

BLACKWOOD ECOLOGICAL SERVICES



Ecological Assessment Proposed Hutley Drive Northern Extension

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A Report to Ballina Shire Council
December 2018

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Document Verification

Project Title:	Hutley Drive Northern Extension – Biodiversity Assessment		
Project Number:	1833		
Revision	Date	Author	
Draft	20/11/18	Mark Free	
Final	18/12/18	Mark Free	



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1 INTRODUCTION

1.1 Background

Blackwood Ecological Services has been engaged by Ballina Shire Council to complete a Biodiversity Assessment for the proposed extension of Hutley Drive from Silkwood Road north east to Byron Bay Road where a new roundabout intersection is to be constructed.

APPENDIX A shows the footprint of the proposed road extension and roundabout. **APPENDIX B** shows the footprint of the approved road extension.

Ballina Shire Council have previously granted approval for the extension of Hutley Drive in this location. This approved alignment involved construction of a road from Silkwood Road to the existing roundabout at the Byron Bay Road/North Creek Road intersection. GHD completed an REF and ecological assessment for this road alignment in 2013. Where appropriate, this assessment considers biodiversity impacts in the context of impacts associated with the existing approval.

1.2 Subject site

The Subject site refers to the area directly affected by the proposal. The Subject site for this study consists of land within and adjacent to the proposed road corridor. **FIGURE 1** shows the location of the site. **FIGURE 2** shows the area subject to the field survey.

1.3 Study area and proposed development

The Study area refers to the Subject site together with any additional areas which are likely to be affected by the proposal, either directly or indirectly. The Study area includes surrounding areas of vegetation adjacent to the route. The route extends east from Silkwood Road through an area of grassland and then along a section of road reserve where neighbouring houses have extended gardens and planted trees within the road reserve. The route then heads north through a patch of vegetation associated with a dwelling in this area before meeting Byron Bay Road. In this area an earthen mound along the southern side of Byron Bay Road has been planted out with native vegetation and landscape species for noise attenuation.

The western section of the road corridor is lower lying and stormwater is currently piped under the road reserve where it flows from the northern side into wet grassland and wetland south of the Hutley Road extension. This area has previously been identified as supporting areas of Freshwater wetland TEC as well as the Threatened species Hairy joint grass (*Artbraxon hispidus*). (Blackwood Ecology 2014).

2 FLORA

2.1 Introduction

This section discusses the methods used in the vegetation assessment and presents the results of the assessment. Relevant databases and reports were reviewed to identify records of locally occurring Threatened and Rare plant species, populations and communities. A site assessment was completed on the 14th of November 2018.

The objectives of the site assessment were:

- To identify vegetation communities and flora species present in the route.
- To complete targeted searches for significant flora species known from the locality and considered possible occurrences based on an assessment of site habitats.
- To identify potential impacts including vegetation removal and trimming likely as a result of the proposed works.

2.2 Database searches

2.2.1 NPWS Database search

A search of the NPWS Database revealed records of 20 Threatened flora species within 10km of the Subject site. These species are shown in **TABLE 1**.

TABLE 1
NPWS DATABASE RECORDS OF THREATENED FLORA SPECIES WITHIN 10 KM OF THE SUBJECT SITE

Botanical name	Common name	NSW Status
<i>Acronychia littoralis</i>	Scented Acronychia	E1
<i>Archidendron hendersonii</i>	White Lace Flower	V
<i>Arthraxon hispidus</i>	Hairy Jointgrass	V
<i>Cryptocarya foetida</i>	Stinking Cryptocarya	V
<i>Davidsonia jerseyana</i>	Davidson's Plum	E1
<i>Davidsonia johnsonii</i>	Smooth Davidson's Plum	E1
<i>Diploglottis campbellii</i>	Small-leaved Tamarind	E1
<i>Diuris sp. aff. chrysantha</i>	Byron Bay Diuris	E1
<i>Endiandra muelleri</i> subsp. <i>bracteata</i>	Green-leaved Rose Walnut	E1
<i>Fontainea oraria</i>	Coastal Fontainea	E4A
<i>Gossia fragrantissima</i>	Sweet Myrtle	E1
<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V
<i>Niemeyera whitei</i>	Rusty Plum, Plum Boxwood	V
<i>Ochrosia moorei</i>	Southern Ochrosia	E1
<i>Owenia cepiodora</i>	Onion Cedar	V
<i>Pterostylis nigricans</i>	Dark Greenhood	V
<i>Senna acclinis</i>	Rainforest Cassia	E1
<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V
<i>Syzygium moorei</i>	Durobby	V
<i>Tinospora tinosporoides</i>	Arrow-head Vine	V

KEY

E1	Endangered
E4A	Critically endangered
V	Vulnerable

2.2.2 Commonwealth EPBC Act (1999) Database search

A search of the Commonwealth EPBC Act (1999) Database revealed potential suitable habitat for a number of Threatened flora species within 5km of the Subject site. These species are shown in **TABLE 2**. The Commonwealth EPBC Act Protected Matters Report is included in full in **APPENDIX C**.

TABLE 2
COMMONWEALTH EPBC ACT (1999) DATABASE SEARCH RESULTS
THREATENED FLORA SPECIES WITH POTENTIAL HABITAT
WITHIN 5 KM RADIUS OF THE SUBJECT SITE

Botanical name	Common Name	Status
<i>Acronychia littoralis</i>	Scented acronychia	E
<i>Allocasuarina defungens</i>	Dwarf heath casuarina	E
<i>Artbraxon hispidus</i>	Hairy Jointgrass	V
<i>Baloghia marmorata</i>	Jointed baloghia	V
<i>Bulbophyllum globuliforme</i>	Miniature Moss-orchid	V
<i>Cryptocarya foetida</i>	Stinking cryptocarya	V
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	V
<i>Davidsonia jerseyana</i>	Davidson's Plum	E
<i>Davidsonia johnsonii</i>	Smooth Davidson's plum	E
<i>Diploglottis campbellii</i>	Small-leaved tamarind	E
<i>Floydia praealta</i>	Ball Nut	V
<i>Fontainea oraria</i>	Coastal fontainea	E
<i>Gossia fragrantissima</i>	Sweet Myrtle	E
<i>Macadamia integrifolia</i>	Macadamia Nut	V
<i>Macadamia tetraphylla</i>	Rough-shelled bush nut	V
<i>Owenia cepiodora</i>	Onionwood	V
<i>Phaius australis</i>	Lesser swamp orchid	E
<i>Randia moorei</i>	Spiny Gardenia	E
<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V
<i>Syzygium moorei</i>	Durobby	V
<i>Thesium australe</i>	Austral toadflax	V
EECs		
<i>Littoral Rainforest and Coastal Vine</i> <i>Thickets of Eastern Australia</i>		CE
<i>Lowland Rainforest of Subtropical</i> <i>Australia</i>		CE

KEY

CE	Critically Endangered
E	Endangered
V	Vulnerable

2.3 Site assessment

2.3.1 Existing vegetation

This section discusses individual trees and vegetation communities located within the Subject site and the ecological significance of these communities. A plant species list for the site is included as **APPENDIX D**.

The southern section of the road reserve consists of mown grassland with taller weedy grassland along the southern edge where the site borders an area of lower lying wetland to the south. This wetland area supports areas of *Freshwater wetland* TEC as well as the Threatened species Hairy joint grass (*Arthraxon hispidus*). A clump of trees at the end of the existing Hutley Drive includes Blackwood wattle, Flame tree, Brown kurrajong, Tuckeroo and Singapore daisy.



Plate 1 Vegetation along the southern edge of the road corridor. Wetland area further to the south

Vegetation within the area to be cleared (including for the road batter in this area) consists of grasses dominated by *Setaria* with Ragweed, Lantana, Coastal morning glory, Siratro, Farmer's friends, Blue billygoat weed, Crofton weed, Hairy commelina, Tobacco bush and Cape gooseberry. Vegetation closer to the wetland edge consists of a higher proportion of native species including Typha, Swamp hibiscus, Smartweed, Swamp water fern and and Batswing fern amongst the weeds.



Plate 2 Paper bark trees planted within the Ocean Breeze Reserve

An area within the Ocean Breeze Reserve has been planted out with Broad-leaved paperbark and Weeping paperbark trees that are currently about 2-3m tall. A stormwater surcharge basin is to be constructed in this part of the site to accept runoff from the road.



Plate 3 Planted landscape vegetation at the rear of dwellings accessed from Ocean Breeze Drive

Further to the east, some planted vegetation along the back of houses accessed from Ocean Breeze Drive will require removal. This vegetation includes two Swamp mahoganies, two Forest red gums, two Tuckeroos, a Silky oak, Lilly pilly, Riberry and a Syzygium “Cascade”.

A dwelling is located on Lot 2 DP 620838 to the immediate north of the proposed road location in this part of the site. Vegetation to the south-western corner of this dwelling will be removed and includes a large Norfolk pine, planted Macadamia nut, Guava, Mulberry, Loquat and Crepe myrtle, Tuckeroo, Murraya, Camphor laurel, Umbrella tree, Winter senna, Ground asparagus, Guioa and various weeds.



Plate 4 Vegetation to the south-west of the dwelling on Lot 2 DP620838

Where the proposed Hutley Drive northern extension meets Byron Bay Road, vegetation has become well established on a noise attenuation mound along the southern side of Byron Bay Road. Vegetation on the mound in the area within the footprint of the proposed road extension includes three Swamp mahogany trees, three Broad-leaved paperbark, Coast banksia, Foambark, Bangalow palm, Guioa, Willow bottlebrush, Weeping bottlebrush, Blackwood wattle, Macaranga, Tea tree and various weeds and exotic garden plants.

East of the dwelling on Lot 2 DP620838, vegetation within the previously approved Hutley Drive footprint will be retained. This vegetation includes some larger established Tuckeroo, Guioa and Coast banksia trees, Umbrella tree, Camphor laurel, Cocos palm and various other weed species.



