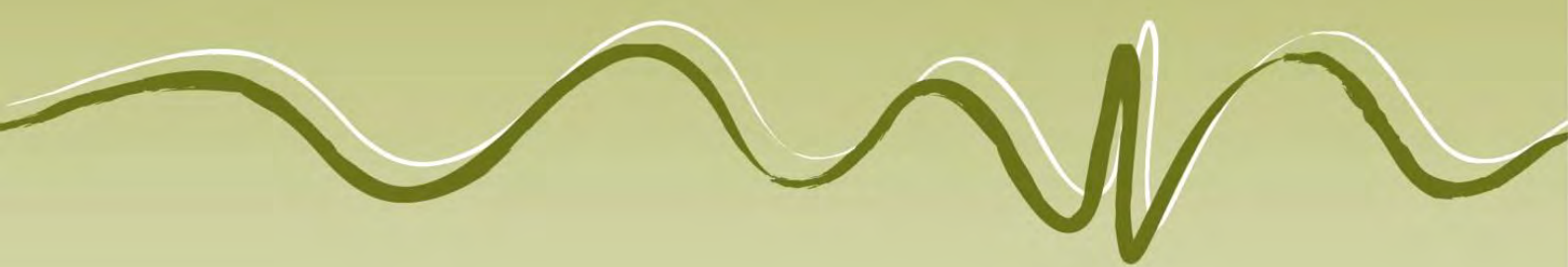


# Ecological Assessment

## Lot 1 DP781542 and Lot 3 DP525783 Compton Drive – Proposed Rezoning



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# Executive Summary

This Ecological Assessment was completed to inform a rezoning application for Lot 1 DP781542 and Lot 3 DP525783, 23 Compton Drive, Ballina. The proposal is to:

- Rezone Lot 1 DP781542 and Lot 3 DP525783 from 7(d) Environmental Protection (Scenic/Escarpment) to R2 Low Density Residential;
- Apply a 600m<sup>2</sup> minimum lot size and 8.5m maximum building height to the land rezoned R2; and
- Make consequent changes to the Land Application Map and Acid Sulfate Soils Map in the Ballina LEP 2012.

The site does not contain land mapped as being of Biodiversity Value (as per the Office of Environment and Heritage (OEH) Biodiversity Values Map and Threshold Tool).

The existing cleared/developed land in the south-eastern portion of the site is free of biodiversity constraints. The north-western portion of the site contains littoral rainforest (PCT1275: *Tuckeroo - Riberry - Yellow Tulipwood littoral rainforest of the NSW North Coast Bioregion*). This vegetation is of high conservation value as it comprises a *Biodiversity Conservation Act 2016* and *Environment Protection and Biodiversity Conservation Act 1999* listed threatened ecological community. It also provides potential habitat for locally recorded threatened fauna and migratory species, although local populations of these species would not be exclusively dependant on the habitat on site. No threatened flora species were recorded at the site.

It is likely that development of the existing cleared/developed land in the south-eastern portion of the site would require some impacts to the littoral rainforest through establishment of an Asset Protection Zone and removal of overhanging trees. Opportunities to minimise impacts are however available and have been recommended.

Review of statutory instruments relevant to the proposed rezoning was completed as follows:

- Ballina Shire Development Control Plan (DCP) 2012: Development controls associated with Section 3.3 of Chapter 2 of the DCP apply for future development of the site
- State Environmental Planning Policy (SEPP) 44 - Koala Habitat Protection: This SEPP does not apply to the site.
- *Biodiversity Conservation Act 2016* (BC Act): rezoning and subsequent development of the site could be undertaken in a way that minimises biodiversity impacts and would be unlikely to significantly affect threatened species or communities. Due to the limited native vegetation potentially requiring removal, a Biodiversity Development Assessment Report (BDAR) is unlikely to be required.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): review of Matters of Environmental Significance (MNES) listed in the Act indicates that rezoning and subsequent development of the site is unlikely to significantly affect any threatened species or community, or migratory species listed in the EPBC Act.



# 1. Introduction

## 1.1 Background

GeoLINK has been engaged by Mr Kristian Moon to prepare an Ecological Assessment to assess the biodiversity values of Lot 1 DP781542 and Lot 3 DP525783, 23 Compton Drive, Ballina ('the site') to inform a rezoning application. The NSW Department of Planning and Environment (DoPE) Gateway Determination (Department Ref: pp\_2018\_BALLI\_003\_00) determined that the proposal should proceed subject to a number of conditions, including '*an ecological assessment if the revised survey plan identifies that the land to be zoned R2 will include land containing the Littoral Rainforest Endangered Ecological Community vegetation or the Littoral Rainforest and Coastal Vine Thickets community*'.

On this basis, this assessment has been prepared to:

- Identify any ecological constraints to the proposed rezoning (e.g. habitat for threatened species or ecological communities listed in the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- Identify any significant trees or fauna habitat features of biodiversity importance; and
- Examine the proposal against relevant statutory requirements.

## 1.2 The Site

The site comprises Lot 1 DP781542 and Lot 3 DP525783, 23 Compton Drive, Ballina (Ballina Shire Council Local Government Area; BSC LGA – refer to **Illustration 1.1**). The land has a combined approximate area of approximately 696m<sup>2</sup> according to the BSC Interactive Mapping (Intramaps; accessed 11/10/2019) with:

- Lot 1 covering an area of 158.1m<sup>2</sup>.
- Lot 3 covering an area of 537.5m<sup>2</sup>.

The site is located at the base of a steep slope and has a south-east aspect. The south-eastern portion of the site fronts Compton Drive and contains existing cleared/developed land, including:


- A concrete slab on Lot 1.
- A former restaurant on Lot 3.

The steeper north-western portion of the site is heavily vegetated. A survey plan of the site is provided in **Appendix A** while photographs of the site are provided at **Appendix B**.

The site is identified on the Ballina Local Environmental Plan 2012 (BLEP 2012) maps as 'Deferred Matter'; therefore the Ballina Local Environmental Plan 1987 (BLEP 1987) zoning applies. The site is currently zoned 7(d) Environmental Protection (Scenic/Escarpment).

Land adjoining the site includes:

- South-east: Compton Drive then the Shaws Bay foreshore.
- South-west: Vacant vegetated land with pedestrian access (footpath and stairs) between Compton Drive and Hill Street.
- North-west: A strip of vegetation then urban residences along Hill Street.

- 
- North-east: residences fronting Compton Drive and vegetation on the steeper slopes.

### **1.3 Biodiversity Values**

The site does not contain any areas of land mapped as being of Biodiversity Value (as per the OEH Biodiversity Values Map and Threshold Tool; accessed 11/10/2019).

### **1.4 The Proposal**

The proposal is to:

- Rezone Lot 1 DP781542 and Lot 3 DP525783 from 7(d) Environmental Protection (Scenic/Escarpment) to R2 Low Density Residential;
- Apply a 600m<sup>2</sup> minimum lot size and 8.5m maximum building height to the land rezoned R2; and
- Make consequent changes to the Land Application Map and Acid Sulfate Soils Map in the Ballina LEP 2012.

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**LEGEND**

- The site
- Cadastre

0 10 Metres



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Ecological Assessment - Lot 1 DP781542 and Lot 3 DP525783 Compton Drive  
Proposed Rezoning  
3466-1003

GDA 1994 MGA Zone 56

**The Site - Illustration 1.1**

*Information shown is for illustrative purposes only*  
 Drawn by: DSA Checked by: AB Reviewed by: AB  
 Source of base data: ESRI WorldImagery  
 Date: 16/10/2019



## 2. Methodology

### 2.1 Desktop Review

The following desktop review was completed prior to field assessment:

- A search of the BioNet Wildlife Atlas (10km x 10km grid centred on the site); completed 11 October 2019.
- A search of the Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES) within a 5km radius of the site; completed 11 October 2019.
- Review of Biodiversity Value mapping (as per the OEH Biodiversity Values Map and Threshold Tool).
- Review of the *Ballina Shire Koala Management Strategy* (BSC 2016).

