

# Ecological Assessment Report

White Patch Esplanade – Bribie Island



**BASE/**

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## 2.0 Introduction

Base Consulting Group (BASE) was commissioned by Red Fox Advisory Pty Ltd (RFA) to prepare this Ecological Assessment Report (EAR) for surveys undertaken between Banksia Beach and White Patch, Bribie Island QLD. This EAR is a supporting document to a Review of Environmental Factors (REF). The REF will assist with the option assessment during the early stage of the project design.

### 2.1 Project Details

A new causeway/bridge structure (the Project) is proposed to be constructed between Banksia Beach and White Patch on White Patch Esplanade (Survey Area). White Patch Esplanade spans Wrights Creek and acts as the solitary link between the community of White Patch to the north to the remainder of Bribie Island to the south. Bribie Island National Park adjoins the road to the northeast of the crossing (Refer to Figure 1). Pumicestone Passage is located to the west of the Survey Area and forms part of the greater Moreton Bay area.

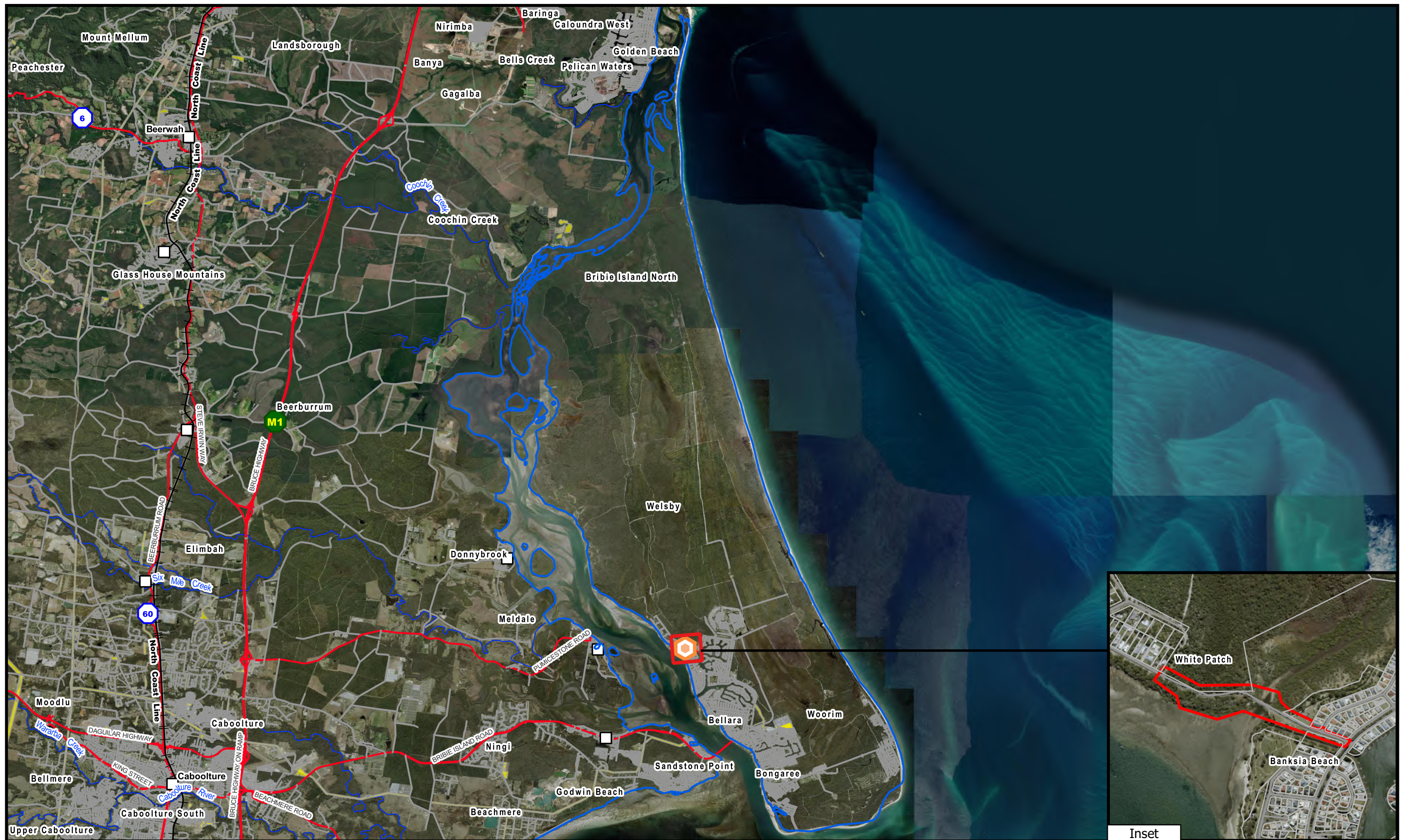
The Survey Area includes two road reserve parcels either side of White Patch Esplanade, to the northeast is the Bribie Island National Park on Lot 105 AP22462. On the southern side the area is open space parkland on both sides of White Patch Esplanade (Lot 2 SP177807, Lot 3 SP 177807 and Lot 201 RP209320) with residential dwellings further to the south on Flamingo Drive and Solander Esplanade. The remaining area outside of the land parcels which is below the Highest Astronomical Tide (HAT) line is unallocated State Land. Refer to Figure 1.