Plate 5 Vegetation on the noise attenuation mound along the southern side of Byron Bay Road



Plate 6 Vegetation along the previously approved route up to the North Creek Road intersection

2.3.2 Significant species and Threatened Ecological Communities

No Threatened (NSW Biodiversity Conservation Act 2016, Commonwealth EPBC Act 1999) flora species were recorded or are considered likely to occur. GHD (2013) did not record any Threatened flora species within the area subject to the northern extension. GHD (2013) acknowledged that adjoining land to the south contained areas of Freshwater wetland EEC and occurrences of Hairy joint grass.

Vegetation communities on the Subject site were compared with descriptions of vegetation communities listed as Threatened Ecological Communities under the NSW Biodiversity Conservation Act (2016) and the EPBC Act (1999). No TECs are considered to occur within the proposed road extension footprint.

3 FAUNA

3.1 Introduction

This section discusses the methods used in the fauna assessment and presents the results of the assessment. Relevant databases and reports were reviewed to identify records of locally occurring Threatened fauna species, populations and communities.

The fauna assessment consisted of:

- A review of relevant databases and literature.
- An assessment of site fauna habitats.

Site habitats were assessed in terms of their value for native fauna species. The site assessment was completed in conjunction with the flora assessment. The assessment focused on identifying habitat features associated with Threatened species known from the locality. Particular attention was paid to habitat features such as:

- The presence of mature trees with hollows, fissures and/or other suitable roosting/nesting places.
- Presence of hollow logs/debris and areas of dense leaf litter.
- The presence of Grey-headed Flying Fox camps
- The presence of preferred Koala food tree species.
- The presence of preferred Glossy black cockatoo feed trees.
- Condition, flow and water quality of drainage lines and bodies of water.
- Areas of dense vegetation.
- Presence of fruiting flora species and blossoming flora species, particularly winter-flowering species.
- Vegetation connectivity and proximity to neighbouring areas of vegetation.
- Presence of caves, hollow trees and/or man-made structures suitable as microchiropteran bat roost sites.

3.2 Database searches

3.2.1 NPWS Database search

A search of the NPWS Database revealed records of 33 Threatened fauna species (excluding marine species) within 10km of the Subject site. These species are shown in **TABLE 3**.

TABLE 3
NPWS DATABASE RECORDS OF THREATENED FAUNA
SPECIES WITHIN 10 KM OF THE SUBJECT SITE

Scientific name	Common name	NSW Status
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1
<i>Carterornis leucotis</i>	White-eared Monarch	V
<i>Circus assimilis</i>	Spotted Harrier	V
<i>Crinia tinnula</i>	Wallum Froglet	V
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1
<i>Grus rubicunda</i>	Brolga	V



Scientific name	Common name	NSW Status
<i>Gygis alba</i>	White Tern	V
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V
<i>Haematopus longirostris</i>	Pied Oystercatcher	E1
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V
<i>Irediparra gallinacea</i>	Comb-crested Jacana	V
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1
<i>Litoria olongburensis</i>	Olongburra Frog	V
<i>Miniopterus australis</i>	Little Bentwing-bat	V
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V
<i>Myotis macropus</i>	Southern Myotis	V
<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V
<i>Pandion cristatus</i>	Eastern Osprey	V
<i>Pezoporus wallicus wallicus</i>	Eastern Ground Parrot	V
<i>Phascolarctos cinereus</i>	Koala	V
<i>Planigale maculata</i>	Common Planigale	V
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V
<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V
<i>Sternula albifrons</i>	Little Tern	E1
<i>Syconycteris australis</i>	Common Blossom-bat	V
<i>Thersites mitchellae</i>	Mitchell's Rainforest Snail	E1
<i>Tyto longimembris</i>	Eastern Grass Owl	V
<i>Tyto novaehollandiae</i>	Masked Owl	V

KEY

E1 Endangered

V Vulnerable

3.2.2 Commonwealth EPBC Act (1999) Database search

A search of the Commonwealth EPBC Act (1999) Database revealed potential suitable habitat for a number of Threatened fauna species within 5km of the Subject site. These species are shown in **TABLE 4**.

The Commonwealth EPBC Act Protected Matters Report is included in full in **APPENDIX B**.

TABLE 4
COMMONWEALTH EPBC ACT (1999) DATABASE RESULTS
THREATENED FAUNA SPECIES WITH POTENTIAL HABITAT
WITHIN 5KM OF THE SUBJECT SITE

Common Name	Scientific name	Status
Invertebrates		
Mitchell's Rainforest snail	<i>Thersites mitchellae</i>	CE
Birds		
Coxen's Fig-Parrot	<i>Cyclopsitta diophthalma coxeni</i>	E
Swift Parrot	<i>Lathamus discolor</i>	CE
Regent Honeyeater	<i>Xanthomyza phrygia</i>	CE
Australasian bittern	<i>Botaurus poiciloptilus</i>	E
Red Goshawk	<i>Erythrotriorchis radiatus</i>	V
White-bellied Storm-Petrel	<i>Fregatta grallaria grallaria</i>	V
Southern Giant-Petrel	<i>Macronectes giganteus</i>	E
Northern Giant-Petrel	<i>Macronectes halli</i>	V
Kermadec Petrel (western)	<i>Pterodroma neglecta neglecta</i>	V
Campbell Albatross	<i>Thalassarche melanophris impavida</i>	V
Australian Painted Snipe	<i>Rostratula australis</i>	E
Red knot	<i>Calidris canutus</i>	E
Curlew sandpiper	<i>Calidris ferruginea</i>	CE
Great knot	<i>Calidris tenuirostris</i>	CE
Greater Sand Plover	<i>Charadrius leschenaultii</i>	V
Lesser Sand Plover	<i>Charadrius mongolus</i>	E
Antipodean Albatross	<i>Diomedea antipodensis</i>	V
Gibson's Albatross	<i>Diomedea antipodensis gibsoni</i>	V
Southern Royal Albatross	<i>Diomedea epomophora</i>	V
Wandering Albatross	<i>Diomedea exulans</i>	V
Bar-tailed Godwit	<i>Limosa lapponica baueri</i>	V
Northern Siberian Bar-tailed Godwit	<i>Limosa lapponica menzhieri</i>	CE
Eastern curlew	<i>Numenius madagascariensis</i>	CE
Fairy Prion	<i>Pachyptila turtur subantarctica</i>	V
Sooty Albatross	<i>Phoebastria fusca</i>	V
Gould's Petrel	<i>Pterodroma leucoptera leucoptera</i>	E
Shy Albatross	<i>Thalassarche cauta cauta</i>	V
White-capped Albatross	<i>Thalassarche cauta stadi</i>	V
Chatham Albatross	<i>Thalassarche eremita</i>	E
Black-browed Albatross	<i>Thalassarche melanophris</i>	V
Salvin's Albatross	<i>Thalassarche salvini</i>	V
Black-breasted Button-quail	<i>Turnix melanogaster</i>	V
Mammals		
Large-eared Pied Bat	<i>Chalinolobus dryeri</i>	V
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	E
Koala (combined populations of Qld, NSW & ACT)	<i>Phascolarctos cinereus</i>	V
Long-nosed Potoroo (SE mainland)	<i>Potorous tridactylus tridactylus</i>	V
New Holland mouse	<i>Pseudomys novaehollandiae</i>	V
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V
Water mouse	<i>Xeromys myoides</i>	V
Greater Glider	<i>Petauroides volans</i>	V
Amphibians		

Common Name	Scientific name	Status
Wallum Sedge Frog	<i>Litoria olongburensis</i>	V
Fish		
Black Rockcod	<i>Epinephelus daemeli</i>	V
Insects		
Pink Underwing Moth	<i>Phyllodes imperialis smithersi</i>	E

KEY

CE	Critically endangered
E	Endangered
V	Vulnerable

3.3 Fauna assessment

3.3.1 Introduction

This section discusses fauna habitat types within the Subject site. It includes a discussion of the ecological significance of these habitats including the potential for threatened and significant fauna species to occur in the Study area.

3.3.2 Significant species

No Threatened (NSW BC Act 2016, EPBC Act 1999) fauna species were recorded during the site assessment. Koala feed tree species were searched for the presence of scats and scratches and no evidence of Koala use was recorded.

3.3.3 Fauna habitats

Land within the study corridor is of limited value as fauna habitat for fauna occurring in neighbouring habitats. Wetland areas to the south provide habitat for wetland species including frogs and migratory wetland birds. The area does not provide suitable habitat for the Wallum froglet.

3.3.4 Potential occurrence of Threatened fauna

Based upon this assessment no threatened fauna species are considered likely to have any degree of reliance on habitats within the area subject to the proposed development.

4 POTENTIAL IMPACTS AND AMELIORATION MEASURES

4.1 Introduction

This section discusses potential impacts associated with the proposed road extension. Impacts may potentially occur as a result of various site activities, including:

- Clearing of vegetation to allow for the road, batters and drainage system.
- Trimming of branches overhanging the route to allow for machinery access.
- Disturbance of adjacent areas of vegetation as a result of providing access, operating machinery, accidental damage etc.
- Transport of materials and personnel to the site and establishment of a compound site.
- Disturbance of soils within the Subject site, including increased potential for erosion and sedimentation.
- Short-term impacts associated with construction noise, vibration and activity.
- Accidental spill of fuel or chemicals.

Design plans in **APPENDIX A** show the road footprint.