Details of the methodology used for field assessment are provided in **Section 2.2**.

### 2.2 Field Assessment

Field assessment was completed on 16 October 2019, using the following methodology:

- Walking survey to identify and map vegetation types and search for threatened flora or ecological communities listed in the BC Act or EPBC Act.
- Develop a flora species list for the site.
- Identification of significant fauna habitat features (e.g. hollow-bearing trees, nests, significant foraging resources).
- Searches for Koala scats under preferred Koala feed trees.

A total of 1.5 hours of site survey was undertaken. Given the small area of the site, the scope of assessment is considered adequate.



## 3. Vegetation

### 3.1 Desktop Analysis

#### 3.1.1 Database Search Results

BioNet search results identified records of 23 threatened flora species (including 13 species also listed in the EPBC Act) and ten threatened ecological communities; three of which are listed under the EPBC Act within or with potential to occur within a 10x10km area centred on the site (refer to **Appendix C**). PMST results identified habitat for 26 threatened flora species and three threatened ecological communities within a 5km radius of the site. These species were target species during threatened flora surveys.

### 3.2 Site Features

#### 3.2.1 Vegetation

The site comprises two distinct areas (**Illustration 3.1**):

- Cleared/developed land in the south-eastern portion of the site, including the existing building, concrete slab and gardens. This area is of no floristic conservation value.
- Littoral rainforest in the steeper north-western portion of the site, covering an area of approximately 340m<sup>2</sup>.

The littoral rainforest comprises Plant Community Type (PCT) 1275: *Tuckeroo - Riberry - Yellow Tulipwood littoral rainforest of the NSW North Coast Bioregion*. The structure and floristic composition of this community is as follows:

**Canopy:** Dominated by Three-veined Laurel (*Cryptocarya triplinervis*) and Tuckeroo (*Cupaniopsis anacardioides*). Cover is around 60% with trees up to 15m tall and 0.4m diameter at breast height (DBH).

**Mid-storey:** Dominated by Green Bolly Gum (*Neolitsea australiensis*) and canopy saplings with a mix of rainforest shrubs and vines including Blue Lilly Pilly (*Syzygium oleosum*), Wax Vine (*Hoya australis*), Guioa (*Guioa semiglauc*), Lawyer Vine (*Smilax australis*), Coffee Bush (*Breynia oblongifolia*), Winter Senna (*Senna pendula* var. *glabrata*\*), Whip Vine (*Flagellaria indica*), Cockspur Thorn (*Maclura cochinchinensis*), Beach Acronychia (*Acronychia imperforata*) and Beach Alectryon (*Alectryon coriaceus*). Mid-storey cover is around 30% and often interconnected with the canopy.

**Groundcover:** Dominated by Asparagus Fern (*Asparagus aethiopicus*), with occasional upper strata saplings and groundcover species including Blue Flax Lily (*Dianella caerulea*) and Birds Nest Fern (*Asplenium australasicum*). Foliage cover is around 40%.

A list of flora species for the site (excluding ornamental species) is provided in **Table 3.1**.

**Table 3.1 Flora Species List**

<b>Family</b>	<b>Species</b>	<b>Common Name</b>
Apocynaceae	<i>Hoya australis</i>	Wax Vine
Asparagaceae	<i>Asparagus aethiopicus</i> <sup>**</sup>	Asparagus Fern
Aspleniaceae	<i>Asplenium australasicum</i>	Birds Nest Fern
Asteliaceae	<i>Cordyline stricta</i>	Narrow-leaved Palm Lily
Asteraceae	<i>Ageratina adenophora</i> <sup>*</sup>	Crofton Weed
Basellaceae	<i>Anredera cordifolia</i> <sup>**</sup>	Madeira Vine
Bignoniaceae	<i>Pandorea pandorana</i>	Wonga Wonga Vine
Commelinaceae	<i>Commelina cyanea</i>	Scurvy Weed
Convolvulaceae	<i>Ipomoea cairica</i> <sup>*</sup>	Coast Morning Glory
Euphorbiaceae	<i>Breynia oblongifolia</i>	Coffee Bush
Fabaceae (Caesalpinioideae)	<i>Senna pendula</i> var. <i>glabrata</i> <sup>*</sup>	Winter Senna
Flagellariaceae	<i>Flagellaria indica</i>	Whip Vine
Lauraceae	<i>Cryptocarya triplinervis</i> var. <i>triplinervis</i>	Three-veined Laurel
Lauraceae	<i>Neolitsea australiensis</i>	Green Bolly Gum
Loranthaceae	<i>Amyema</i> sp.	Mistletoe
Luzuriagaceae	<i>Geitonoplesium cymosum</i>	Scrambling Lily
Menispermaceae	<i>Stephania japonica</i> var. <i>discolor</i>	Snake Vine
Moraceae	<i>Maclura cochinchinensis</i>	Cockspur Thorn
Moraceae	<i>Trophis scandens</i> subsp. <i>scandens</i>	Burny Vine
Myrtaceae	<i>Syzygium hemilampra</i>	Broad-leaved Lilly Pilly
Myrtaceae	<i>Syzygium oleosum</i>	Blue Lilly Pilly
Ochnaceae	<i>Ochna serrulata</i> <sup>*</sup>	Mickey Mouse Plant
Oleaceae	<i>Notelaea longifolia</i>	Large Mock-olive
Phormiaceae	<i>Dianella caerulea</i>	Blue Flax lily
Pittosporaceae	<i>Pittosporum revolutum</i>	Rough Fruit Pittosporum
Putranjivaceae	<i>Drypetes deplanchei</i>	Yellow Tulip
Rutaceae	<i>Acronychia imperforata</i>	Beach Acronychia
Rutaceae	<i>Murraya paniculata</i> <sup>*</sup>	Murraya
Sapindaceae	<i>Alectryon coriaceus</i>	Beach Alectryon
Sapindaceae	<i>Cupaniopsis anacardioides</i>	Tuckeroo
Sapindaceae	<i>Guioa semiglauc</i>	Guioa
Smilacaceae	<i>Smilax australis</i>	Lawyer Vine
Solanaceae	<i>Solanum nigrum</i> <sup>*</sup>	Blackberry Nightshade
Verbenaceae	<i>Lantana camara</i> <sup>**</sup>	Lantana
Vitaceae	<i>Cissus antarctica</i>	Water Vine

\* denotes exotic flora.

^ denotes priority weed species for the North Coast listed under the *Biosecurity Act 2015*.



### 3.2.2 Threatened Flora

The site contains potential habitat for a number of locally recorded threatened flora species known to occur in littoral rainforest such as Scented Acronychia (*Acronychia littoralis*), Stinking Cryptocarya (*Cryptocarya foetida*) and Native Guava (*Rhodomyrtus psidioides*). However, no threatened flora species listed under the BC Act or EPBC Act were recorded at the site.

### 3.2.3 Threatened Ecological Communities

The littoral rainforest vegetation at the site comprises the following threatened ecological communities (TECs):

- *Littoral rainforests and coastal vine thickets of eastern Australia* TEC - listed under the EPBC Act.
- *Littoral rainforest in the NSW North Coast, Sydney Basin and South East Corner bioregions* TEC - listed under the BC Act.

Consequently the littoral rainforest occurring at the site is of high biodiversity conservation value.