### 2.2 Scope of Report

The purpose of this EAR is to undertake ecological surveys to assist in early-stage project design for the new causeway/bridge. The scope of this EAR is to assess the presence or likely presence of Conservation Significant flora and fauna throughout the Survey Area as well as provide insight into the vegetation communities and habitat types currently present.

Furthermore, this EAR aims to provide details of any Matters of National Environmental Significance (MNES) and/or Matters of State Environmental Significance (MSES) currently existing within the Survey Area.





**Figure 1: Site Context**

0 2 4 km

Scale @ A3: 1 : 115000  
 Date: 18/01/2022  
 Job: J0210  
 Drawn: Josh T



DATA SOURCE:  
 OSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022;  
 Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS,  
 AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the  
 GIS User Community, DATSP

- ⬡ Project Location
- Towns and Cities
- Project Area
- DCDB
- State Controlled Roads
- Roads
- Rail
- Queensland Coastline
- VM Watercourse/Drainage





## 3.0 Legislation

### 3.1 *Environment Protection and Biodiversity Conservation Act*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Governments central piece of environmental legislation. It provides the legal framework to protect and manage nationally and internationally important flora and fauna, ecological communities and heritage places (Matters of National Environmental Significance).

Matters of National Environmental Significance (MNES) are outlined in the EPBC Act to include:

- World Heritage Properties.
- National Heritage Places.
- Wetlands of International Importance (listed under the Ramsar Convention).
- Listed Threatened Species and Threatened Ecological Communities (TEC).
- Migratory Species (listed under international agreements).
- Commonwealth Marine Areas.
- Great Barrier Reef Marine Park.
- A Water Resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, threatened species are designated a conservation status as either: extinct, extinct in the wild, critically endangered, endangered or vulnerable. TEC are designated a conservation category as either: Critically endangered, endangered or vulnerable. The EPBC Act also includes a list of bird species described as migratory which are associated with the following:

- Japan-Australia Migratory Bird Agreement (JAMBA)
- China-Australia Migratory Bird Agreement (CAMBA)
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention.

#### 3.1.1 Weeds of National Significance

The conservation of Australian biodiversity is an objective of the EPBC Act. The Australian Weeds Strategy was developed by the Commonwealth and all state and territory jurisdictions to deal with invasive weed species as threatening process to biodiversity. The strategy framework addresses weed issues and impacts on the environment and within the strategy, 32 of Australia's most significant weed species are listed as Weeds of National Significance (WoNS). WoNS are prioritised based on their invasiveness, potential for spread and environmental, social and economic impacts, with national management strategies and manuals for all species. Introduced flora identified during field surveys were assessed against the WoNS list which provided the opportunity to identify potential weed impacts to flora values within the Survey Area.

## 3.2 Queensland Legislation

A range of State environmental legislation is applicable to development within Southeast Queensland. The applicability of this legislation is largely guided by a series of mapping layers and scheduled flora and fauna species.

### 3.2.1 *Nature Conservation Act 1992*

The *Nature Conservation Act 1992* (NCA) classifies and protects significant areas (Protected Areas) and protects threatened plant and animal species in the wild. All native plants and animals in Queensland are protected under Section 71 of the NC Act. The *Nature Conservation (Plants) Regulation 2020* (NCPR) lists plants whilst *Nature Conservation (Animals) Regulation 2020* (NCAR) lists animal species as: extinct, presumed extinct, critically endangered, endangered, vulnerable, near threatened. In addition, special least concern species are protected under the NC Act for their cultural significance or association with international migratory bird agreements. Special least concern species include Echidna (*Tachyglossus aculeatus*), platypus (*Ornithorhynchus anatinus*) and migratory birds identified under JAMBA, CAMBA, or the Bonn agreement.

Threatened and Special Least Concern species that may occur or are likely to occur within the Survey Area are discussed in Section 5.3.1 and 6.3.

### 3.2.2 *Environmental Protection Act 1994*

The objective of the *Environmental Protection Act 1994* (EP Act) is to protect Queensland's environment while allowing for development. The EP Act aims to ensure that development improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).

The EP Act provides the key legislative framework for the protection of the environment in Queensland. Section 319 of the EP states 'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm (the general environmental duty)'.

### 3.2.3 *Vegetation Management Act 1999*

The *Vegetation Management Act 1999* (Qld) (VM Act) regulates the clearing of native vegetation in Queensland and is administered by the Department of Resources (DoR). The VM Act also protects and regulates areas designated for offsets or compliance (Category A). The VM Act categorises the status of native vegetation as remnant (Category B), high value regrowth (HVR) (Category C), reef regrowth watercourse vegetation (Category R) and non-remnant (Category X). Remnant, HVR or reef regrowth vegetation can be further classified into regional ecosystems (REs) based on bioregion, landform and dominant canopy species.