4.2 Potential ecological impacts

4.2.1 Flora

4.2.1.1 Direct removal of vegetation

The proposed road extension requires the clearing of some vegetation along the road corridor as follows:

- Mown grassland within the western section of the road reserve consists of with taller weedy grassland along the southern edge where the site borders an area of lower lying wetland to the south. A clump of trees at the end of the existing Hutley Drive includes Blackwood wattle, Flame tree, Brown kurrajong, Tuckeroo and Singapore daisy (Approx 50m²).
- An area within the Ocean Breeze Reserve that has been planted out with Broad-leaved paperbark and Weeping paperbark trees that are currently about 2-3m tall. A stormwater surcharge basin is to be constructed in this part of the site to accept runoff from the road (Approx 100m²).
- Further to the east, some planted vegetation along the back of houses accessed from Ocean Breeze Drive will require removal. This vegetation includes two Swamp mahoganies, two Forest red gums, two Tuckeroos, a Silky oak, Lilly pilly, Riberry and a Syzygium “Cascade” (Approx 320m²).
- A dwelling is located on Lot 2 DP 620838 to the immediate north of the proposed road location in this part of the site. Vegetation to the south-western corner of this dwelling will be removed and includes a large Norfolk pine, planted Macadamia nut, Guava, Mulberry, Loquat and Crepe myrtle, Tuckeroo, Murraya, Camphor laurel, Umbrella tree, Winter senna, Ground asparagus, Guioa and various weeds (Approx 270m²).
- Vegetation on the noise attenuation mound where the proposed Hutley Drive northern extension meets Byron Bay consisting of three Swamp mahogany trees, three Broad-leaved paperbark, Coast banksia, Foambark, Bangalow palm, Guioa, Willow bottlebrush, Weeping bottlebrush, Blackwood wattle, Macaranga, Tea tree and various weeds and exotic garden plants (Approx 595m²).

- Several regrowth Blackwood wattle on the northern side of Byron Bay Road will be removed where the roundabout will require widening of the road (Approx 30m²).

Vegetation loss should be considered of the context of the previously approved Hutley Drive northern extension. The road alignment in the south-western section of the road reserve has not changed and vegetation loss in this area is consistent with that considered in the REF prepared by GHD (2013). North-east of the dwelling on Lot 2, vegetation along the existing road reserve leading to the Byron Bay Road/North Creek Road intersection will be retained (Approx 685m²) whereas vegetation near the dwelling on Lot 2 and on the noise mound will be removed.

In comparison with the previously approved road extension, 1365m² of native vegetation will require removal with 685m² to be retained, leaving a net loss of 680m². Vegetation to be removed is not consistent with the description of any EEC and consists of relatively common native species, weeds and garden/orchard plantings.

4.2.1.2 Indirect physical effects on vegetation adjacent to the works area

There is some potential for retained trees adjacent to the clearance corridor to be affected by accidental damage from construction vehicles or by root zone impacts. The construction corridor is quite open and easily accessible and no areas of substantial retained native vegetation are likely to be affected.

4.2.1.3 Impacts on significant flora species

No significant flora species occur within the footprint of the proposed road extension. Hairy joint grass (HJG) has previously been recorded within wetland areas on the “Reservoir Hill” site to the south of the road corridor. No known or potential locations of HJG will be directly affected. There is some potential for the road to result in a change in hydrological conditions within the Reservoir Hill site that could have some impact on habitat values for this species. The road design incorporates a stormwater surcharge basin that will moderate flows into the northern part of the lower Reservoir Hill wetland area. It is unlikely that the proposed development will affect hydrological conditions in the area of known HJG habitat to the extent that the local population of HJG will be affected.

4.2.2 Fauna

4.2.2.1 Loss of fauna habitat

The proposed works would require the removal of up to 1365m² of vegetation consisting of native species, garden plantings and weeds. Fauna habitat to be lost is likely to be utilised by a very limited range of fauna species due to historic disturbance and the fragmented nature of surrounding vegetation.

4.2.2.2 Degradation of neighbouring areas of habitat

Areas of fauna habitat adjacent to the works area may be affected by accidental damage, sedimentation, introduction of weeds and other indirect effects.

4.2.2.3 Direct impacts on fauna

There is little potential for native fauna to be killed or injured as a result of tree removal activities or other construction works as trees to be removed are relatively small and do not provide tree hollows.

4.2.2.4 Impacts on corridor values

Within the Study area, fauna movement opportunities are provided by isolated trees and clumps of regrowth vegetation. The proposed works are unlikely to have any significant impact on fauna movement opportunities and would not sever any important wildlife corridors.

4.2.3 Aquatic habitats

4.2.3.1 Impacts on water quality and hydrology of adjacent Freshwater wetland

The disturbance of soils has some minor potential to affect water quality through sediment runoff although wetland areas are currently susceptible to sedimentation from previous agricultural practices on the Reservoir Hill site. There is also some slight potential for accidental spills and/or leaks from machinery to enter the wetland area.

There is some potential for the road to result in a change in hydrological conditions within the Reservoir Hill site that could have some impact on Freshwater wetland habitat. The road design incorporates a stormwater surcharge basin that will moderate flows into the northern part of the lower Reservoir Hill wetland area. It is unlikely that the proposed development will affect hydrological conditions in the area to the extent that the Freshwater wetland area will be affected.

4.3 Amelioration Measures

Based on the assessment of potential impacts, a number of mitigation measures are proposed to manage ecological impacts associated with the proposed works. These are discussed below:

- Trees are to be inspected for the presence of fauna prior to removal.
- Trimming of vegetation adjacent to the clearance corridor should be kept to a minimum where possible and is to be undertaken in accordance with Australian Standard AS4373-1996 *Pruning Amenity Trees*.
- Vegetation waste should be removed from site or mulched and reused where required.
- Disturbance of soils should be kept to a minimum and appropriate sediment and erosion controls established to prevent sediment laden run-off to adjacent areas.
- Machinery movements within the drip line of retained mature trees should be kept to a minimum. The parking of vehicles and the storage of excavated material is not to be undertaken within tree drip lines.
- All reasonable practical steps shall be undertaken to reduce noise and vibration from the site.
- No waste is to be left onsite at the completion of works.

4.4 Proposed offset works

The Ballina Shire Development Control Plan (2012) notes that where development is unable to be sited, designed and managed to avoid potential adverse impacts on natural areas (as identified on the Natural Areas and Habitat Map), a proposal to remove habitat may be considered. Council typically applies a compensatory planting ratio of 3:1, with a higher rate of compensatory planting required in some circumstances.

The proposed northern extension of Hutley Drive is not located within any areas of mapped Natural areas and Habitat or within the buffer of any such mapped areas.

As vegetation within the study corridor does include some native species, the net loss of 680m² of this vegetation should be compensated for by the implementation of vegetation restoration works including weed control and assisted natural regeneration throughout a minimum area of 680m² (an



offset ratio of 1:1). **APPENDIX E** shows the proposed compensatory offset area which involves an extension of the compensatory offset area for the recent Ross Lane and Coast Road works.

5 STATUTORY AND PLANNING ASSESSMENT

5.1 Introduction

This section includes assessments of the impacts of the Proposed development with regard to:

- The NSW Biodiversity Conservation Act 2016
- the Commonwealth Environment Protection and Biodiversity Conservation Act (1999).
- State Environmental Planning Policies (SEPP) No. 44 – Koala Habitat Protection, No. 14 (Coastal wetlands) and No. 26 (Littoral rainforests).

5.2 Biodiversity offset scheme (BOS) and Biodiversity assessment Method (BAM)

5.2.1 Introduction

The Biodiversity Offsets Scheme Threshold is a test used to determine when is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) to assess the impacts of a proposal. It is used for local developments (development applications submitted to councils) and clearing that does not require development consent in urban areas and areas zoned for environmental conservation (under the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017).

The Biodiversity Conservation Regulation 2017 sets out threshold levels for when the Biodiversity Offsets Scheme will be triggered. The threshold has two elements:

- whether the amount of native vegetation being cleared exceeds a threshold area set out below
- whether the impacts occur on an area mapped on the Biodiversity Values map published by the Minister for the Environment.

If clearing and other impacts exceeds either trigger, the Biodiversity Offset Scheme applies to the proposed development including biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017.

5.2.2 Biodiversity offset scheme (BOS) Entry Test Report

The Biodiversity Offsets Scheme Entry Threshold Tool was accessed on 20th November 2018 following a site inspection. The BOSET map produced shows that:

- The site is located on land Excluded from the LLS Act.
- The site does not contain mapped Biodiversity Values.

The BOSET mapping is included as **FIGURE 3**. Based on the likely extent of native vegetation the Biodiversity Assessment Method (BAM) will not need to be applied.

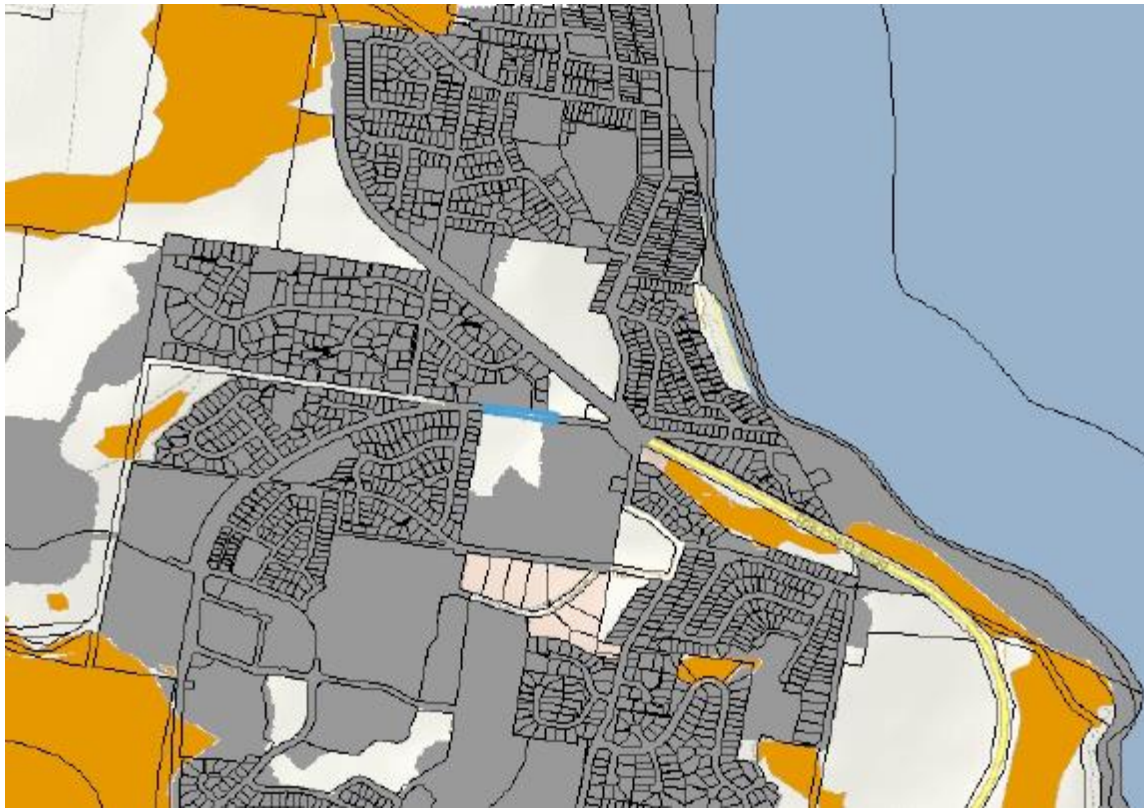


Figure 3 Biodiversity Value mapping (Biodiversity Conservation Act 2016)

5.3 Commonwealth EPBC Act (1999)

5.3.1 Introduction

Under the environmental assessment provisions of the EPBC Act, actions that are likely to have a significant impact on a matter of National Environmental Significance are subject to a rigorous assessment and approval process. An action includes a project, development, undertaking, activity, or series of activities. An action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.