The cleared area in the south-eastern portion of the site is does not comprise any TECs.

### 3.2.4 Priority Weeds

The site includes a number of environmental weed species, including the following Priority Weeds as listed in the *Biosecurity Act 2015* for the North Coast:

- Asparagus Fern (*Asparagus aethiopicus*). Duty: The plant or parts of the plant should not be traded, carried, grown or released into the environment.
- Madeira Vine (*Anredera cordifolia*). Duty: Must not be imported into the State or sold.
- Lantana (*Lantana camara*). Duty: Must not be imported into the State or sold.

Relevant biosecurity duties must be enacted by land managers for weeds listed as Priority Weeds under the Biosecurity Act.

### 3.2.5 Condition

The condition of the site is described as follows:

- Cleared/developed land in the south-eastern portion of the site: highly modified and disturbed.
- Littoral rainforest in the north-western portion of the site: Moderate condition with weeds and edge effects apparent.



# LEGEND

- The site
- Littoral Rainforest (PCT1275)
- Cadastre

GDA 1994 MGA Zone 56

0 5 Metres

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Ecological Assessment - Lot 1 DP781542 and Lot 3 DP525783 Compton Drive  
Proposed Rezoning  
3466-1004

## Vegetation Plan - Illustration 3.1

*Information shown is for illustrative purposes only*  
Drawn by: DSA Checked by: AB Reviewed by: AB  
Source of base data: ESRI WorldImagery  
Date: 16/10/2019



## 4. Fauna Habitat

### 4.1 Desktop Analysis

#### 4.1.1 Database search results

BioNet search results identified records of 61 threatened fauna species listed under the BC Act and/or EPBC Act within the 10x10km search area centred on the site (excluding marine species and seabirds; refer to **Appendix B**). PMST results identified habitat for 29 threatened fauna species (excluding marine species and seabirds) and 39 migratory fauna species (6 migratory terrestrial species and 33 migratory wetland species; marine species are excluded) within the 5km radius search area around the site.

#### 4.1.2 BSC Koala Management Strategy

Under the BSC (2016) *Koala Management Strategy*, the site is not located on land mapped:

- Within an area supporting an 'important population' of Koalas.
- Within a 'Koala Planning Area'.
- As potential Koala habitat.

### 4.2 Site Features

#### 4.2.1 Habitat Values

The littoral rainforest on site forms part of a larger stand of forest on the steeper slopes of East Ballina, surrounded by developed urban land. It provides rainforest structured vegetation that includes foraging resources (nectar/pollen, fruit and seed) and/or shelter for terrestrial fauna, as part of a larger area of similar habitat. The limited floristic diversity of the site and location in an urban environment reduces the fauna habitat values of the site.


The following key fauna habitat features are absent from the site:

- Trees with well developed hollows that provide denning/nesting/roosting habitat for hollow-obligated species.
- Significant nectar and pollen resources.
- Complex floristic diversity.
- Aquatic habitat.
- Large emergent trees.
- Koala food trees.

Shaws Bay is located on the opposite site of Compton Drive (20m south-east of the site) and provides an estuarine bay environment.

#### 4.2.2 Potential Threatened Fauna Occurrence

The threatened fauna potential occurrence assessment (**Appendix D**) considers the potential for locally recorded threatened fauna species to occur on site giving consideration to the habitat on site.



Nine threatened fauna species were considered potential occurrences on site within the littoral rainforest habitat:

- Barred Cuckoo-shrike (*Coracina lineata*).
- Rose-crowned Fruit-dove (*Ptilinopus regina*).
- Superb Fruit-dove (*Ptilinopus superb*).
- Little Bentwing-bat (*Miniopterus australis*).
- Large Bentwing-bat (*Miniopterus orianae oceanensis*).
- Eastern Long-eared Bat (*Nyctophilus bifax*).
- Grey-headed Flying-fox (*Pteropus poliocephalus*).
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).
- Common Blossom-bat (*Syconycteris australis*).

It is unlikely that the local population of any of these species would be dependant on the habitat on site given their mobility, the limited extent of potential habitat on site and the extent of alternative habitat locally. The existing cleared/developed portion does not provide significant habitat value for any threatened fauna species.

Shaws Bay provides potential habitat for a number of other threatened fauna species associated with estuarine environments (e.g. Eastern Osprey *Pandion cristatus* and Black-necked Stork (*Ephippiorhynchus asiaticus*), however the site does not provide significant habitat value for these species.

#### **4.2.3 Migratory Species Threatened Fauna Occurrence**

EPBC Act listed migratory species with potential to occur in the littoral rainforest on site include:

- Oriental Cuckoo (*Cuculus optatus*): Potential foraging habitat.
- Black-faced Monarch (*Monarcha melanopsis*) : Potential foraging and nesting habitat.
- Spectacled Monarch (*Monarcha trivirgatus*): Potential foraging and nesting habitat.
- Rufous Fantail (*Rhipidura rufifrons*): Potential foraging and nesting habitat.

The site does not comprise EPBC Act defined important habitat for any of these species. The existing cleared/developed portion of the site does not provide significant habitat value for any EPBC Act listed migratory species. Shaws Bay may provide potential foraging habitat for a number of EPBC Act listed migratory wetland species, however habitat for such species does not occur on site.



## 5. Impacts

### 5.1 Biodiversity Constraints

The existing cleared/developed land in the south-east of the site does not have significant ecological value, therefore is free of biodiversity constraints for residential rezoning and development. The littoral rainforest in the north-western portion of the site constitutes BC Act and EPBC Act listed TECs; posing a constraint to the development of this land. This habitat also provides potential habitat for a number of locally recorded threatened and migratory fauna species associated with this habitat type.

### 5.2 Potential Impacts of Rezoning and Development

Residential rezoning and future development within the existing cleared/developed portion of the site would have minimal biodiversity impact, though some direct impacts to the littoral vegetation on the edge of this area is likely through:

- Establishment and maintenance of the Asset Protection Zone (APZ) to the north-west (3.4-4m for BAL-40 or 4-6m for BAL29; BCA 2019).
- Removal of overhanging trees.

It is estimated that approximately 130m<sup>2</sup> of littoral rainforest would be impacted. Selective tree retention within the APZ would lessen these impacts. Additionally, as the understorey along the vegetation is highly disturbed, the actual extent of littoral rainforest impacted may be less.

Other key potential impacts from residential development on the site would include:

- Increased edge effects and weed invasion in retained vegetation. This is unlikely to be detrimental for the retained vegetation given the historic and adjoining land uses.
- Incremental loss or modification of retained vegetation. Legal mechanisms could be applied as part of a future DA or consent conditions to minimise the risk of such impacts.

These impacts are considered unlikely to trigger a significant impact on any threatened species or TECs, and can be managed such that biodiversity impacts may be minimised.



## 6. Statutory Requirements

The following sections examine the findings of the site assessment with regard to relevant statutory requirements which require consideration for the development application.

