022) maps approximately 399 hectares of this EEC within 5 km of the site. This is comprised of five plant communities consistent with the EEC:

- 6.9 hectares of PCT 3962 Coastal Floodplain Phragmites Reedland
- 1 hectare of PCT 3963 Estuarine Reedland
- 52.6 hectares of PCT 4026 Estuarine Sea Rush Swamp Oak Forest
- 47.6 hectares of PCT 4027 Estuarine Swamp Oak-Mangrove Forest
- 290.9 hectares of PCT 4028 Estuarine Swamp Oak Twig-rush Forest

The proposed removal and modification of 0.02 hectares of this EEC on site represents 0.005% of this EEC mapped within 5 km of the site and 1.25% of the community occurring within the proposed conservation area. It is unlikely that the proposed works would substantially modify the composition of the vegetation to be retained and mitigation measures including restrictions to use and weed management are recommended to minimise indirect impacts. Given the limited extent of vegetation

Swamp Oak Floodplain Forest of the New South Wales Coast, Sydney Basin and South East Corner Bioregions EEC

removal within the site, the proposed works are unlikely to place the local occurrence of this EEC at risk of extinction.

Please note that the local area calculation is indicative only. The calculation was based on the NSW State Vegetation Type Map (DPE, 2023) and does not account for any potential map errors.

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

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

ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

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

***Lindernia alsinoides* (Noah's False Chickweed)**

i)	The proposal will result in the modification of up to 0.11 hectares of habitat for this species. The impact area would be managed as an APZ. The remaining 1.7 hectares of Swamp Forest habitat would be retained within the C2 zoned land.
ii)	The proposal involves the modification of a relatively small area (0.11 hectares) of habitat that occurs along the southern edge of an approximate 8 hectare patch of swamp forest. The narrow impact area is unlikely to significantly fragment or isolate the existing population.
iii)	This species appears to respond well to disturbance and it is likely the species can persist within the proposed APZ provided the recommended mitigation and management measures are implemented. Given the relatively small area to be impacted and considering that the majority of habitat within the site would be retained and managed under a VMP (approximately 1.7 hectares), the proposal is unlikely to result in adverse impacts that will affect the long-term survival of this species in the locality.

Swamp Oak Floodplain Forest EEC

i)	The proposed subdivision has the potential to remove up to 0.02 hectares of native vegetation consistent with this EEC.
ii)	The proposal is situated in an area already fragmented by roads and residential land. The proposed works will slightly decrease the patch size of this EEC adding to the incremental fragmentation of vegetation within the local area.
iii)	This EEC is patchily distributed in the local area with about 399 hectares recorded within the search area (5 km). Whilst contributing to the incremental decline of this EEC, the proposed removal and modification of 0.02 hectares of this EEC is not likely to be important for the long-term survival of this EEC in the local area.

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

No declared area of outstanding biodiversity value would be impacted by the proposed works.

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 'Key Threatening Processes' currently listed under Schedule 4 of the BC Act relevant to the site are listed below:

- Clearing of native vegetation
- Invasion and establishment of exotic vines and scramblers
- Invasion of native plant communities by exotic perennial grasses
- Invasion, establishment and spread of *Lantana camara*
- Invasion of native plant communities by Bitou Bush and Boneseed
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
- Herbivory and environmental degradation caused by feral deer
- Infection of native plants by *Phytophthora cinnamomi*

Where relevant, mitigation measures for the proposed works will be implemented to minimise the impact of these key threatening processes.

Assessment of Significance (Five-Part Test) Conclusion

Based on the considerations above, the proposed works are unlikely to have a significant impact on any threatened ecological community or threatened species such that the local occurrence or population is placed at risk of extinction.

CONSIDERATIONS UNDER THE EPBC ACT 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires approval of the Commonwealth Minister representing the Department of Climate Change, Energy, the Environment and Water (DCCEEW), for actions that may have a significant impact on Matters of National Environmental Significance (MNES). The EPBC Act also requires Commonwealth approval for certain actions on Commonwealth land.

MNES protected under the EPBC Act include:

- World Heritage properties;
- National Heritage places;
- RAMSAR wetlands of international importance;
- threatened species or ecological communities listed in the EPBC Act;
- migratory species listed in the EPBC Act;
- the Great Barrier Reef Marine Park;
- Commonwealth marine environment; and
- nuclear actions.

The EPBC protected matters search for the site is provided in **Appendix VI**.

With regard to flora and fauna, the only MNES relevant to the study area are nationally listed threatened communities, species and migratory species.

The areas of *PCT 4048 – Northern Swamp Oak – Paperbark Forest* (VZ1 and VZ3) identified within the site are associated with the endangered ecological community, Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland. Further consideration of the MNES significant impact guidelines addressing impacts to this TEC is provided below**.**

No other TECs occur within the proposal area.