The Act identifies seven matters of national environmental significance:

- World Heritage properties
- National heritage places
- Wetlands of international importance (Ramsar wetlands)
- Threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- Nuclear actions (including uranium mining)

The EPBC Act Policy Statement 1.1 Significant Impact Guidelines (DEH 2006) outline an assessment process, including detailed criteria, to assist in deciding whether or not referral to the Minister is required. These guidelines replace the EPBC Act Administrative Guidelines of July 2000.

No Commonwealth EPBC Act (1999) Threatened fauna or flora species were recorded or are considered likely to occur within or immediately adjacent to the proposed road extension.

Based upon this assessment and with the implementation of the amelioration measures discussed in this report, the proposed development is unlikely to result in a significant impact on any matters of National Environmental Significance (NES) as listed under the EPBC Act 1999.

5.4 Coastal Management SEPP Coastal Wetlands Littoral Rainforests

The Coastal Management SEPP consolidates existing SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection). The Coastal Management SEPP outlines a range of development controls that aim to help protect and manage our sensitive coastal environments, manage risks from coastal hazards, and support appropriate urban development. Development controls for the mapped coastal wetlands and littoral rainforests area aim to continue existing protections for these important ecological communities.

FIGURE 3 shows an extract of mapping from the Coastal Management SEPP. No areas mapped as Coastal wetland or Littoral rainforest occur within or adjacent to the Hutley Drive northern extension corridor and the site does not fall within the proximity area for any Coastal Wetlands or Littoral rainforests.

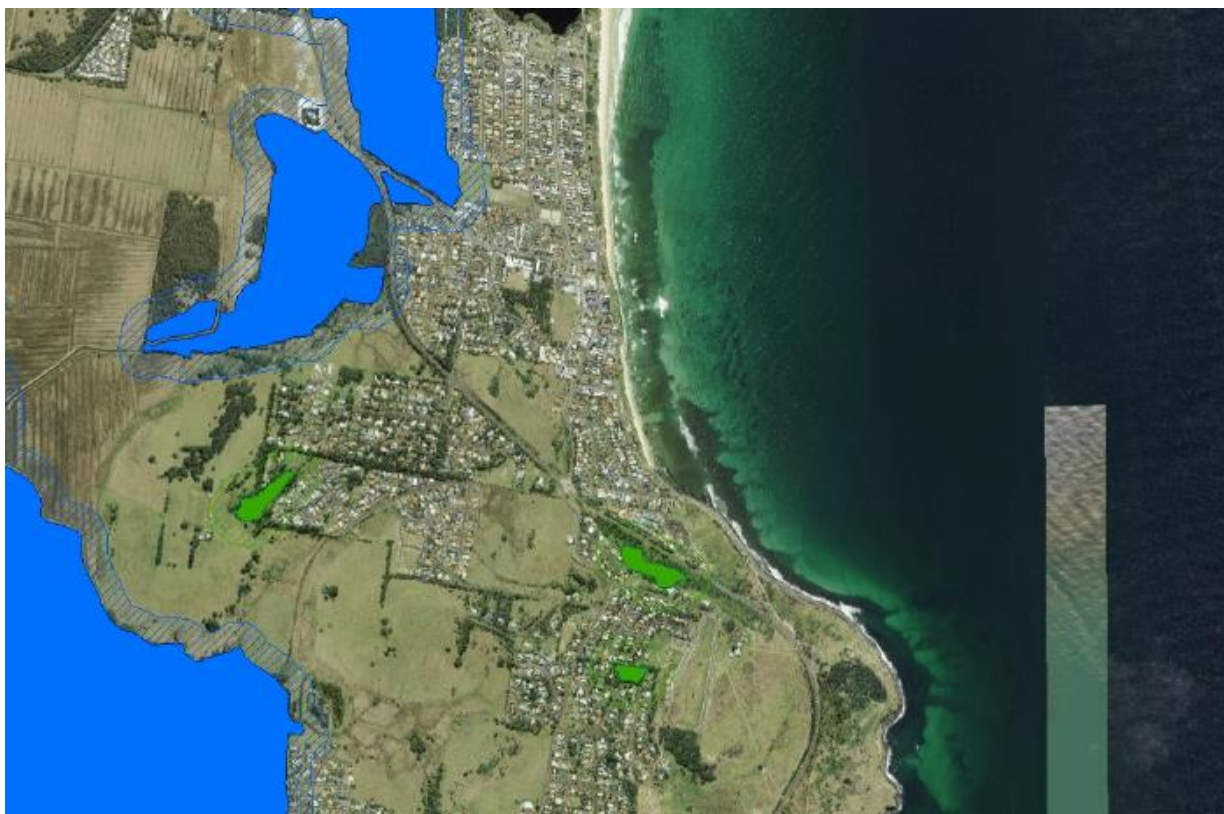


Figure 3 Coastal Management SEPP Mapping

5.5 Ballina Shire Koala Management Strategy

The Subject site is located outside of the planning area for the Ballina Shire Koala Management Strategy, which includes extensive areas in the western part of the Shire as well as a smaller area in East Ballina.

5.6 SEPP 44 Koala Habitat Protection

The SEPP 44 Koala Habitat Protection Policy aims to “encourage the proper conservation and management of area of natural vegetation that provide habitat for Koalas, to ensure permanent free-living populations over their present range and to reverse the current trend of population decline.”

SEPP 44 consists of a series of questions to provide a basis for the assessment of lands as potential and/or core Koala habitat.

1. Does the policy apply?

Does the subject land occur in an LGA identified in Schedule 1?

The Subject site occurs in the Ballina LGA, which is listed under Schedule 1.

Is the landholding to which the DA applies greater than 1 hectare in area?

Yes.

2. Is the land potential Koala habitat?

Does the site contain areas of native vegetation where the trees of types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component?

No. A small number of relatively immature Forest red gum and Swamp mahogany trees occur but form less than 15% of the tree component.

3. Is there core Koala habitat on the subject land?

The site does not support core Koala habitat.

4. Is there a requirement for the preparation of a Plan of Management for identified core Koala habitat?

No.

6 SUMMARY AND CONCLUSIONS

Blackwood Ecological Services has been engaged by Ballina Shire Council to complete a Biodiversity Assessment for the proposed extension of Hutley Drive from Silkwood Road north east to Byron Bay Road where a new roundabout intersection is to be constructed. Ballina Shire Council have previously granted approval for the extension of Hutley Drive in this location. This approved alignment involved construction of a road from Silkwood Road to the existing roundabout at the Byron Bay Road/North Creek Road intersection. GHD completed an REF and ecological assessment for this road alignment in 2013. Where appropriate, this assessment considers biodiversity impacts in the context of impacts associated with the existing approval.

A site assessment was completed on the 14th of November 2018. The route extends east from Silkwood Road through an area of grassland and then along a section of road reserve where neighbouring houses have extended gardens and planted trees within the road reserve. The route then heads north through a patch of vegetation associated with a dwelling in this area before meeting Byron Bay Road. In this area an earthen mound along the southern side of Byron Bay Road has been planted out with native vegetation and landscape species for noise attenuation.

The western section of the road corridor is lower lying and stormwater is currently piped under the road reserve where it flows from the northern side into wet grassland and wetland south of the Hutley Road extension. This area has previously been identified as supporting areas of Freshwater wetland TEC as well as the Threatened species Hairy joint grass (*Artbraxxon hispidus*). (Blackwood Ecology 2014).

A dwelling is located on Lot 2 DP 620838 to the immediate north of the proposed road location in this part of the site. Vegetation to the south-western corner of this dwelling will be removed and includes a large Norfolk pine, planted Macadamia nut, Guava, Mulberry, Loquat and Crepe myrtle, Tuckeroo, Murraya, Camphor laurel, Umbrella tree, Winter senna, Ground asparagus, Guioa and various weeds.

Where the proposed Hutley Drive northern extension meets Byron Bay Road, vegetation has become well established on a noise attenuation mound along the southern side of Byron Bay Road. Vegetation on the mound in the area within the footprint of the proposed road extension includes three Swamp mahogany trees, three Broad-leaved paperbark, Coast banksia, Foambark, Bangalow palm, Guioa, Willow bottlebrush, Weeping bottlebrush, Blackwood wattle, Macaranga, Tea tree and various weeds and exotic garden plants.

East of the dwelling on Lot 2 DP620838, vegetation within the previously approved Hutley Drive footprint will be retained. This vegetation includes some larger established Tuckeroo, Guioa and Coast banksia trees, Umbrella tree, Camphor laurel, Cocos palm and various other weed species.

No Threatened (NSW Biodiversity Conservation Act 2016, Commonwealth EPBC Act 1999) flora species were recorded or are considered likely to occur. GHD (2013) did not record any Threatened flora species within the area subject to the northern extension. Vegetation communities on the Subject site were compared with descriptions of vegetation communities listed as Threatened Ecological Communities under the NSW Biodiversity Conservation Act (2016) and the EPBC Act (1999). No TECs are considered to occur within the proposed road extension footprint.