### 6.1 Ballina Shire DCP 2012

Section 3.3 *Natural Areas and Habitat* of the *Ballina Shire Development Control Plan (DCP) 2012 – Chapter 2 – General Environmental Considerations* relates to biodiversity and would apply to residential development of the site due to the site being mapped as *Natural Areas and Habitat* and *Wildlife Corridors* under the DCP. The planning objectives of this section are:

- a) *Protect and enhance ecologically significant areas;*
- b) *Provide for development that is compatible with ecological values and that minimises risk to ecologically sensitive environments; and*
- c) *Encourage development that contributes to the maintenance, enhancement or rehabilitation of environmental values and ecologically sensitive areas.*

Development controls applicable to future development of the site include:

- i. *Development is to be sited, designed and managed to avoid or mitigate potential adverse impacts on natural areas and habitat;*
- ii. *All development (except dwellings, basic agricultural buildings and routine agricultural management activities) must demonstrate a net environmental benefit;*
- iii. *A development application for land containing a wildlife corridor, must demonstrate a long term net benefit to the operation and retention of the wildlife corridor. Compliance with this provision may also meet the requirements of (ii);*
- iv. *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. If habitat is proposed to be removed or impacted as part of a development, an offset for the loss of biodiversity may be considered by Council provided it can be demonstrated that the proposed offset will maintain or improve biodiversity outcomes and values.*
- v. *Development applications relating to land to which this section applies are to be accompanied by an ecological assessment report prepared by an appropriately qualified and experienced professional.*

### 6.2 State Environmental Planning Policy (SEPP) 44 – Koala Habitat Protection

SEPP 44 applies to all LGAs listed under Schedule 1 of the Policy, which includes the BSC LGA and where land is >1ha in area. The Policy does not apply to the site due to the land being <1ha in area.

### 6.3 Biodiversity Conservation Act 2016 (BC Act)

The BC Act requires a test of significance (five-part test) when assessing whether an action, development or activity is likely to significantly affect threatened species, ecological communities or their habitats. Based on the potential for several threatened fauna species to occur at the site and the presence of littoral rainforest TEC, tests of significance would be required for any future development

of the site should the rezoning proceed and require vegetation removal. Through minimising impacts to the littoral rainforest, the risk of a significant impact on any threatened species or TEC would be low.

Given that any future proposal to develop the site would be unlikely to require substantial native vegetation loss, and that the site is not mapped as containing biodiversity value land as per the Biodiversity Values Map and Threshold Tool, the Biodiversity Offsets Scheme (BOS) would not be triggered. It is noted that the minimum lot size proposed for the site is 600m<sup>2</sup>, and hence up to 0.25ha of native vegetation may be cleared before triggering the BOS.

On this basis, future rezoning and development of the site is unlikely to require a *Biodiversity Development Assessment Report* (BDAR).

## 6.4 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)


The EPBC Act protects/ regulates matters of national environmental significance (MNES), including:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining)
- A water resource, in relation to coal seam gas development and large coal mining development.

Based on the search results and site assessment, significant impacts to any MNES would not be likely to result from the proposal (refer to **Table 6.1**).

**Table 6.1 Assessment of MNES**

<b>Matter</b>	<b>Potential impact</b>
<b><i>Any impact on a World Heritage property?</i></b>	
No World Heritage properties occur within a 5km radius of the site.	Nil
<b><i>Any impact on a National Heritage place?</i></b>	
No National Heritage places occur within a 5km radius of the site.	Nil
<b><i>Any impact on a Wetland of International Importance?</i></b>	
No wetlands of international importance (Ramsar sites) occur within a 5km radius of the site.	Nil
<b><i>Any impact on the Great Barrier Reef Marine Park?</i></b>	
The Great Barrier Reef Marine park is distant from the site.	Nil
<b><i>Any impact on a Commonwealth marine area?</i></b>	
No Commonwealth marine areas occur within a 5km radius of the site.	Nil
<b><i>Any impact on nationally threatened species and ecological communities?</i></b>	
The littoral rainforest on site comprises the EPBC Act TEC <i>Littoral rainforests and coastal vine thickets of eastern Australia</i> .	There is potential for development of existing
No EPBC Act listed threatened flora species occur on site.	



<b>Matter</b>	<b>Potential impact</b>
<p>The site provides potential foraging habitat for the Grey-headed Flying-fox. No known camps occur at or adjacent to the site. No other threatened fauna species are likely to occur on the site. While some species have potential to occur at Shaws Bay, the site is of negligible habitat value for these species.</p> <p>Impacts from the proposed residential rezoning and subsequent development on this lot would depend on the final lot layout. Development of the existing developed south-eastern portion of the site could be achieved with minimal impact to these TECs or threatened species habitat.</p>	clearing/ developed areas with minimal impact to this matter.
<b><i>Any impact on Migratory species?</i></b>	
Refer to <b>Section 4.2.3</b> . The site does not comprise EPBC Act defined important habitat for any migratory species. Migratory species are unlikely to be significantly affected by the proposal.	Negligible



## 7. Recommendations and Future Requirements

### 7.1 Rezoning Recommendations

The following recommendations should be considered as part of the proposed rezoning and development of the site:

- The design of any future development of the site should aim to minimise impacts to the littoral rainforest (TEC) vegetation.
- Consideration should be given to applying for DCP building setbacks to be waived in the south-eastern portion of the site along Compton Drive to minimise impacts to the littoral rainforest vegetation in the north-western portion of the site (subject to other planning consideration).
- Mechanisms to protect retained vegetation (outside the building envelope and APZ) should form part of any future development application.

### 7.2 Future Requirements

Based on the site assessment, the proposed rezoning could achieve relatively low impacts on biodiversity, through minimising impacts to the littoral rainforest and centring the development in the existing cleared/ developed area. In the event the rezoning proposal is accepted, the following requirements would need to be addressed for any future proposal to develop the site:

- Incorporate the recommendations of this assessment as part of future design/ layout where possible.
- Determine the need for offset provisions in accordance with *Section 3.3 Natural Areas and Habitat* of the Ballina DCP Chapter 2 – General Environmental Considerations. There is limited room for replanting on site, however bush regeneration within the retained vegetation could be undertaken.
- Complete Tests of Significance ('five part tests') under Section 7.3 of the BC Act for threatened species and TECs known to occur or considered as having potential to occur at the site.



## References

BCA (2019). *Bush Fire Assessment Report - 23 Compton Drive, East Ballina, NSW*. Bushfire Consultancy Australia.

BSC (2016). *Ballina Shire Koala Management Strategy*. Ballina Shire Council.

Department of the Environment (Cth) (2018). Protected Matters Search Tool: [Accessed 11/10/2019]

NSW Office of Environment and Heritage (2019). *NSW BioNet Database Search Tool*. [Accessed 11/10/2019].