In addition, within the VM Act Regulations all RE are assigned to a Vegetation Management Class (VM Class). This is based on the current extent remaining compared to its pre-clearing extent, as gazetted under the VM Act and listed in the Regional Ecosystem Description Database (REDD) maintained by the Queensland Herbarium, Department of Environment and Science (DES).

Regional ecosystems are designated a Biodiversity Status (BD Status) through the Regional Ecosystem Description Database (REDD) based on an assessment of vegetation condition and are used for a range of planning and management applications. Table 1 summarises the criteria used to assess the VM Act class and BD status of on-ground REs.

Table 1 Criteria assessing VM Act class and BD status

Regional Ecosystems	BD Status Criteria	VM Class Criteria
Endangered	Less than 10% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss; or	Less than 10% of its pre-clearing extent remaining, or
	10–30% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000ha; or	10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha.
	It is a rare regional ecosystem subject to a threatening process.	
Of Concern	10% to 30% of its pre-clearing extent remaining, or	10% to 30% of its pre-clearing extent remaining; or
	More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha; and	More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha.
	10–30% of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.	
No Concern at Present	More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10,000 ha; and	N/A
	the degradation criteria listed above for 'endangered' or 'of concern' regional ecosystems are not met.	N/A
Least Concern	N/A	More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10,000 ha.

For the purpose of the ecological assessment, floristic values have been classified and defined according to the REDD and status under the VM Act. Regulated Vegetation and REs within the Survey Area are discussed in Section 5.1.

**3.2.3.1 Essential Habitat**

Essential habitat is also regulated under the VM Act. Protected (Category A), Remnant (Category B) and HVR (Category C) vegetation in which 'Endangered' and 'Vulnerable' species listed under the NC Act have been known to occur are classified as essential habitat. Within the VM Act, Section 20AC states 'Essential habitat, for protected wildlife, is a category A area, a category B area or category C area shown on the regulated vegetation management map—

- (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
- (b) in which the protected wildlife, at any stage of its life cycle, is located'.

A discussion regarding essential habitat within the Survey Area is reviewed in Section 5.4 and 6.7.



### 3.2.4 Koala Protection Framework Under the *Planning Act 2016*

The Queensland Government has amended the planning framework to address a key threat to koala populations in Southeast Queensland - loss of habitat. Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g., land cover, soil, terrain, climate and groundwater). In order to protect important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas. The Queensland Government has assumed responsibility for assessing developments that propose the clearing of koala habitat areas outside koala priority areas, against a new State Code for Development in Southeast Queensland Koala Habitat Areas. Koala habitat is discussed in Section 6.5.

### 3.2.5 *Biosecurity Act 2014*

The *Biosecurity Act 2014* (Qld) (Biosecurity Act) commenced on 1 July 2016 and ensures a consistent, risk-based approach to biosecurity in Queensland. The Act provides biosecurity measures to safeguard Queensland's economy, agricultural and tourism industries and environment from:

- Pests (e.g. wild dogs and weeds);
- Diseases (e.g. foot-and-mouth disease); and
- Contaminants (e.g. lead on grazing land).

Under the Biosecurity Act, invasive plants and animals are categorised as either a 'prohibited matter' or a 'restricted matter' and replaced many separate pieces of legislation that were previously used to manage biosecurity. Decisions made under the Biosecurity Act will depend on the likelihood and consequences of the risk. The *Biosecurity Regulation 2016* sets out how the Biosecurity Act is implemented and applied. Introduced flora or fauna identified during field surveys were assessed against the list of restricted invasive species which allowed the opportunity to identify potential weed impacts to flora values across the Survey Area (See Section 5.3.2 and 6.4).

### 3.2.6 *Fisheries Act 1994*

The *Fisheries Act 1994* and the *Fisheries Regulations 1995* allows for the management, use, development and protection of fisheries resources and fish habitats, the management of aquaculture activities and helping to prevent shark attacks, and for related purposes. It provides Queensland's principle legislative framework for the regulation of commercial fishing, recreational fishing, indigenous fishing, coastal areas that are important as fisheries habitat and marine plants. The act also regulates land-based activities that damage declared fish habitat areas and marine plants such as mangroves.

The Survey Area supports coastal areas that are important as fisheries habitat (mangroves and tidal flats) and marine plants. Furthermore, the Survey Area contains areas considered to be important for fish passage (See Sections 5.5, 6.9).

## 4.0 Methodology

### 4.1 Approach

The primary objective of the ecological assessment is to describe vegetation communities, fauna habitat characteristics, weeds, pests and other relevant ecological values within the Survey Area. The following stages were undertaken:

- Desktop assessment (refer to Section 4.2); and
- Field assessment (refer to Section 4.5).