No Threatened (NSW BC Act 2016, EPBC Act 1999) fauna species were recorded during the site assessment. Koala feed tree species were searched for the presence of scats and scratches and no evidence of Koala use was recorded. Land within the study corridor is of limited value as fauna habitat for fauna occurring in neighbouring habitats. Wetland areas to the south provide habitat for wetland species including frogs and migratory wetland birds. The area does not provide suitable habitat for the Wallum froglet. Based upon this assessment no threatened fauna species are considered likely to have any degree of reliance on habitats within the area subject to the proposed development.

The proposed road extension requires the clearing of patches of vegetation along the road corridor which contain some native species. Vegetation loss should be considered of the context of the previously approved Hutley Drive northern extension. The road alignment in the south-western section of the road reserve has not changed and vegetation loss in this area is consistent with that considered in the REF prepared by GHD (2013). North-east of the dwelling on Lot 2, vegetation along the existing road reserve leading to the Byron Bay Road/North Creek Road intersection will be retained (approx 685m²) whereas vegetation near the dwelling on Lot 2 and on the noise mound will be removed.

In comparison with the previously approved road extension, 1365m² of native vegetation will require removal with 685m² to be retained, leaving a net loss of 680m². Vegetation to be removed is not consistent with the description of any EEC and consists of relatively common native species, weeds and garden/orchard plantings. As vegetation within the study corridor does include some native species, the net loss of 680m² of this vegetation should be compensated for by the implementation of vegetation restoration works including weed control and assisted natural regeneration throughout a minimum area of 680m² (an offset ratio of 1:1).

The Biodiversity Offsets Scheme Entry Threshold Tool was accessed on 20th November 2018 following a site inspection. The BOSET map produced shows that:

- The site is located on land Excluded from the LLS Act.
- The site does not contain mapped Biodiversity Values.

Based on the likely extent of native vegetation the Biodiversity Assessment Method (BAM) will not need to be applied. No Commonwealth EPBC Act (1999) Threatened fauna or flora species were recorded or are considered likely to occur within or immediately adjacent to the proposed road extension. Based upon this assessment and with the implementation of the amelioration measures discussed in this report, the proposed development is unlikely to result in a significant impact on any matters of National Environmental Significance (NES) as listed under the EPBC Act 1999.

No areas mapped as Coastal wetland or Littoral rainforest occur within or adjacent to the Hutley Drive northern extension corridor and the site does not fall within the proximity area for any Coastal Wetlands or Littoral rainforests. The Subject site is located outside of the planning area for the Ballina Shire Koala Management Strategy, which includes extensive areas in the western part of the Shire as well as a smaller area in East Ballina. The Subject site does not provide core Koala habitat as defined by SEPP 44.

7 REFERENCES

Blackwood Ecological Services (2014) Peer review. Reservoir Hill site Ecological Issues. A Report to Ballina Shire Council.

CRA Unit, Northern Zone NPWS (1999). Forest Ecosystem Classification and Mapping for Upper and Lower North East CRA Regions. A project undertaken for the Joint Commonwealth NSW Regional Forest Agreement Steering Committee as part of the NSW Comprehensive Regional Assessments project number NA35/EH.

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Harden, G., McDonald, B., & Williams, J (2009) Rainforest Trees and Shrubs: A field guide to the identification. Gwen Harden Publishing, Nambucca Heads, NSW.

Office of Environment and Heritage (2013). **Threatened species, populations and ecological communities**. <http://www.environment.nsw.gov.au/threatenedspecies/index.htm>

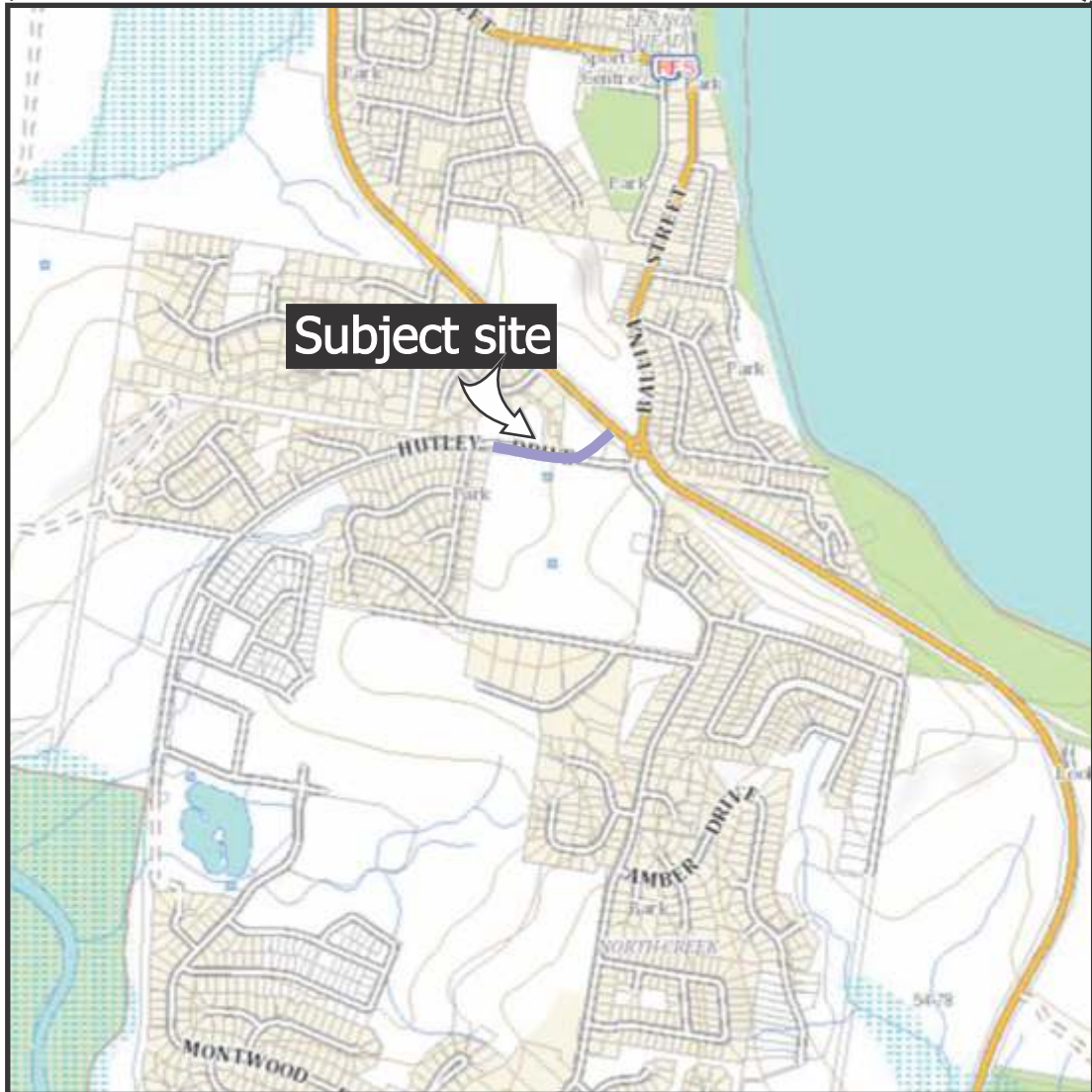
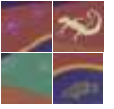
NPWS (2002) Threatened Species of the Upper North Coast of NSW – Flora. NPWS Northern Directorate, Coffs Harbour.

NSW Government Legislation website <http://www.legislation.nsw.gov.au/>

Sheringham and Westaway (1995). **Significant vascular plants of northern NSW**. A report to the NSW NPWS and Northern Region Audit Council.