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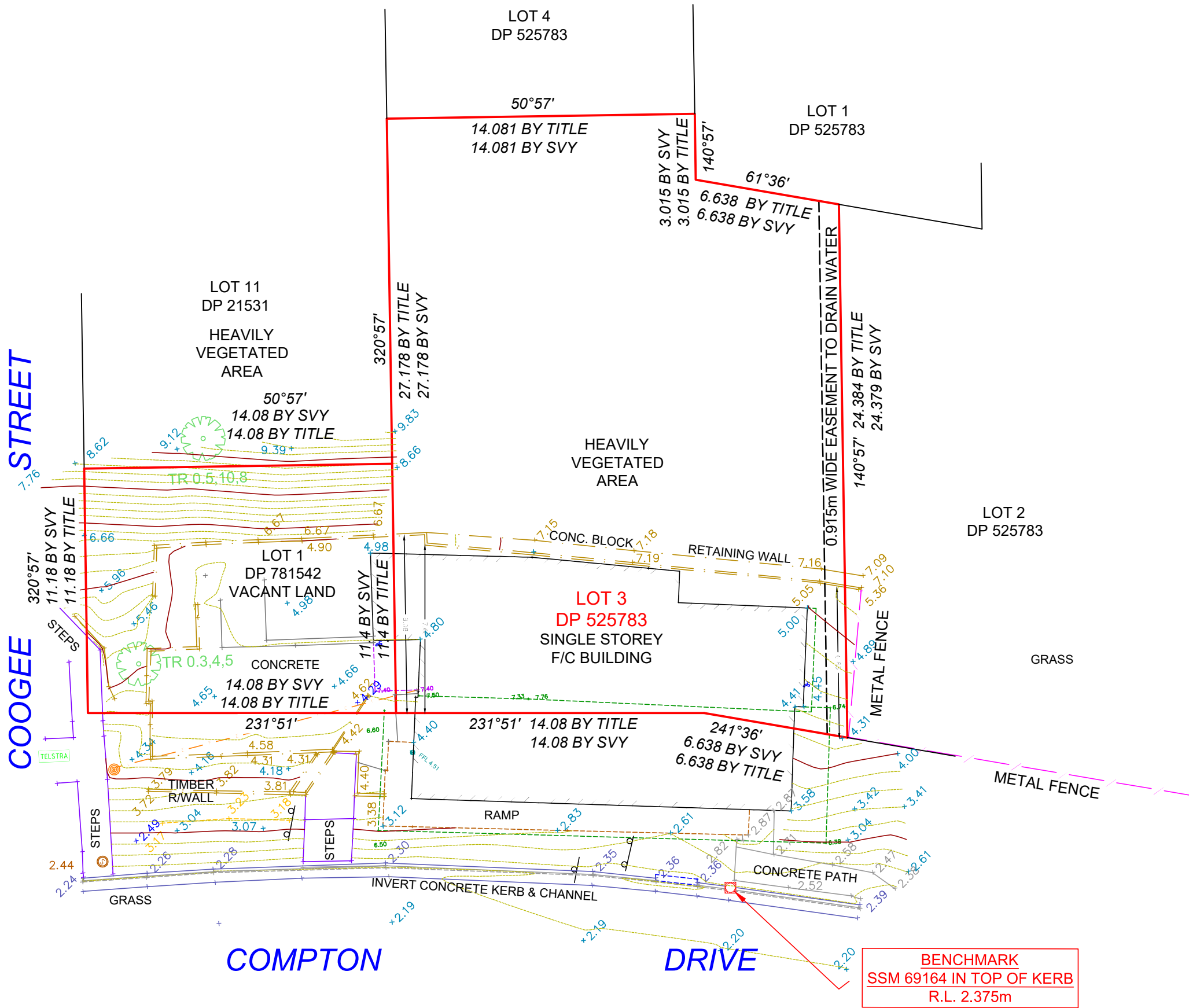
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## **Appendix A**

# **Survey Plan**



Neil A. Kennedy  
Registered Surveyor

NOTES

1. THE DEPICTION OF CADASTRAL BOUNDARY INFORMATION (WHETHER GRAPHICAL OR ANALYTICAL) CONSTITUTES A LAND SURVEY UNDER THE SURVEYING AND SPATIAL INFORMATION ACT 2002 AND CAN ONLY BE UNDERTAKEN AND PRESENTED BY A REGISTERED SURVEYOR REGISTERED UNDER THE ACT.

THE SIGNATURE ENDORSEMENT OF THIS PLAN BY THE REGISTERED SURVEYOR IS THE GUARANTEE THAT THIS LAND SURVEY HAS BEEN CONDUCTED IN ACCORDANCE WITH THE PROVISIONS OF THE SURVEYING AND SPATIAL INFORMATION ACT (2002) & REGULATION (2017).

2. FOR THIS PARTICULAR LAND SURVEY, THE CADASTRAL BOUNDARY POSITION HAS BEEN DETERMINED BY THE REGISTERED SURVEYOR TO AN APPROXIMATE ACCURACY OF +/- 0.50.

CRITICAL FEATURES ON THIS PLAN MUST BE VERIFIED BY THE USER AS TO THE ACCURACY REQUIRED FOR THE INTENDED PURPOSE.

3. TITLE DENOTES DISTANCE AS SHOWN ON TITLE PLAN.

SVY DENOTES DISTANCE DETERMINED BY SURVEY.

4. ONLY VISIBLE SERVICES HAVE BEEN LOCATED. UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED. A "DIAL BEFORE YOU DIG" SERVICES LOCATION SEARCH SHOULD BE CONDUCTED PRIOR TO ANY EXCAVATION WORKS.

5. SPOT LEVELS & CONTOURS INDICATE GENERAL TOPOGRAPHY. DO NOT SCALE OR INFER ACCURATE LEVELS. CONTOUR INTERVAL:

MAJOR 1.0m

MINOR 0.2m

6. LEGEND

- SUBJECT LOT BOUNDARY

- APPROX. ADJOIN. LOT BOUNDARY

- RAMP

- RETAINING WALL

- BUILD GUTTER

- BUILD WALL

- EASEMENT

- FENCE

- KERB LIP

- KERB BACK

- KERB INVERT

- KERB TOP

- CONCRETE

- STEPS

- BUILD RIDGE

- OVERHEAD ELECTRICITY

- ROAD SIGN

- WATER TAP

- SEWER PIT

- SPOT LEVEL ON NATURAL SURFACE

- POWER POLE

- TELSTRA PIT
7. THIS PLAN HAS BEEN PREPARED FOR KRISTIAN MOON.
8. THIS PLAN REPRESENTS A COPY OF INFORMATION SUPPLIED IN .DWG/.DXF FORMAT. THIS INFORMATION SHOULD BE VERIFIED AGAINST THIS PLAN. DIGITAL DATA ASSOCIATED WITH THIS PLAN IS SUBJECT TO CONDITIONS CONTAINED IN THESE NOTES.
9. THESE NOTES FORM AN INTEGRAL PART OF THIS PLAN AND AS SUCH MUST REMAIN WITH THE PLAN IN REPRODUCTION.

Prepared by:  
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SCALE: 1:150 ORIG: A3		
REV	DATE	DESCRIPTION
1	22.05.2019	ORIGINAL ISSUE
2	24.05.2019	AMEND BOUNDARY
3	12.07.2019	ADDITIONAL SURVEY

HORIZONTAL DATUM:	M.M.
ORIGIN:	DP525783
VERTICAL DATUM:	A.H.D.
ORIGIN:	SSM 69164
REDUCED LEVEL:	2.370m
SCIMS DATE:	02.05.2019

JOB No:	19036
SURVEYED BY:	AC
FIELD BOOK:	IN FILE
DATE OF SURVEY:	03.05.2019
DRAWN:	PDJ
PASSED:	LF

TITLE: SKETCH SHOWING CONTOURS AND DETAIL	
SITE: LOT 3 IN DP 525783 No. 23 COMPTON DRIVE EAST BALLINA. 2478.	
CLIENT: KRISTIAN MOON	DWG No: 19036A.DWG
	SHEET 1 of 1 REV 3

## Appendix B

### Photographs

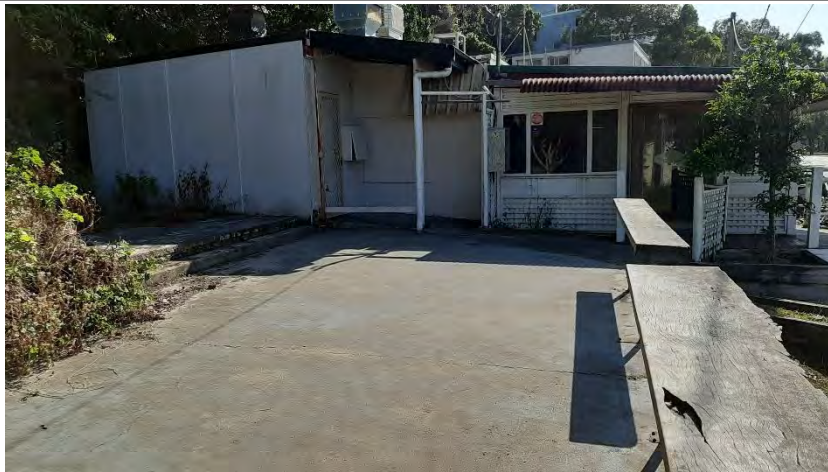


Plate 1. Developed south-eastern portion of the site (viewed south-west to north-east).