### 4.2 Desktop Assessment

Prior to the commencement of surveys, a desktop analysis was conducted to identify relevant information for the Survey Area. The following information was reviewed:

- Protected Matters Search Tool (PMST) to identify threatened species with the potential to occur within the search extent (Appendix A)
- Wildlife Online Database search to identify threatened species known to occur within the search extent (Appendix B)
- Protected Plants Flora Trigger Survey Map (Appendix C)
- Regional Ecosystem Description Database (REDD), Version 12 (Queensland Herbarium, 2021)
- Vegetation Management Regional Ecosystem spatial layer, Version 12 (DoR, 2022)
- Atlas of Living Australia (ALA) website at <http://www.ala.org.au> for species occurrence records
- DES MSES mapping (DES, 2022)
- DES VM Act wetland mapping (DES, 2022)
- DES map of Queensland wetland environmental values to identify wetlands of high ecological significance (HES) and general ecological significance (DES, 2022)
- The DNRME Vegetation Management Act 1999 (VM Act) watercourse mapping (DoR, 2022)
- DAF Fish habitat areas and waterway barrier classification mapping (DAF, 2022)
- Essential habitat mapping to identify vegetation in which a threatened species has been known to occur (DES, 2022)
- Species distribution maps from various current field guides

Database searches were undertaken over a 5 km radius for Commonwealth, State and Local government databases using the Survey Area's central coordinate as the search reference point. The PMST, whilst based on some species records, primarily relies on the modelling of suitable habitats (with mapped boundary constraints accounted for) and is largely a predictive tool.

Wildlife Online database records are based on records of species from a wide variety of observers, and although the records are generally accurate in terms of spatial location, not all records have been verified. Records from DES's Species Profile Search are generally restricted to sightings from Queensland Government department activities and are considered spatially accurate.

### 4.3 Field Assessment Methodology

Results from the desktop assessment and previous knowledge of the local area informed the Survey Area assessment including the identification of areas with the greatest potential for listed species to occur based on available and suitable habitat. The surveys conducted involved the following:

- Flora and fauna survey including targeted searches and habitat suitability assessment
- Marine plants assessment.

#### 4.3.1 Flora Survey

Following the broad delineation of vegetation communities using aerial photography and information obtained in the desktop review, a detailed field vegetation survey was conducted by two (2) ecologists on 17 May 2022. The field survey was used to locate, describe, map and verify current RE vegetation communities found within the Survey Area.

The extent, classification, and condition of ground-truthed vegetation communities within the Survey Area was validated in accordance with the methodology for surveying and mapping regional ecosystem and vegetation communities in Queensland (Neldner, et al., 2020). Field Surveys included undertaking tertiary and quaternary level assessments across the Survey Area.

Tertiary-level sites were utilised to verify vegetation units and confirm dominant characteristic flora species. Structural analysis included recording the height class and life form of the dominant species within the mid and canopy strata as per (Neldner, et al., 2020). Evidence of previous disturbance, fire history, incidence of exotic species and general notes on soil type and ecological integrity were compiled for each quaternary survey site. Numerous digital photographs were taken at each site as a reference.

RE classification was determined based on the vegetation, soil and landform characteristics identified in the field, geological mapping for the region and the REDD. Condition status for woody vegetation was evaluated utilising the definitions of remnant vegetation under the VM Act. For the purposes of this assessment, vegetation was mapped into three categories:

- Remnant: woody vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has greater than 70 % of the height and greater than 50 % of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy;
- HVR: areas previously cleared or disturbed (e.g., by wildfire) over 15 years ago and containing woody vegetation floristically and structurally consistent with the RE but typically less than 70 % of the height and less than 50 % density of the RE; and
- Regrowth and non-remnant: areas previously cleared or otherwise significantly disturbed. A running incidental flora species list was recorded, including weed species, during vegetation assessments and tree plots.

##### 4.3.1.1 Marine Plants Assessment

The Survey Area was traversed on foot and the vegetation on northern and southern bank of the Wrights Creek and the foreshore of Pumicestone Passage below the highest astronomical tide (HAT) was assessed. The HAT used in the assessment was obtained from the Department of Resources (DoR) via Qspatial (Qspatial, 2022).

At each site the following information was recorded:

- Site number;
- Location;
- Photographs;
- Structural description of vegetation;
- Species list;
- Height and cover values of each species;
- Woody debris; and
- Bare ground.

The location of survey sites is provided in Figure 2. Larger areas below the HAT and within the Survey Area were divided into ten metre (m) sections which allowed a cover percentage to be attributed to all flora species within a defined section. Vegetation not included as a marine plant (weed species considered restricted matter under the *Biosecurity Act 2014*) were not included as part of percentage cover. In this instance, bare ground, wood debris or other flora species percentage cover were measured in the space the weed species occupies.