No listed flora or fauna species or populations listed under the EPBC Act were recorded within or near the proposal site during surveys and none were considered likely to be impacted by the proposal.

ASSESSMENT OF SIGNIFICANCE FOR CRITICALLY ENDANGERED OR ENDANGERED ECOLOGICAL COMMUNITIES

Significant Impact Criteria **An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:**	**Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland (EEC)**
Reduce the extent of an ecological community	VZ1 and VZ3 (*PCT 4048 – Northern Swamp Oak – Paperbark Forest*) occurring within the site are consistent with the EEC Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland. The proposed development would result in the removal of approximately 0.02 hectares of the EEC. The identified PCT and related EEC is common throughout the local area (occupying an area of approximately 399 hectares) and the proposed development would impact a relatively small area (0.005% of the EEC mapped within 5km of the site). The proposal avoids impacts to the majority of the EEC occurring within the site by restricting development to the southern part of the site, within previously cleared land. The impacts to native vegetation are confined to the proposed APZ. The relatively small area to be impacted by the proposal is minor in relation to the local context and is unlikely to threaten the persistence of the EEC in the local area or more broadly reduce the extent of occurrence.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The proposed clearing would result in a minor increase to fragmentation. Given the existing fragmentation within the landscape, no significant habitat areas would be isolated by the works and the impacts are considered to be minor.
Adversely affect habitat critical to the survival of an ecological community	No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this EEC.
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The existing landform over the proposed lots in the south of the site was created as a result of earthworks completed in accordance with the subdivision works certificate and no further filling or shaping is required for the development. The stormwater strategy for the proposal (LSW Surveyors, 2024) incorporates a combination of measures including rainwater tanks and water quality bioretention basins to manage stormwater and the discharge of nutrients and pollutants leaving the site. The stormwater strategy modelling demonstrates that the water quality objective of "neutral or beneficial effect on water quality" can be achieved for the proposed subdivision. Given the above measures, the proposal is unlikely to substantially modify or destroy any abiotic factors such that the retained areas of EECs would be significantly affected.

Significant Impact Criteria **An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:**	**Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland (EEC)**
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	Vegetation clearing associated with the proposal will result in the removal of the ecological community within the proposed APZ footprint. The proposal is unlikely to substantially modify the composition of the community outside of the identified impact area.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: i. assisting invasive species, that are harmful to the listed ecological community, to become established, or ii. causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community	i. Management of weeds during works is warranted to prevent further weed incursion into adjacent habitat. The minor nature of vegetation removal is unlikely to cause a substantial reduction in the quality or integrity of the retained areas of EEC vegetation. ii. The proposal is for a residential subdivision and is unlikely to result in regular mobilisation of fertilisers, herbicides or other chemicals or pollutants. There is potential for fuel and oil spills to occur during construction and the potential for these would be avoided and/ or minimised by appropriate safeguards to be prepared and implemented as part of the conditions of consent.
Interfere with the recovery of an ecological community	The proposal is unlikely to interfere with the recovery of this EEC. The design of the proposal includes measures to avoid and minimise impacts to this EEC wherever possible. The proposal would result in a minor reduction in the extent of the EEC in the local area and is unlikely to threaten its viability or persistence.
Conclusion	The proposal is unlikely to result in a significant impact on this EEC given: • The design of the subdivision includes measures to avoid and minimise impacts to this EEC where possible and resulting impacts to remnant EEC vegetation are relatively minor. • Impacts would be limited to vegetation along existing edges already subject to ongoing edge effects. • Fragmentation of the EEC would be minor and no areas of this EEC would be isolated by the proposal. • The proposal will not impact on habitat that is critical to the survival of this EEC. • The proposal is unlikely to affect the recovery of this EEC.