Plate 2. Littoral Rainforest vegetation in north-western portion of the site.



Plate 3. Lot 3 viewed from Compton Drive showing developed south-eastern portion of the site in the foreground and the littoral rainforest vegetation in the background.



Plate 4. Lot 3 viewed from the northern boundary with littoral rainforest vegetation in the foreground, the roof of the existing building in the mid-ground and Shaws Bay in the background.



Plate 5. The disturbed interface between the littoral rainforest and existing cleared/developed portion of the site.



## Appendix C

# BioNet Database Search Results

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Â°; ^^ rounded to 0.01Â°). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Licensed Report of all Valid Records of Threatened (listed on TSC Act 1995) or Commonwealth listed Entities in selected area [North: -28.81 West: 153.53 East: 153.63 South: -28.91] returned a total of 3,701 records of 100 species.

Report generated on 11/10/2019 2:28 PM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records
Animalia	Amphibia	Myobatrachidae	3137	<i>Crinia tinnula</i>	Wallum Froglet	V,P		9
Animalia	Amphibia	Hylidae	3166	<i>Litoria aurea</i>	Green and Golden Bell Frog	E1,P	V	1
Animalia	Reptilia	Cheloniidae	2004	<i>Caretta caretta</i>	Loggerhead Turtle	E1,P	E	5
Animalia	Reptilia	Cheloniidae	2007	<i>Chelonia mydas</i>	Green Turtle	V,P	V	7
Animalia	Reptilia	Cheloniidae	2008	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	P	V	3
Animalia	Reptilia	Dermochelyidae	2013	<i>Dermochelys coriacea</i>	Leatherback Turtle	E1,P	E	5
Animalia	Aves	Anseranatidae	0199	<i>Anseranas semipalmata</i>	Magpie Goose	V,P		2
Animalia	Aves	Anatidae	0200	<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	E1,P		2
Animalia	Aves	Anatidae	0214	<i>Stictonetta naevosa</i>	Freckled Duck	V,P		2
Animalia	Aves	Phaethontidae	0107	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	V,P	C	2
Animalia	Aves	Columbidae	0021	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V,P		3
Animalia	Aves	Columbidae	0023	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V,P		1
Animalia	Aves	Podargidae	0314	<i>Podargus ocellatus</i>	Marbled Frogmouth	V,P		1
Animalia	Aves	Diomedidae	0086	<i>Diomedea exulans</i>	Wandering Albatross	E1,P	E,J	1
Animalia	Aves	Diomedidae	0092	<i>Phoebastria fusca</i>	Sooty Albatross	V,P	V	1
Animalia	Aves	Diomedidae	0931	<i>Thalassarche bulleri</i>	Buller's Albatross	P	V	1
Animalia	Aves	Diomedidae	0091	<i>Thalassarche cauta</i>	Shy Albatross	V,P	V	1
Animalia	Aves	Procellariidae	0072	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	V,P	J,K	12
Animalia	Aves	Procellariidae	8684	<i>Pterodroma leucoptera leucoptera</i>	Gould's Petrel	V,P	E	1
Animalia	Aves	Procellariidae	0955	<i>Pterodroma nigripennis</i>	Black-winged Petrel	V,P		3
Animalia	Aves	Procellariidae	0971	<i>Pterodroma solandri</i>	Providence Petrel	V,P	J	2
Animalia	Aves	Procellariidae	0067	<i>Puffinus assimilis</i>	Little Shearwater	V,P		1
Animalia	Aves	Sulidae	0105	<i>Sula dactylatra</i>	Masked Booby	V,P	J,K	3
Animalia	Aves	Ciconiidae	0183	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		70
Animalia	Aves	Ardeidae	0197	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	4

Animalia	Aves	Ardeidae	0196	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		2
Animalia	Aves	Accipitridae	0218	<i>Circus assimilis</i>	Spotted Harrier	V,P		3
Animalia	Aves	Accipitridae	0223	<i>Erythrotriorchis radiatus</i>	Red Goshawk	E4A,P,2	V	3
Animalia	Aves	Accipitridae	0226	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	C	65
Animalia	Aves	Accipitridae	0225	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		17
Animalia	Aves	Accipitridae	8739	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		178
Animalia	Aves	Falconidae	0238	<i>Falco subniger</i>	Black Falcon	V,P		1
Animalia	Aves	Burhinidae	0174	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		20
Animalia	Aves	Burhinidae	0175	<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P		31
Animalia	Aves	Haematopodidae	0131	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V,P		36
Animalia	Aves	Haematopodidae	0130	<i>Haematopus longirostris</i>	Pied Oystercatcher	E1,P		263
Animalia	Aves	Charadriidae	0141	<i>Charadrius leschenaultii</i>	Greater Sand-plover	V,P	V,C,J,K	44
Animalia	Aves	Charadriidae	0139	<i>Charadrius mongolus</i>	Lesser Sand-plover	V,P	E,C,J,K	65
Animalia	Aves	Jacaniidae	0171	<i>Irediparra gallinacea</i>	Comb-crested Jacana	V,P		2
Animalia	Aves	Rostratulidae	0170	<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	1
Animalia	Aves	Scolopacidae	0166	<i>Calidris alba</i>	Sanderling	V,P	C,J,K	36
Animalia	Aves	Scolopacidae	0164	<i>Calidris canutus</i>	Red Knot	P	E,C,J,K	67
Animalia	Aves	Scolopacidae	0161	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	124
Animalia	Aves	Scolopacidae	0165	<i>Calidris tenuirostris</i>	Great Knot	V,P	CE,C,J,K	81
Animalia	Aves	Scolopacidae	0167	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	V,P	C,J,K	7
Animalia	Aves	Scolopacidae	8781	<i>Limosa lapponica baueri</i>	Bar-tailed Godwit (baueri)	P	V,C,J,K	4
Animalia	Aves	Scolopacidae	0152	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	17
Animalia	Aves	Scolopacidae	0149	<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K	165
Animalia	Aves	Scolopacidae	0160	<i>Xenus cinereus</i>	Terek Sandpiper	V,P	C,J,K	91
Animalia	Aves	Laridae	0972	<i>Gygis alba</i>	White Tern	V,P		6
Animalia	Aves	Laridae	0120	<i>Onychoprion fuscata</i>	Sooty Tern	V,P		9
Animalia	Aves	Laridae	9926	<i>Procelsterna cerulea</i>	Grey Ternlet	V,P		3
Animalia	Aves	Laridae	0117	<i>Sternula albifrons</i>	Little Tern	E1,P	C,J,K	117
Animalia	Aves	Cacatuidae	0265	<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V,P,2		3
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		1
Animalia	Aves	Tytonidae	0252	<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3		17
Animalia	Aves	Tytonidae	0250	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		1
Animalia	Aves	Alcedinidae	0327	<i>Todiramphus chloris</i>	Collared Kingfisher	V,P		2