#### 4.3.2 Fauna Survey

Habitat assessments were undertaken to characterise the fauna habitat values in the remnant vegetation areas within the Survey Area. These assessments provide an indication of likely fauna utilisation, and suitability for fauna species, including conservation significant fauna. Habitat attributes recorded during the assessment include:

- Vegetation structure and dominant species, including a description of canopy, shrub and ground layer structure and composition;
- Presence and abundance of tree hollows and stags;
- Presence and abundance of woody debris such as habitat logs and ground timber;
- Rocky habitat such as surface rocks, boulders, crevices, overhangs and caves;
- Proximity to water (both permanent and ephemeral);
- Disturbance from invasive weeds/pests;
- Other disturbances such as grazing pressure, clearing, thinning or fire; and
- Any other significant habitat features or values present.

Included in the habitat assessments were searches for signs of animal activity, including tracks, scats, scratches, bones, fur, feathers, nests, foraging holes and diggings.

The assessment included general observations of fauna species present and targeted searched for species of conservation significance. The assessment considered the availability of niche habitats for target species.

##### 4.3.2.1 Koala Spot Analysis Technique (SAT)

The methodology used in conducting the SAT surveys is derived from The Spot Analysis Technique (SAT) which is a survey technique used for determining localised levels of habitat usage by the Koala

(*Phascolarctos cinereus*) (Phillips & Callaghan, 2011). This involves locating a centre koala habitat tree then identifying the 29 nearest trees to the centre tree, undertake a search for Koala faecal pellets beneath each of the 30 marked trees based on a cursory inspection of the undisturbed ground surface within a distance of 100 centimetres around the base of each tree, followed (if no faecal pellets are initially detected) by a more thorough inspection involving disturbance of the leaf litter and ground cover within the prescribed search area.

#### 4.4 Limitations

Any flora assessment has limitations connected with the variability of vegetation communities spatially as well as differences to the detectability and occurrence of species temporally. The seasonal condition during which the survey was undertaken (autumn) was favourable to a high degree of detectable floral diversity. In addition, it is acknowledged that field surveys completed over a single season cannot always account for 100% of potential floral diversity present across a survey location.

Many fauna species have a cryptic or nocturnal nature often limiting fauna species detection during field surveys and habitat assessment. Species directly observed during field surveys are opportunistic sightings and are not deemed a complete complement of fauna species utilising the Survey Area. Nevertheless, habitat assessments are an accepted method to identify conservation significant or migratory species within the Survey Area.

Field Surveys were completed on mobile ipad/android devices with associated aerial imagery; as such, the accuracy of these devices is generally +/- 3 m. Therefore, it is not intended that survey point locations be used as part of the design process.

#### 4.5 Likelihood of Occurrence Assessment

An assessment was undertaken to attribute a 'likelihood of occurrence' to conservation significant species (i.e. species listed under the EPBC Act and/or NC Act) that have been previously recorded or were predicted to occur from the desktop assessments.

The likelihood of occurrence assessment combined a review of species distributions and habitat requirements, historical records for the region, with the results of habitat assessments and field surveys conducted within the Survey Area. The likelihood of occurrence ranking was based on the following framework:

- **Confirmed present** - species recorded during the field survey.
- **Likely to occur** - species was not recorded during field surveys or previously; however, there are known records within the nearby surrounding area and suitable habitat exists in the Survey Area.
- **May occur** - suitable habitat is present or marginal; however, the species was not recorded during field surveys or previously, the species has not been recorded in the other nearby field surveys. The species has been recorded in the surrounding area / search extent but within suitable habitat.
- **Unlikely to occur** - suitable habitat is marginal or absent; the species was not recorded during field surveys or previously, has not been previously recorded in the search extent and/or the current known distribution does not encompass the Survey Area.

The results of the likelihood of occurrence assessment are provided in Appendix D.





**Figure 2: Survey Effort**

0 20 40 60 80 m

Scale @ A3: 1:2000  
 Date: 27/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

- |                                       |                           |                       |
|---------------------------------------|---------------------------|-----------------------|
| Project Area                          | Highest Astronomical Tide | Tertiary Assessment   |
| Easement                              | Tree with Scratches       | Quaternary Assessment |
| DCDB                                  | Fauna Habitat Assessment  | RE Mapping Point      |
| Road                                  | Koala SAT                 | Marine Plants Mapping |
| VM watercourse/drainage<br>- 1:25 000 |                           | Flora Species List    |





## 5.0 Flora Values

### 5.1 Regulated Vegetation

A review of DoR Regulated Vegetation mapping identified two vegetation management categories occurring within the Survey Area (Figure 3):

- Category B (remnant vegetation). In Queensland, remnant vegetation is described and mapped by the Queensland Herbarium as REs (Section 5.2).
- Category X (non-remnant vegetation).

Field assessments confirmed Category B remnant vegetation within the Survey Area. Remnant vegetation occurs on the northern and southern side of the White Patch Esplanade, west of Wrights Creek, as well as the northern side of the White Patch Esplanade, east of Wrights Creek. The remainder of the Survey Area is representative of Category X non-remnant vegetation, with the majority of this vegetation type located south of White Patch Esplanade and east of Wrights Creek. This area is largely mown with a scattering of planted and regrowth trees and shrubs.

The extent of Regulated Vegetation following field validation within the Survey Area is provided in Table 2.