MIGRATORY SPECIES PROTECTED UNDER INTERNATIONAL AGREEMENTS

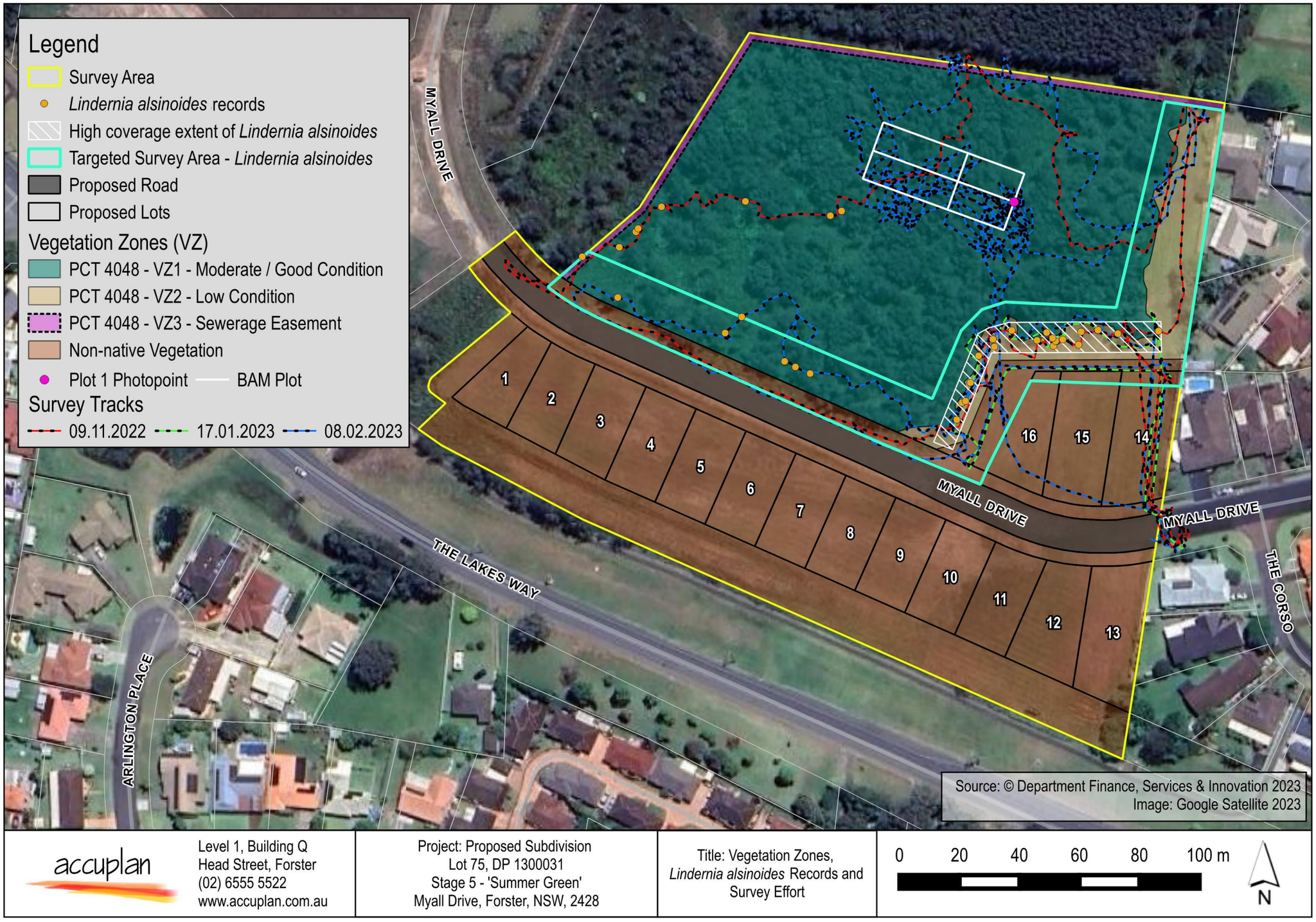
Six nationally listed migratory terrestrial species were recorded on the DCCEEW on-line database or are considered to have potential habitat available within 10 km of the site as listed in **Table A1**.

Table A1: Listed migratory species with the potential to occur in the local area

Scientific Name	Common Name
Cuculus optatus	Oriental Cuckoo
Hirundapus caudacutus	White-throated Needletail
Monarcha melanopsis	Black-faced Monarch
Monarcha trivirgatus	Spectacled Monarch
Myiagra cyanoleuca	Satin Flycatcher
Rhipidura rufifrons	Rufous Fantail

The proposed development is unlikely to impact any area considered to be 'important habitat' for the above migratory species, nor is it likely to impact a significant proportion of a migratory population.

APPENDIX V Survey Effort



accuplan Level 1, Building Q Head Street, Forster (02) 6555 5522 www.accuplan.com.au	Project: Proposed Subdivision Lot 75, DP 1300031 Stage 5 - 'Summer Green' Myall Drive, Forster, NSW, 2428	Title: Vegetation Zones, *Lindernia alsinoides* Records and Survey Effort	0 20 40 60 80 100 m N

APPENDIX VI EPBC Protected Matters Search

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: 16-May-2024

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	99
Listed Migratory Species:	73

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	9
Commonwealth Heritage Places:	None
Listed Marine Species:	94
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:	11
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	6
Key Ecological Features (Marine):	None
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Myall lakes	Within 10km of Ramsar site	In buffer area only