Animalia	Aves	Meliphagidae	0610	<i>Lichenostomus fasciularis</i>	Mangrove Honeyeater	V,P		15
Animalia	Aves	Pomatostomidae	8388	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		2
Animalia	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		15
Animalia	Aves	Campephagidae	0428	<i>Coracina lineata</i>	Barred Cuckoo-shrike	V,P		1
Animalia	Mammalia	Dasyuridae	1045	<i>Planigale maculata</i>	Common Planigale	V,P		10
Animalia	Mammalia	Phascolarctidae	1162	<i>Phascolarctos cinereus</i>	Koala	V,P	V	20
Animalia	Mammalia	Burramyidae	1150	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		1
Animalia	Mammalia	Petauridae	1137	<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		1
Animalia	Mammalia	Pteropodidae	1280	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	36
Animalia	Mammalia	Pteropodidae	1294	<i>Syconycteris australis</i>	Common Blossom-bat	V,P		1
Animalia	Mammalia	Vespertilionidae	1372	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		2
Animalia	Mammalia	Vespertilionidae	1357	<i>Myotis macropus</i>	Southern Myotis	V,P		5
Animalia	Mammalia	Vespertilionidae	1336	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V,P		10
Animalia	Mammalia	Vespertilionidae	1369	<i>Phoniscus papuensis</i>	Golden-tipped Bat	V,P		1
Animalia	Mammalia	Vespertilionidae	1361	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		7
Animalia	Mammalia	Dugongidae	1558	<i>Dugong dugon</i>	Dugong	E1,P		1
Animalia	Mammalia	Balaenopteridae	1575	<i>Megaptera novaeangliae</i>	Humpback Whale	V,P	V	3
Plantae	Flora	Cunoniaceae	10943	<i>Davidsonia jerseyana</i>	Davidson's Plum	E1,2	E	1
Plantae	Flora	Cunoniaceae	10944	<i>Davidsonia johnsonii</i>	Smooth Davidson's Plum	E1	E	1
Plantae	Flora	Euphorbiaceae	8334	<i>Fontainea oraria</i>	Coastal Fontainea	E4A,2	E	28
Plantae	Flora	Fabaceae (Faboideae)	3032	<i>Sophora tomentosa</i>	Silverbush	E1		1
Plantae	Flora	Fabaceae (Mimosoideae)	7757	<i>Archidendron hendersonii</i>	White Lace Flower	V		13
Plantae	Flora	Flacourtiaceae	3114	<i>Xylosma terraereginae</i>	Queensland Xylosma	E1		1
Plantae	Flora	Lauraceae	3477	<i>Cryptocarya foetida</i>	Stinking Cryptocarya	V	V	42
Plantae	Flora	Lauraceae	8480	<i>Endiandra muelleri subsp. bracteata</i>	Green-leaved Rose Walnut	E1		2
Plantae	Flora	Meliaceae	3682	<i>Owenia cepiodora</i>	Onion Cedar	V	V	1
Plantae	Flora	Menispermaceae	3691	<i>Tinospora tinospoides</i>	Arrow-head Vine	V		4
Plantae	Flora	Myrtaceae	11894	<i>Gossia fragrantissima</i>	Sweet Myrtle	E1	E	1
Plantae	Flora	Myrtaceae	4284	<i>Rhodomyrtus psidioides</i>	Native Guava	E4A		3
Plantae	Flora	Myrtaceae	4290	<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V	V	1



Plantae	Flora	Myrtaceae	4292	<i>Syzygium moorei</i>	Durobby	V	V	1
Plantae	Flora	Orchidaceae	6630	<i>^Dendrobium melaleucaphilum</i>	Spider orchid	E1,P,2		2
Plantae	Flora	Orchidaceae	7077	<i>^Oberonia titania</i>	Red-flowered King of the Fairies	V,P,2		3
Plantae	Flora	Orchidaceae	4479	<i>^Peristeranthus hillii</i>	Brown Fairy-chain Orchid	V,P,2		3
Plantae	Flora	Orchidaceae	4480	<i>^Phaius australis</i>	Southern Swamp Orchid	E1,P,2	E	7
Plantae	Flora	Poaceae	4776	<i>Arthraxon hispidus</i>	Hairy Jointgrass	V	V	1773
Plantae	Flora	Primulaceae	11951	<i>Myrsine richmondensis</i>	Ripple-leaf Muttonwood	E1	E	4
Plantae	Flora	Proteaceae	5446	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V	V	10
Plantae	Flora	Psilotaceae	8164	<i>Psilotum complanatum</i>	Flat Fork Fern	E1,3		2
Plantae	Flora	Rutaceae	6457	<i>Acronychia littoralis</i>	Scented Acronychia	E1	E	24
Animalia	Mammalia	Miniopteridae	1346	<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P		13
Animalia	Mammalia	Miniopteridae	3330	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V		4

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Licensed Report of all Valid Records of Threatened (listed on TSC Act 1995) or Commonwealth listed Communities in selected area [North: -28.81 West: 153.53 East: 153.63 South: -28.91] returned 0 records for 10 entities. Report generated on 11/10/2019 2:37 PM

Kingdom	Common Name	NSW status	Comm. status	Records
Community	Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3		K
Community	Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	V	K
Community	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K
Community	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	CE	K
Community	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3	CE	K
Community	Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3	CE	K
Community	Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		K
Community	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		K
Community	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		K
Community	White Gum Moist Forest in the NSW North Coast Bioregion	E3		K




## **Appendix D**

# **Threatened Fauna Potential Occurrence Assessment**


**Table D.1 Threatened Fauna Potential Occurrence Assessment\***

\*Migratory/pelagic marine species identified in the search results are not assessed as no habitat occurs at the site


Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
<b>Avifauna</b>						
<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	E	-	Freshwater lakes, lagoons, swamps and dams, particularly those vegetated with waterlilies and other floating and submerged aquatic vegetation.	No suitable habitat.	Unlikely
<i>Anseranas semipalmata</i>	Magpie Goose	V	-	Shallow wetlands (<1 m deep), large swamps and dams with dense growth of rushes or sedge.	No suitable habitat.	Unlikely
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Permanent freshwater wetlands with tall dense vegetation, particularly bullrushes and spikerushes.	No suitable habitat.	Unlikely
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	Lightly timbered open forest and woodland, and partly cleared farmland with woodland remnants, preferring areas with dry leaf-litter, fallen timber and sparse ground cover.	Low	Low
<i>Calidris alba</i>	Sanderling	V	-	Low beaches of firm sand, often near reefs and occasionally inlets and tidal mudflats.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Calidris canutus</i>	Red Knot	-	E	Sheltered coasts on mudflats and sandbars of estuaries, harbors, lagoons; occasionally on beaches, reefs.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE	CE	Tidal mudflats, sandy ocean shores and occasionally inland freshwater or salt-lakes.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Calidris tenuirostris</i>	Great Knot	V	-	Tidal mudflats, sandy ocean shores and occasionally inland freshwater or salt-lakes.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V	-	Sheoaks in coastal forests and woodlands, timbered watercourses, and moist and dry eucalypt forests of the coast and the Great Divide up to 1,000 m.	Low	Low
<i>Charadrius leschenaultii</i>	Greater Sand Plover	V	-	Wide sandy beaches, mangroves, saltmarsh, mudflats and exposed reefs.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Charadrius mongolus</i>	Lesser Sand Plover	V	E	Mudflats, wide sandy beaches, estuaries and tidal areas in mangroves.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.




Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
<i>Circus assimilis</i>	Spotted Harrier	V	-	Grassy open woodland, inland riparian woodland, grassland and shrub steppe.	Low	Low
<i>Coracina lineata</i>	Barred Cuckoo-shrike	V	-	Rainforest, eucalypt woodlands, swamp woodlands and timber along watercourses.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	Low
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-	Swamps, mangroves, mudflats, dry floodplains.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Erythrotriorchis radiatus</i>	Red Goshawk	CE	V	Along or near watercourses, swamp forest and woodlands on the coastal plain.	Low	Low
<i>Esacus magnirostris</i>	Beach Stone-curlew	CE	-	Tidal flats at the mouth of estuaries or on open beaches.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Falco subniger</i>	Black Falcon	V	-	Widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In NSW there is assumed to be a single population that is continuous with a broader continental population	Low	Low
<i>Gavicalis fasciolaris</i>	Mangrove Honeyeater	V	-	Mangrove forest, also near coastal forests and woodlands including casuarina and paperbark swamps.	Low suitability on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	Forages in open Eucalyptus forest and woodland; also feeds on Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Low	Low
<i>Gygis alba</i>	White Tern	V	-	Marine environments, coastal tall open forest up to 1 km inland.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V	-	Intertidal rocky and coral reefs, mostly ocean shores.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Haematopus longirostris</i>	Pied Oystercatcher	E	-	Open beaches, intertidal flats, sandbanks and occasionally rocky headlands.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.




Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle	V	-	Coastal habitats and around terrestrial wetlands characterised by the presence of large areas of open water (larger rivers, swamps, lakes, ocean). Habitats may include freshwater swamps, lakes, reservoirs, billabongs, saltmarsh and sewage ponds in addition to bays and inlets, beaches, reefs, lagoons, estuaries and mangroves.	No foraging habitat on site. No known or likely nesting sites on site. Potential habitat at Shaws Bay and surrounding emergent trees.	Low on site.
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	Open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used.	Low	Low
<i>Irediparra gallinacea</i>	Comb-crested Jacana	V	-	Among vegetation floating on slow-moving rivers and permanent lagoons, swamps, lakes and dams.	No suitable habitat.	Unlikely
<i>Ixobrychus flavicollis</i>	Black Bittern	V	-	Dense vegetation fringing and in streams, swamps, tidal creeks and mudflats, particularly amongst swamp sheoaks and mangroves.	No suitable habitat.	Unlikely
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	V	-	Tidal mudflats in coastal estuaries and lagoons, mudflats adjacent to mangroves for feeding.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Limosa lapponica baueri</i>	Black-tailed Godwit (baueri)	-	V	Found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms. Often occurs around beds of seagrass, and sometimes in nearby saltmarsh or the outer margins of mangrove areas.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Limosa limosa</i>	Black-tailed Godwit	V	-	Tidal mudflats, sandspits, swamps, shallow river-margins and reservoirs.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Numenius madagascariensis</i>	Eastern Curlew	-	CE	Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats and sometimes saltmarsh of sheltered coasts.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Onychoprion fuscata</i>	Sooty Tern	V	-	Breeds in large colonies in sand or coral scrapes on offshore islands and cays including Lord Howe and Norfolk Islands.	No suitable habitat on site.	Unlikely on site.
<i>Pandion cristatus</i>	Eastern Osprey	V	-	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. Typically occur in coastal areas but occasionally travel inland along major rivers. Wetland habitats include inshore	No foraging habitat on site. No known or likely nesting sites on site. Potential habitat	Low on site.



Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
				waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	at Shaws Bay and surrounding emergent trees.	
<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	V	-	Marine, coastal cliffs and under bushes in tropical Australia.	No suitable habitat on site.	Unlikely on site.
<i>Podargus ocellatus</i>	Marbled Frogmouth	V	-	Subtropical rainforest spending most time in deep, wet sheltered gullies.	Moderate in broad habitat terms in the littoral rainforest	Low, typically associated with subtropical rainforest
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	V	-	Open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.	Low	Low
<i>Procelsterna cerulea</i>	Grey Ternlet	V	-	Vagrant birds occasionally occur in coastal NSW waters, particularly after storm events.	No suitable habitat on site.	Unlikely on site.
<i>Ptilinopus regina</i>	Rose-crowned Fruit-dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Ptilinopus superbus</i>	Superb Fruit-dove	V	-	Subtropical and dry rainforest, moist eucalypt forest and swamp forest.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Rostratula australis</i>	Australian Painted Snipe	E	E	Well-vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub, and open timber.	No suitable habitat on or adjacent to the site.	Unlikely.
<i>Sternula albifrons</i>	Little Tern	E	-	Coastal waters, bays, shallow inlets, salt or brackish lakes.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<i>Stictonetta naevosa</i>	Freckled Duck	V	-	Permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. In drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	No suitable habitat on or adjacent to the site.	Unlikely.
<i>Todiramphus chloris</i>	Collared Kingfisher	V	-	Restricted to mangroves and other estuarine habitats, occur about mouths of larger coastal rivers.	Low suitability on site. Potential habitat at Shaws Bay	Unlikely on site.



Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
<i>Tyto longimembris</i>	Eastern Grass Owl	V	-	Areas of tall grass, including tussocks in swampy areas, grassy plains, swampy heath, cane grass, sedges on flood plains.	No suitable habitat on or adjacent to the site.	Unlikely.
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Dry eucalypt forest and woodlands.	Low	Low
<i>Xenus cinereus</i>	Terek Sandpiper	V	-	Tidal mudflats, estuaries, shores and reefs of offshore islands and coastal swamps.	No suitable habitat on site. Potential habitat at Shaws Bay	Unlikely on site.
<b>Mammals</b>						
<i>Phoniscus papuensis</i>	Golden-tipped Bat	V	-	Rainforest and adjacent sclerophyll forest. Roosts in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests.	Moderate in broad habitat terms	Low due to historic disturbance and urban setting.
<i>Cercartetus nanus</i>	Eastern Pygmy Possum	V	-	Range from rainforest to heath. North Coast mainly in rainforest, wet eucalypt forest and tee-tree-banksia scrub.	Moderate in broad habitat terms	Low due to historic disturbance and urban setting.
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	Moist and dry eucalypt forest and rainforest, particularly at high elevations.	Moderate in broad habitat terms	Low due to coastal location.
<i>Miniopterus australis</i>	Little Bentwing-bat	V	-	Moist eucalypt forest, rainforest and dense coastal scrub.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Miniopterus orianae oceanensis</i>	Large Bentwing-bat	V	-	Forest or woodland, roost in caves, old mines and stormwater channels.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Myotis macropus</i>	Southern Myotis	V	-	Bodies of water, rainforest streams, large lakes, reservoirs.	Low	Low on site. Shaws Bay provides potential foraging habitat.
<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V	-	Lowland subtropical rainforest and wet and swamp eucalypt forest, extending to adjacent moist eucalypt forest.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Blackbutt, bloodwood and ironbark eucalypt forest with heath understorey in coastal areas, and box-ironbark woodlands and River Red Gum forest inland.	Low	Low



Scientific name	Common name	BC Act	EPBC Act	Habitat requirement	Suitability of site habitat	Potential occurrence
<i>Phascolarctos cinereus</i>	Koala	V	V	Appropriate food trees in forests and woodlands, and treed urban areas.	Low	Low
<i>Planigale maculata</i>	Common Planigale	V	-	Rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas with surface cover close to water.	Moderate in broad habitat terms	Low due to historic disturbance and urban setting.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Moderate	Possible with the littoral rainforest providing foraging habitat. The site is not a known roost.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.	Moderate	Possible with the littoral rainforest providing foraging habitat.
<i>Syconycteris australis</i>	Common Blossom-bat	V	-	Feeds in heathland and paperbark swamps; roosts in littoral rainforest. Also recorded in subtropical rainforest, wet sclerophyll forest and other coastal forests.	Moderate	Possible with the littoral rainforest providing potential roosting habitat.
<b>Amphibia</b>						
<i>Crinia tinnula</i>	Wallum Froglet	V	-	Acid paperbark and sedge swamps known as 'wallum', this is a banksia-dominated lowland heath ecosystem characterised by acidic waterbodies.	No suitable habitat on or adjacent to the site.	Unlikely.
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	Amongst vegetation in and around permanent swamps, lagoons, farm dams and on flood-prone river flats, particularly where there are bullrushes or spikerushes.	No suitable habitat on or adjacent to the site.	Unlikely.