*Table 2 Extent of Regulated Vegetation within the Survey Area*

Vegetation Management Category	Total Area within Survey Area (ha)
Category B	3.19
Category X	2.21

#### 5.1.1 Regulated Vegetation within a Defined Distance to a Watercourse

The DES 'MSES - Regulated vegetation - intersecting a watercourse' mapping was reviewed as part of the desktop assessment. Wrights Creek on the north-eastern side of White Patch Esplanade is mapped as containing regulated vegetation within a defined distance to a watercourse.

During the field survey, regulated vegetation was confirmed within a defined distance of a watercourse as identified as per State mapping.

#### 5.1.2 Regulated Vegetation within 100 m of a Wetland

The DES 'MSES - Regulated vegetation - 100 m from wetland' mapping was examined as part of the desktop assessment and showed wetlands mapped to the northeast outside of the Survey Area.

Field surveys confirmed regulated vegetation within 100 m of a wetland mapped is absent from within the Survey Area.

## 5.2 Regional Ecosystems

DoR RE mapping was reviewed to identify the classification and status of REs mapped across the Category B and Category X regulated vegetation within the Survey Area. The RE mapping identifies two remnant RE within the Survey Area as well as non-remnant vegetation south of White Patch Esplanade and east of Wrights Creek. These are listed in Table 3 and shown on Figure 3.

Table 3 Queensland RE mapping across the Survey Area


RE ID	Short Description <sup>1</sup>	VM Act Status	Biodiversity Status
12.1.3	Mangrove shrubland to low closed forest. Occurs on Quaternary estuarine deposits.	Least concern	No concern at present
12.2.5	<i>Corymbia intermedia</i> +/- <i>Lophostemon confertus</i> +/- <i>Banksia</i> spp. +/- <i>Callitris columellaris</i> open forest on beach ridges usually in southern half of bioregion	Least concern	Of concern
Non-remnant	Non-remnant vegetation	-	-


<sup>1</sup> Full description of REs contained in Regional Ecosystem Description Database (REDD) Version 12 (Queensland Herbarium, 2021).

Field surveys confirmed the presence of both State mapped RE across the Survey Area as well as the presence of non-remnant vegetation south of White Patch Esplanade and east of Wrights Creek. Mangrove vegetation analogous with RE 12.1.3b occurs fringing the intertidal zone along the Bribie Island foreshore as well as along Wrights Creek. *Corymbia intermedia* dominated woodland analogous with RE 12.2.5 was observed on both sides of White Patch Esplanade west of Wrights Creek. Often scattered along the boundary between the mangroves and *Corymbia intermedia* woodland are *Casuarina glauca* and *Eucalyptus tereticornis*, often overhanging the mangrove canopy, reflective of RE 12.1.1. However, given the narrow-scattered band of this vegetation, which is often single tree width, the patches are not able to be mapped and have been incorporated into mapping for RE 12.2.5.


Further information regarding each field verified RE is discussed within Table 4 below and displayed in Figure 4.

Table 4 Extent of Field Verified RE within the Survey Area

RE	Vegetation Description	VM Act Status	Biodiversity Status	Ha within Survey Area	Image
12.1.3b (Remnant)	<p>Vegetation reflective of this community occurs within the intertidal zone along Pumicestone Passage and Wrights Creek. <i>Avicennia marina</i> dominates low closed forest vegetation with occasional <i>Excoecaria agallocha</i>, <i>Rhizophora stylosa</i> and <i>Aegiceras corniculatum</i>. Canopy height ranges from 4 to 7 m with overhanging emergent <i>Melaleuca quinquenervia</i>, <i>Casuarina glauca</i> or <i>Corymbia intermedia</i> regularly shading the mangrove canopy from above the highest astronomical tide (HAT) line. A shrub layer is very sparse and composed of mangrove canopy species. A sparse ground layer is occasional present close to the HAT and typically includes <i>Sporobolus virginicus</i> and/or <i>Coleocarya sp.</i></p>	Least concern	No concern at present	1.15	

RE	Vegetation Description	VM Act Status	Biodiversity Status	Ha within Survey Area	Image
12.2.5 (Remnant)	<p>Open forest to woodland vegetation dominated by <i>Corymbia intermedia</i>, <i>Lophostemon confertus</i> and locally dominant <i>Callitris columellaris</i>. <i>Eucalyptus tereticornis</i> and <i>Melaleuca quinquenervia</i> were also noted scattered throughout this vegetation community. Average canopy heights range from 17 to 20 m with occasional individuals up to 24 m. A lower sparse to mid-dense subcanopy is also present frequently divided into an upper (av. 11 m) and lower (av. 5 m) composed of canopy species as well as the following: <i>Acacia disparrima</i>, <i>Myrsine variabilis</i> and <i>Alphitonia excelsa</i>. The shrub layer is sparse a composed of a variety of species including <i>Myrsine variabilis</i>, <i>Lantana camara</i>*, <i>Ochna serrulata</i>* and <i>Alphitonia excelsa</i>. The ground layer is mid-dense and composed of a diversity of native and exotic grasses and forbs. <i>Ottochloa gracillima</i> (grass), <i>Pteridium esculentum</i> (fern) are the most common native species within the ground layer; whilst <i>Megathyrsus maximus</i>* (grass), <i>Passiflora suberosa</i>* (vine) and <i>Gloriosa superba</i>* (forb) regularly compete with native ground layer species. Fire scars and uniform ground cover layer denotes a recent fire (within the last 12 months) has occurred on the southern side of White Patch Esplanade in this vegetation community.</p>	Least concern	Of concern	2.04	