FIGURES





Area of planted paperbark trees

Vegetation on noise attenuation mound

Previously approved section of road to be retained

0 Scale (metres) 50 100





APPENDIX A
PROPOSED HUTLEY DRIVE NORTHERN EXTENSION

HUTLEY DRIVE NORTHERN EXTENSION BYRON BAY ROAD ROUNDABOUT

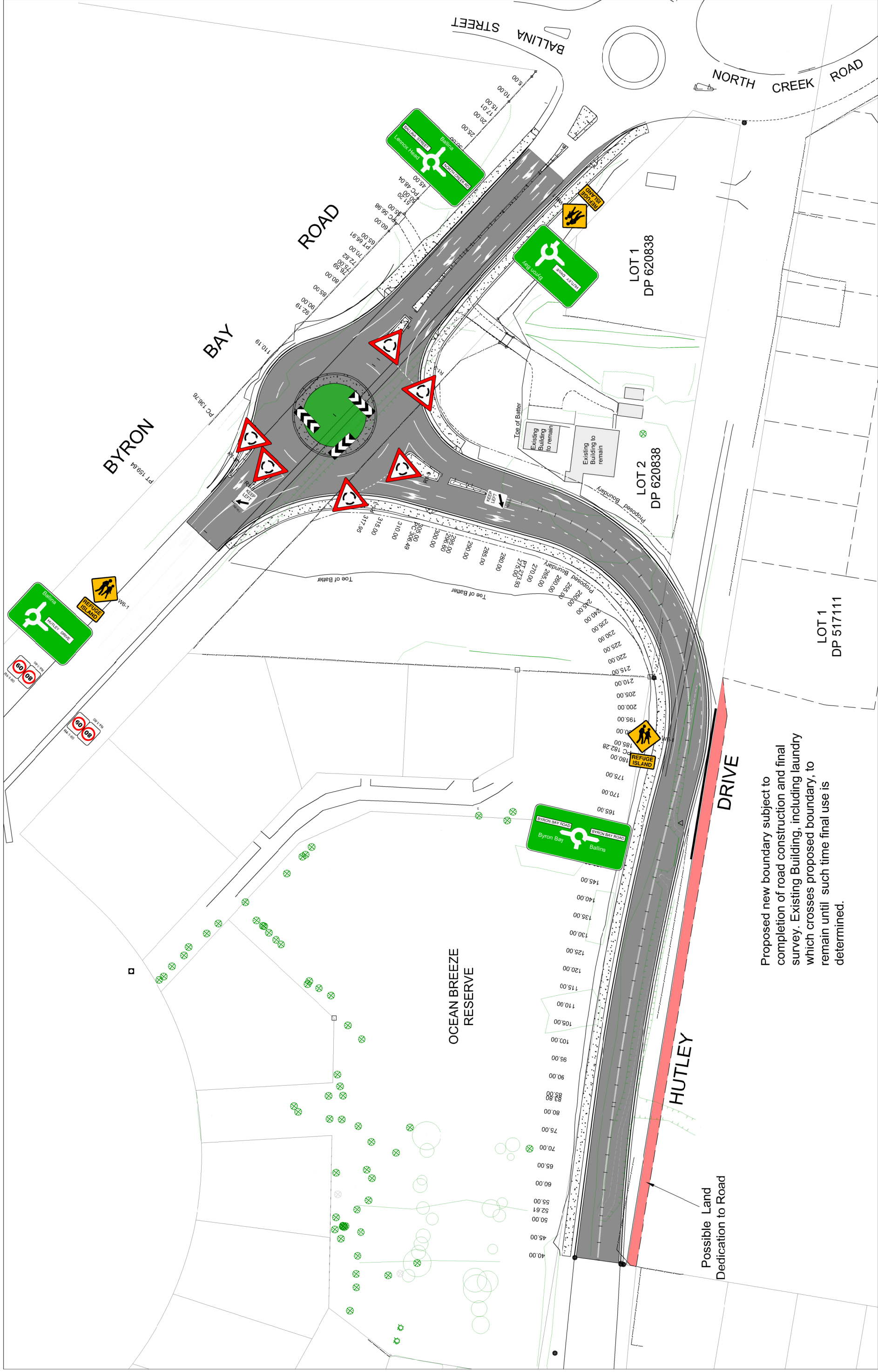
ISSUE A AUGUST 2018

PRELIMINARY DRAWINGS

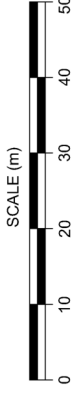
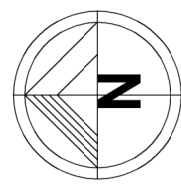
DRAWING	SHEET	ISSUE	DATE	TITLE
SR31_049_03	1 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension and Byron Bay Road Roundabout Signs and Linemarking
SR31_049_03	2 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension and Byron Bay Road Roundabout Contour Plan
SR31_049_03	3 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension and Byron Bay Road Roundabout Services
SR31_049_03	4 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Longsections
SR31_049_03	5 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	6 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	7 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	8 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	9 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	10 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections
SR31_049_03	11 OF	Preliminary	15/10/2018	Hutley Drive Northern Extension Cross Sections



LOCALITY PLAN

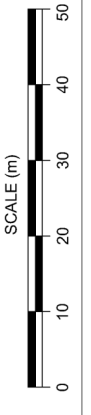
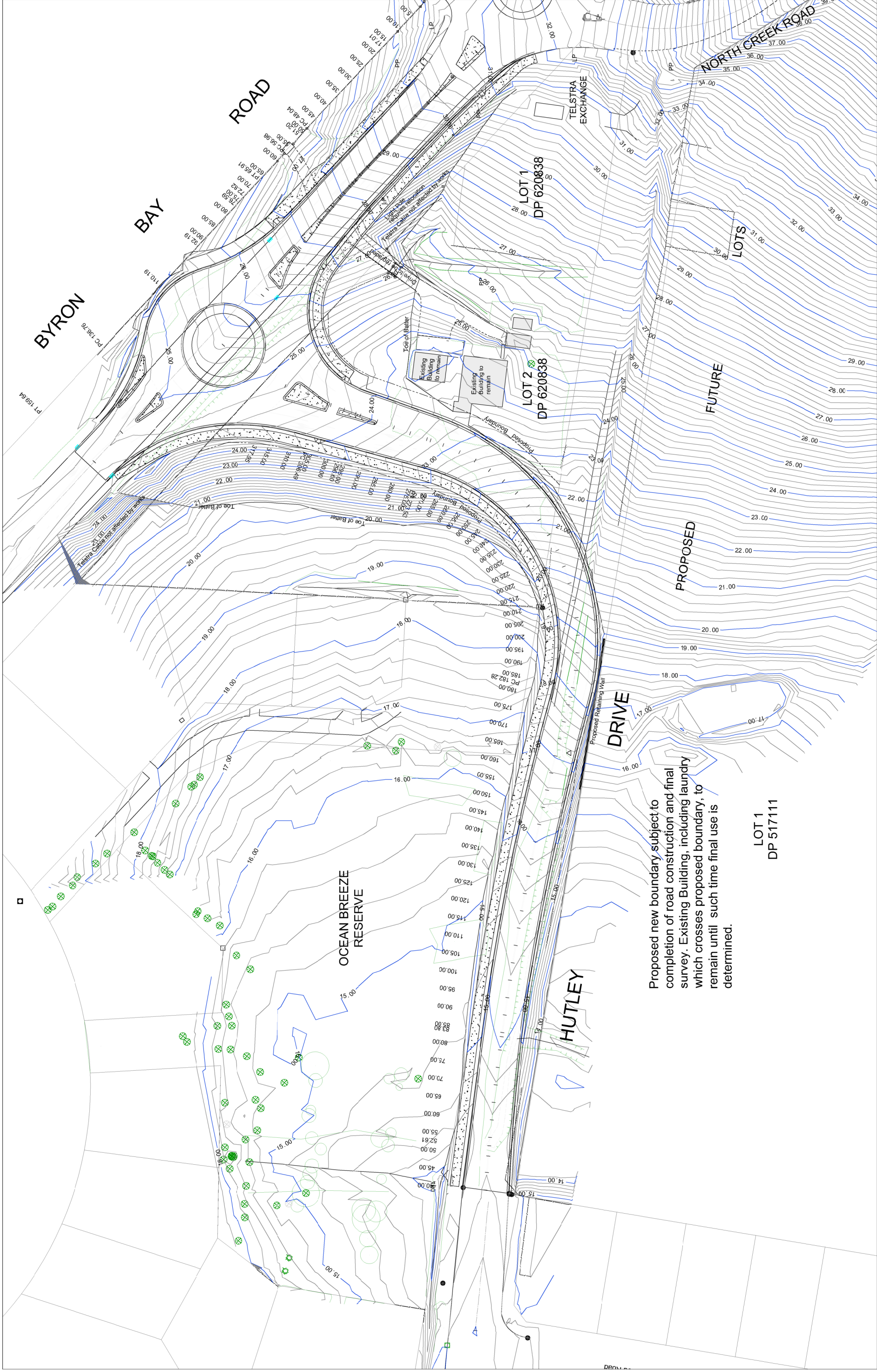


Proposed new boundary subject to completion of road construction and final survey. Existing Building, including laundry which crosses proposed boundary, to remain until such time final use is determined.



SURVEY		DESIGNED	MNF
DATE	15/08/2018	DRAWN	MNF
F.B.	L.B.	CHECKED	
DATUM	AHD	APPROVED	
DRAWING HUTLEY DRIVE BYRON BAY ROAD ROUNDABOUT AUG 2018 VZ.DWG			
SHEET 1 OF		Scale HORIZONTAL: 1 : 500 @ A1 VERTICAL: SR31_049_03	

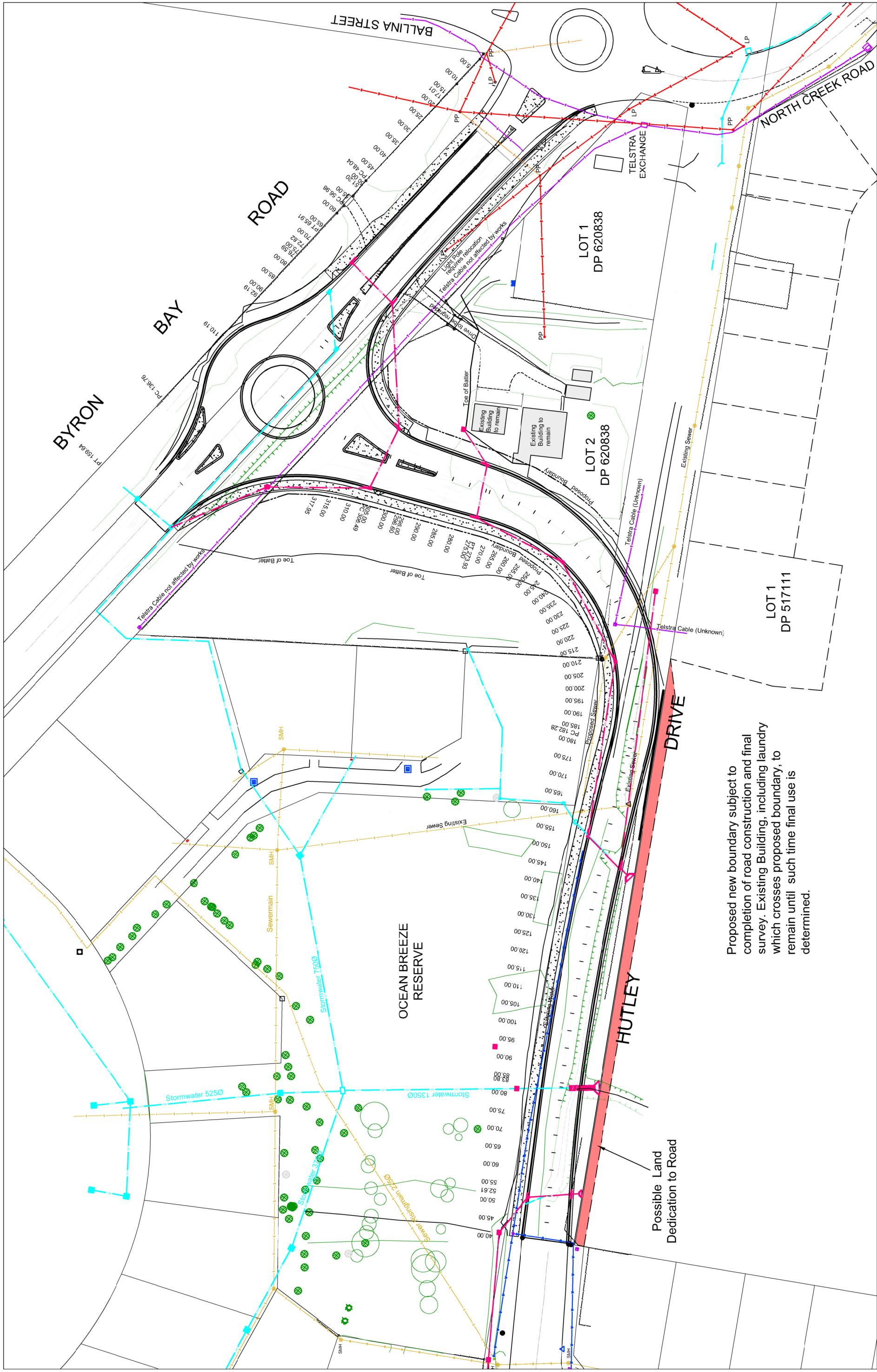
BALLINA SHIRE COUNCIL
HUTLEY DRIVE NORTHERN EXTENSION
BYRON BAY ROAD ROUNDABOUT
SIGNS AND LINEMARKING PLAN