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name	Buffer Status
Commonwealth Marine Areas (EPBC Act)	In buffer area only

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In buffer area only
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In buffer area only
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

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]	Endangered	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 buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	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 buffer area only
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only
FISH			
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Seriolella brama Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
FROG			
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	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 buffer area only
Notamacropus parma Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	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]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Allocasuarina simulans			
Nabiac Casuarina [21935]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Asperula asthenes			
Trailing Woodruff [14004]	Vulnerable	Species or species habitat known to occur within area	In feature area
Corunastylis littoralis			
Tuncurry Midge Orchid [82945]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area	In feature area
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area	In feature area
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
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tetratheca juncea](#) Black-eyed Susan [21407]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Vincetoxicum woollsii listed as Tylophora woollsii](#) [40080]	Endangered	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 buffer area only
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
SHARK			
[Carcharias taurus (east coast population)](#) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Congregation or aggregation known to occur within area	In buffer area only
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
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]		Breeding known to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Breeding likely to occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Migration route known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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 may occur within area	In feature area
[Arenaria interpres](#)			
Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#)			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#)			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#)			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Calidris ruficollis](#)			
Red-necked Stint [860]		Roosting known to occur within area	In buffer area only
[Charadrius bicinctus](#)			
Double-banded Plover [895]		Roosting 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	Roosting known to occur within area	In buffer area only
[Gallinago hardwickii](#)			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting 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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11344]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11347]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11345]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11338]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11339]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11340]	NSW	In buffer area only
Defence - Royal Australian Navy Central Canteens Board		
Commonwealth Land - Royal Australian Navy Central Canteens Board [11343]	NSW	In buffer area only
Commonwealth Land - Royal Australian Navy Central Canteens Board [11342]	NSW	In buffer area only
Commonwealth Land - Royal Australian Navy Central Canteens Board [11341]	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 may occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only

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]		Breeding known to occur within area	In feature area
[Ardenna grisea as Puffinus griseus](#) Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Arenaria interpres](#) Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area	In buffer area only
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris ruficollis](#) Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In buffer area only
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[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
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Numenius minutus](#) Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area overfly marine area	In buffer area only
[Numenius phaeopus](#) Whimbrel [849]		Roosting known to occur within area	In buffer area only
[Pachyptila turtur](#) Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area	In feature area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
[Phoebetria fusca](#) Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area	In buffer area only
Pluvialis squatarola Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding likely to occur within area	In buffer area only
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 buffer area only
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Roosting known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Xenus cinereus Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area	In buffer area only
Fish			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In buffer area only
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In buffer area only
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area	In buffer area only
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area	In buffer area only
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In buffer area only
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In buffer area only
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Solegnathus spinosissimus](#) Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In buffer area only
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In buffer area only
[Solenostomus paradoxus](#) Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In buffer area only
[Stigmatopora nigra](#) Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In buffer area only
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In buffer area only
Reptile			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Hydrophis platura as Pelamis platurus			
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera borealis			
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Bandicoot Island	Nature Reserve	NSW	In buffer area only
Booti Booti	National Park	NSW	In buffer area only
Darawank	Nature Reserve	NSW	In buffer area only
Durands Island	Nature Reserve	NSW	In buffer area only
Flat Island	Nature Reserve	NSW	In buffer area only
Minimbah	Nature Reserve	NSW	In buffer area only
Port Stephens - Great Lakes	Marine Park	NSW	In buffer area only
Regatta Island	Nature Reserve	NSW	In buffer area only
Wallingat	National Park	NSW	In buffer area only
Wallis Island	Nature Reserve	NSW	In buffer area only
Yahoo Island	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

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

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Wallis Lake and adjacent estuarine islands	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
North Tuncurry Mixed Use Development	2011/5954	Controlled Action	Direction to Publish	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Proposed Establishment of the North Tuncurry Stockpile, NSW	2012/6550	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Tourist accommodation, surf camp and associated amenities.	2004/1685	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Proposed waste transfer station at Tuncurry, Darawant, NSW	2015/7472	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only

Biologically Important Areas

[Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In buffer area only
Seabirds			
Ardenna carneipes Flesh-footed Shearwater [82404]	Foraging	Known to occur	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Foraging	Likely to occur	In buffer area only
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging	Likely to occur	In buffer area only
Ardenna tenuirostris Short-tailed Shearwater [82652]	Foraging	Likely to occur	In buffer area only
Procellaria parkinsoni Black Petrel [1048]	Foraging	Likely to occur	In buffer area only
Sharks			
Carcharias taurus Grey Nurse Shark [64469]	Foraging	Known to occur	In buffer area only
Carcharodon carcharias White Shark [64470]	Distribution	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae Humpback Whale [38]	Foraging	Known to occur	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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