RE	Vegetation Description	VM Act Status	Biodiversity Status	Ha within Survey Area	Image
Non remnant	A maintained mown grass park/ verge with scattered planted native trees occurs on the southern side of White Patch Esplanade, east of Wrights Creek. A small patch of regrowth vegetation continues to grow along the interface with mangroves along Pumicestone Passage. Examination of historical imagery (Queensland Government, 2022) suggests that portions of non-remnant vegetation were cleared prior to 1990.	Non-remnant	-	2.21	





**Figure 3: Regional Ecosystems**

0 20 40 60 80 m

Scale @ A3: 1:2000  
 Date: 27/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

Project Area  
 VM watercourse/drainage - 1:25 000

**Regional ecosystem map (regulated)**

- Category A or B area containing endangered
- Category A or B area containing of concern
- Category A or B area that is least concern
- Category C or R area containing endangered
- Category C or R area containing of concern
- Category C or R area that is of least concern
- Water
- Non-remnant







**Figure 4: Ground Truthed Regional Ecosystems**

0 20 40 60 80 m

Scale @ A3: 1:2000  
 Date: 27/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

- Project Area
- VM watercourse/drainage - 1:25 000

- Regional ecosystem map (regulated)**
- Category A or B area containing endangered
  - Category A or B area containing of concern
  - Category A or B area that is least concern
  - Category C or R area containing endangered
  - Category C or R area containing of concern
  - Category C or R area that is of least concern
  - Water
  - Non-remnant





### 5.2.1 Threatened Ecological Communities

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Protected Matters Search Tool (PMST) listed four (4) Threatened Ecological Communities (TECs) that may occur within the local area. These TECs and their corresponding REs are listed in Table 5. No REs corresponding to these TECs occur within or adjacent to the Survey Area.

Table 5 TEC Desktop Results

TEC	EPBC Act Status	Corresponding REs (Bioregion 12)
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	12.1.2
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	12.2.7, 12.3.4/12.3.4a, 12.3.5, 12.3.6, 12.3.20
Lowland Rainforest of Subtropical Australia	Critically Endangered	12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1, 12.12.16.
Coastal Swamp Oak ( <i>Casuarina glauca</i> ) Forest of New South Wales and South East Queensland ecological community	Endangered	12.1.1 and 12.3.20.

Desktop RE mapping does not indicate the potential presence of these TECs. In addition, no TECs or RE communities analogous to potentially occurring TECs were identified within the Survey Area during the field survey.

### 5.3 Species Diversity

A total of 90 species from 50 families and 84 genera were identified during the survey (Appendix E). The dominant plant families recorded were the grasses (Poaceae) (9 taxa), eucalypts and allies (Myrtaceae) (6 taxa) and daisies (Asteraceae) (6 taxa). Common native species recorded across the site were:

- *Avicennia marina* (grey mangrove);
- *Melaleuca quinquenervia* (paperbark tea tree);
- *Corymbia intermedia* (pink bloodwood);
- *Casuarina glauca* (swamp oak);
- *Eucalyptus tereticornis* (Queensland blue gum);
- *Acacia disparrima* (hickory wattle);
- *Pteridium esculentum* (bracken);
- *Ottochloa gracillima* (beard grass); and
- *Imperata cylindrica* (blady grass).

### 5.3.1 Conservation Significant Flora

The Commonwealth PMST search tool was used as a basis to establish potential threatened species within the Survey Area. The PMST identified seventeen (17) flora species as having the potential to occur within 5 km of the Survey Area. Results from the Queensland Wildlife Online database identified one (1) species listed under the NC Act (Appendix B) as occurring within 5 km of the Survey Area.

No conservation significant flora species were observed within the Survey Area during the field survey.

The likelihood of occurrence assessment for conservation significant flora species is provided in Appendix D highlighting suitable habitat for these species is absent from the Survey Area.

#### 5.3.1.1 Protected Plants Mapping

The DES 'Flora Survey Trigger Map for Clearing Protected Plants in Queensland - Version 8.0' mapping was examined as part of the desktop assessment. A review of the mapping showed a high-risk area on the flora survey trigger map 3.3 km to the southeast outside of the Survey Area.

### 5.3.2 Introduced Flora Species

A total of 24 out of the 90 species identified during the survey (27 %) were introduced species. Of this number, five (5) were identified as Category 3 restricted invasive plants under the Queensland *Biosecurity Act 2014* and three of these are also recognised as WoNS. The Category 3 and WoNS plants are outlined below in Table 6. Eucalypt woodland areas contain the highest occurrences of introduced flora species, with the portion of the Survey Area within Bribie Island National Park particularly weed infested.