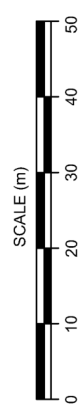
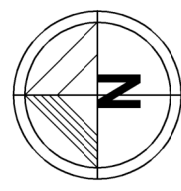
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DATUM	AHD	APPROVED	
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SHEET 2 OF		Plan No. SR31_049_03	
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BALLINA SHIRE COUNCIL
HUTLEY DRIVE NORTHERN EXTENSION
BYRON BAY ROAD ROUNDABOUT
CONTOUR PLAN

No.	Date	By	Change	X'd
			Amendments	



Proposed new boundary subject to completion of road construction and final survey. Existing Building, including laundry which crosses proposed boundary, to remain until such time final use is determined.



- EXISTING STORMWATER
- PROPOSED STORMWATER
- EXISTING SEWER
- EXISTING WATER
- EXISTING TELSTRA
- EXISTING ELECTRICITY

No.	Date	By	Change	X'd
Amendments				



SURVEY	DESIGNED	MINF
DATE 15/08/2018	DRAWN	MINF
F.B. L.B.	CHECKED	
DATUM AHD	APPROVED	
DRAWING HUTLEY DRIVE BYRON BAY ROAD ROUNDABOUT AUG 2018 VZ.DWG		

BALLINA SHIRE COUNCIL	
HUTLEY DRIVE NORTHERN EXTENSION BYRON BAY ROAD ROUNDABOUT SERVICES PLAN	
Scale HORIZONTAL: 1 : 500 @ A1	Plan No. SR31_049_03
SHEET 3 OF A1	



APPENDIX B
APPROVED HUTLEY DRIVE NORTHERN EXTENSION



Figure 2 Area of proposed activity (source: Ballina Shire Council)



APPENDIX C
EPBC PROTECTED MATTERS DATABASE SEARCH RESULTS



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

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

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

Report created: 29/11/18 16:11:18

[Summary](#)

[Details](#)

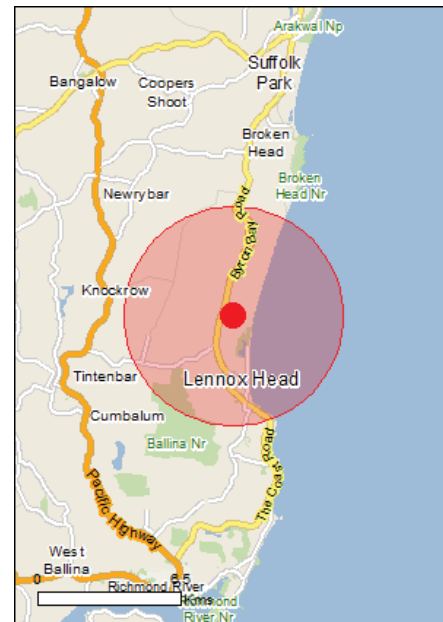
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

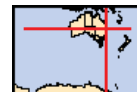
[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	83
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 <http://www.environment.gov.au/heritage>

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	105
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	1
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species

Name	Status	Type of Presence
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	habitat may occur within area Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area
Fish		
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
Litoria olongburensis Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat known to occur within area
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Other		
Thersites mitchellae Mitchell's Rainforest Snail [66774]	Critically Endangered	Species or species habitat known to occur within area
Plants		
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Allocasuarina thalassoscopica [21927]	Endangered	Species or species habitat may occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat known to occur within area
Baloghia marmorata Marbled Baloghia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat likely to occur within area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat known to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
Davidsonia jerseyana Davidson's Plum [67219]	Endangered	Species or species habitat likely to occur within area
Davidsonia johnsonii Smooth Davidsonia, Smooth Davidson's Plum, Small-leaved Davidson's Plum [67178]	Endangered	Species or species habitat likely to occur within area
Diploglottis campbellii Small-leaved Tamarind [21484]	Endangered	Species or species habitat likely to occur within area
Elaeocarpus williamsianus Hairy Quandong [8956]	Endangered	Species or species habitat may occur within area
Endiandra floydii Floyd's Walnut [52955]	Endangered	Species or species habitat likely to occur within area
Floydia praealta Ball Nut, Possum Nut, Big Nut, Beefwood [15762]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
Fontainea oraria Coastal Fontainea [24038]	Endangered	Species or species habitat likely to occur within area
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat likely to occur within area
Hicksbeachia pinnatifolia Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat known to occur within area
Ochrosia moorei Southern Ochrosia [11350]	Endangered	Species or species habitat likely to occur within area
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Randia moorei Spiny Gardenia [10577]	Endangered	Species or species habitat likely to occur within area
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat likely to occur within area
Syzygium moorei Rose Apple, Coolamon, Robby, Durobby, Watermelon Tree, Coolamon Rose Apple [12284]	Vulnerable	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Sharks		
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species

Name	Threatened	Type of Presence
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		habitat may occur within area Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa incana Wandering Tattler [831]		Species or species

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		habitat known to occur within area Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

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.

Name
Commonwealth Land - Australian Telecommunications Commission

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Heteroscelus incanus Wandering Tattler [59547]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		habitat known to occur within area Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus kelloggi Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney		Species or species

Name	Threatened	Type of Presence
Seahorse [66240]		habitat likely to occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Microphis manadensis Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Reptiles		
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	within area Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Ballina	NSW

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species [\[Resource Information \]](#)

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species

Name	Status	Type of Presence
Mammals		
Bos taurus Domestic Cattle [16]		habitat known to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-28.77017 153.5882

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.

APPENDIX D FLORA SPECIES LIST

Hutley Drive Northern Extension Flora species list

Notes:

- BOLD** Threatened species
 BC-V Species listed as Vulnerable under the NSW *Biodiversity Conservation Act 2016*
 EPBC-V Species listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
 * Introduced species

Where uncertainty exists due to the unavailability of reproductive material, the taxon is preceded by a question mark, or plants are identified to genus level only. Botanical nomenclature follows G.J. Harden (ed) (1990-2002) *Flora of New South Wales*, UNSW Press, except where recent changes have occurred.

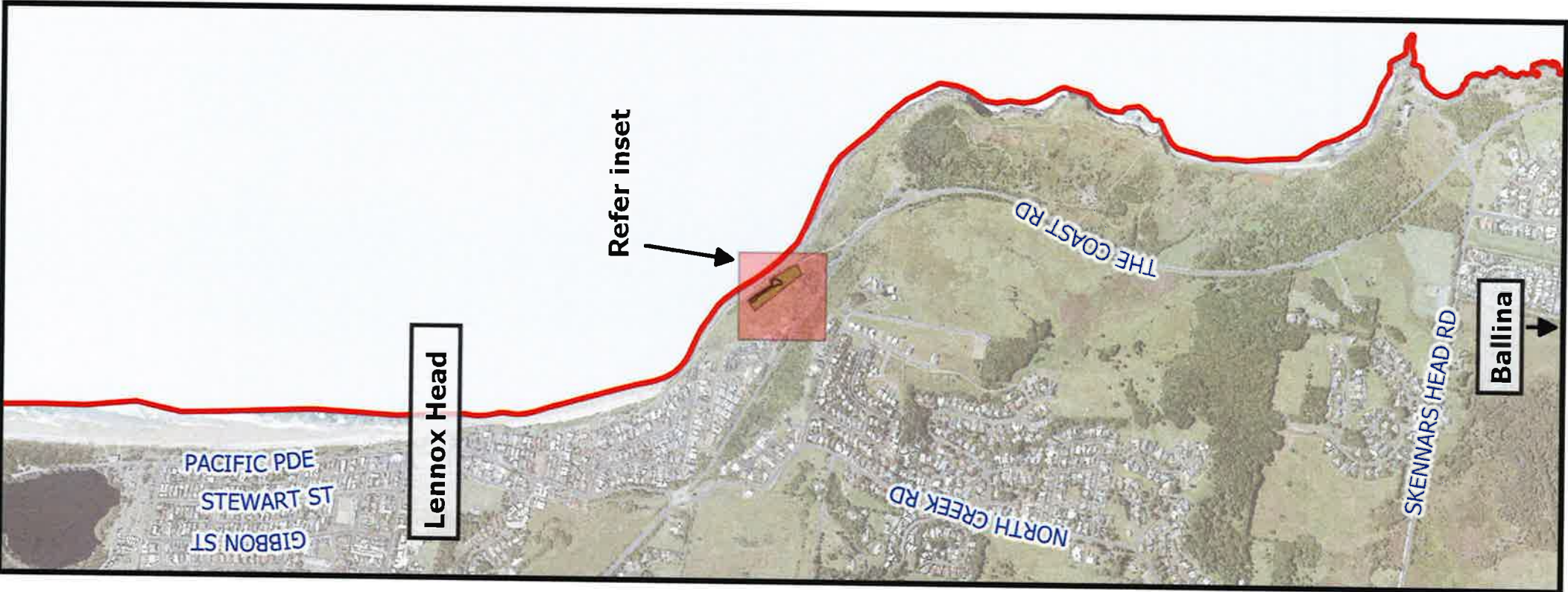
Grouping and Family	Botanical Name	Common Name
Ferns and Fern Allies		
Blechnaceae	<i>Blechnum indicum</i>	Swamp water fern
Davalliaceae	<i>Nephrolepis cordifolia</i> *	Fishbone fern
Gymnosperms		
Araucariaceae	<i>Araucaria heterophylla</i> *	Norfolk pine
Monocotyledons		
Arecaceae	<i>Archontophoenix cunninghamiana</i>	Bangalow palm
	<i>Syagrus romanoffiana</i> *	Cocos palm
Asparagaceae	<i>Asparagus aethiopicus</i> *	Ground asparagus fern
Commelinaceae	<i>Commelina cyanea</i>	Native commelina
Flagellariaceae	<i>Flagellaria indica</i>	Whip vine
Poaceae	<i>Paspalum dilatatum</i> *	Paspalum
	<i>Paspalum urvillei</i> *	Giant paspalum
	<i>Pennisetum purpureum</i> *	Barner grass
	<i>Phragmites australis</i>	Phragmites
Typhaceae	<i>Typha orientalis</i>	Broad-leaved cumbungi
Dicotyledons		
Acanthaceae	<i>Hypoestes phyllostachya</i> *	Pink polkadot plant
Araliaceae	<i>Schefflera actinophylla</i> *	Umbrella tree
Asteraceae	<i>Ageratina adenophora</i> *	Crofton weed
	<i>Ageratum houstonianum</i> *	Blue billygoat weed
	<i>Ambrosia artemisiifolia</i> *	Annual ragweed
	<i>Bidens pilosa</i> *	Cobblers pegs
	<i>Conyza</i> sp.*	Fleabane
	<i>Onopordum acanthium</i> *	Scotch thistle
	<i>Sphagneticola trilobata</i> *	Singapore daisy
Caesalpinioideae	<i>Senna pendula</i> var. <i>glabrata</i> *	Senna
Convolvulaceae	<i>Ipomoea cairica</i> *	Coastal morning glory
Ochnaceae	<i>Ochna serrulata</i> *	Ochna
Euphorbiaceae	<i>Macaranga tanarius</i>	Macaranga
Fabaceae	<i>Pueraria lobata</i> *	Kudzu



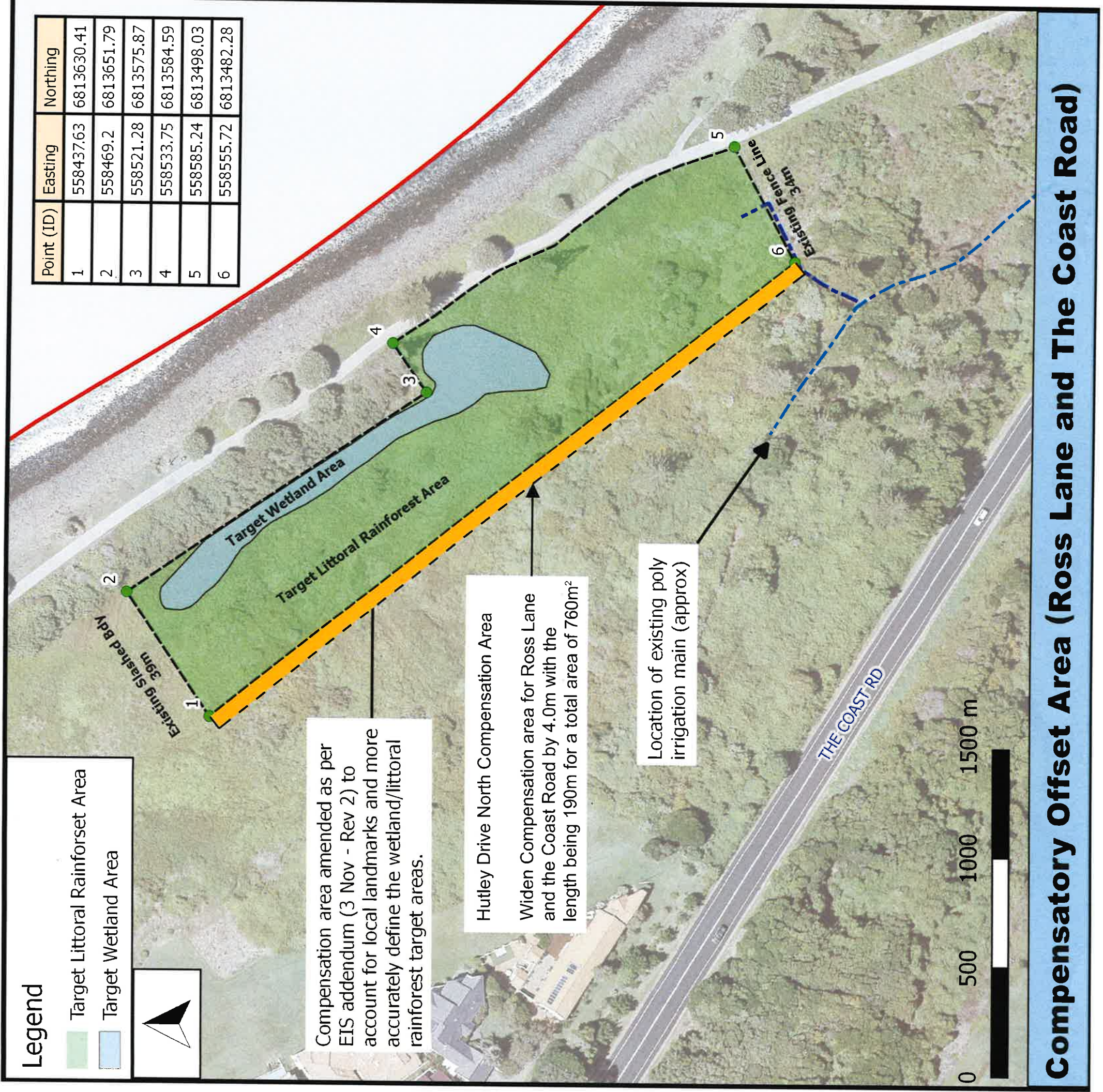
Grouping and Family	Botanical Name	Common Name
Lauraceae	<i>Cinnamomum camphora</i> *	Camphor laurel
Lythraceae	<i>Lagerstroemia indica</i> *	Crepe myrtle
Malvaceae	<i>Eriobotrya japonica</i> *	Loquat
	<i>Hibiscus diversifolius</i>	Swamp hibiscus
Menispermaceae	<i>Stephania japonica</i> var. <i>discolor</i>	Snake vine
Mimosaceae	<i>Acacia melanoxylon</i>	Blackwood wattle
Moraceae	<i>Maclura cochinchinensis</i>	Cockspur
	<i>Morus alba</i> *	Mulberry
Myrtaceae	<i>Acmena smithii</i>	Lilly pillly
	<i>Callistemon salignus</i>	Willow bottlebrush
	<i>Callistemon viminalis</i>	Weeping bottlebrush
	<i>Eucalyptus robusta</i>	Swamp mahogany
	<i>Eucalyptus tereticornis</i>	Forest red gum
	<i>Leptospermum laevigatum</i> *	Coastal teatree
	<i>Melaleuca quinquenervia</i>	Broad-leaved paperbark
	<i>Psidium guajava</i> *	Common guava
	<i>Syzygium luehmannii</i>	Riberry
	<i>Syzygium</i> sp. "Cascade"*	Landscape Lilly pillly
Nyctaginaceae	<i>Bougainvillea</i> sp.*	Bougainvillea
Passifloraceae	<i>Passiflora subpeltata</i> *	White passionflower
Polygonaceae	<i>Persicaria</i> sp.	Smartweed
	<i>Rumex brownii</i> *	Swamp Dock
Proteaceae	<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	Coast banksia
	<i>Grevillea robusta</i>	Silky oak
	<i>Macadamia integrifolia</i>	Macadamia nut
Rosaceae	<i>Rubus hillii</i>	Molucca bramble
Rutaceae	<i>Murraya paniculata</i> *	Mock orange
Sapindaceae	<i>Cupaniopsis anacardioides</i>	Tuckeroo
	<i>Guioa semiglauc</i>	Guioa
	<i>Jagera pseudorhus</i>	Foambark
Solanaceae	<i>Solanum mauritianum</i> *	Wild tobacco tree
Sterculiaceae	<i>Brachychiton acerifolius</i>	Flame tree
	<i>Commersonia bartramia</i>	Brown kurrajong
Thymelaeaceae	<i>Wikstroemia indica</i>	Wikstromeia
Ulmaceae	<i>Trema tomentosa</i> var. <i>aspera</i>	Native peach
Verbenaceae	<i>Duranta repens</i>	Duranta
Verbenaceae	<i>Lantana camara</i> *	Lantana



APPENDIX E
PROPOSED COMPENSATORY OFFSET AREA



Point (ID)	Easting	Northing
1	558437.63	6813630.41
2	558469.2	6813651.79
3	558521.28	6813575.87
4	558533.75	6813584.59
5	558585.24	6813498.03
6	558555.72	6813482.28



Legend

- Target Littoral Rainforest Area
- Target Wetland Area

Compensation area amended as per EIS addendum (3 Nov - Rev 2) to account for local landmarks and more accurately define the wetland/littoral rainforest target areas.

Hutley Drive North Compensation Area
Widen Compensation area for Ross Lane and the Coast Road by 4.0m with the length being 190m for a total area of 760m²

Location of existing poly irrigation main (approx)

Compensatory Offset Area (Ross Lane and The Coast Road)