Table 6 Restricted Invasives Flora Observed within the Survey Area

Introduced flora species	Category 3 Biosecurity Act 2014	WoNS
<i>Asparagus aethiopicus</i>	✓	✓
<i>Lantana camara</i>	✓	✓
<i>Opuntia stricta</i>	✓	✓
<i>Senecio madagascariensis</i>	✓	
<i>Sphagneticola trilobata</i>	✓	

### 5.4 Essential Habitat for Flora Species

The DoR 'Regulated Vegetation – essential habitat' mapping was reviewed as part of the desktop assessment. No essential habitat for threatened flora is mapped within the Survey Area.

### 5.5 Marine Plants

The marine plants identified within the Survey Area occur within the fringing vegetation immediately adjacent to the Pumicestone Passage and Wrights Creek generally below the HAT; however, there are



several small areas of *Sporobolus virginicus* (saltwater couch) outside the HAT which are considered marine plants increasing the overall are of marine plants (Figure 5). The area of marine plants as defined under the *Fisheries Act*, totals 1.11 hectares. The definition states that both marine and terrestrial flora species are considered marine plants under the *Fisheries Act* and these species are outlined in Table 7.

Table 7 Marine plant species within the Survey Area

Family	Scientific Name	Common Name	Plant life form type
Acanthaceae	<i>Avicennia marina</i>	grey mangrove	Tree
Aizoaceae	<i>Sesuvium portulacastrum</i>	sea purslane	Forb
Aizoaceae	<i>Tetragonia tetragonoides</i>	warrigal greens	Forb
Casuarinaceae	<i>Casuarina glauca</i>	swamp oak	Tree
Chenopodiaceae	<i>Enchylaena tomentosa</i>	ruby saltbush	Forb
Cupressaceae	<i>Callitris columellaris</i>	coastal cypress pine	Tree
Euphorbiaceae	<i>Excoecaria agallocha</i>	milky mangrove	Tree
Lamiaceae	<i>Vitex trifolia</i> var. <i>trifolia</i>	coastal vitex	Shrub
Leguminosae (Caesalpinioideae)	<i>Acacia disparrima</i>	hickory wattle	Tree
Malvaceae	<i>Hibiscus tiliaceus</i>	cottonwood	Tree
Myrsinaceae	<i>Aegiceras corniculatum</i>	river mangrove	
Myrtaceae	<i>Corymbia intermedia</i>	pink bloodwood	Tree
Myrtaceae	<i>Eucalyptus tereticornis</i>	Queensland blue gum	Tree
Myrtaceae	<i>Melaleuca quinquenervia</i>	paperbark teatree	Tree
Poaceae	<i>Sporobolus virginicus</i>	saltwater cooch	Grass
Restionaceae	<i>Coleocarya</i> sp.	-	Forb
Rhizophoraceae	<i>Rhizophora stylosa</i>	stilt-root mangrove	Tree
Sapindaceae	<i>Cupaniopsis anacardioides</i>	tuckeroo	Tree





**Figure 5: Marine Plants Extent**

0 20 40 60 80 m



Scale @ A3: 1:2000  
 Date: 27/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

- Project Area
- Marine Plant Extent
- Highest Astronomical Tide

**BASE/**






## 6.0 Fauna Values


### 6.1 Habitat Types

Four habitat types were recorded within the Survey Area, listed in Table 8 and displayed on Figure 6.

Table 8 Habitat Types within the Survey Area

Habitat No.	Habitat Type	Analogous RE	Key Habitat Features	Image
1	Eucalypt and Corymbia dominated open forest or woodland on sandy soils	12.2.5	<ul style="list-style-type: none"> <li>This habitat occurs to the west of Wrights Creek and occupies the majority of this portion of the site and is well connected to the adjacent Bribie Island National Park.</li> <li>Canopy or sub canopy dominated by <i>Corymbia intermedia</i>, with <i>Eucalyptus tereticornis</i>, <i>Callitris columellaris</i> and <i>Melaleuca quinquenervia</i> (analogous with RE 12.2.5).</li> <li>Non juvenile koala habitat trees are common</li> <li>Scattered occasional hollow bearing trees up to 10 cm observed.</li> <li>Woody debris and large fallen logs scattered and likely provide foraging and shelter opportunities for a range of species.</li> <li>Scattered <i>Allocasuarina littoralis</i> observed which are a known foraging resource for the glossy black cockatoo</li> <li>A mid-dense ground cover and areas of mid-dense shrub provide suitable refuge and dispersal habitat for a range common woodland birds, reptiles and small ground dwelling mammal species.</li> <li>Foraging opportunities existed for bird species with a range of feeding strategies including granivores, foliage-gleaners, nectar feeders and raptors (white-bellied sea eagles) which were observed soaring above the Survey Area.</li> <li>Habitat for reptiles included deep leaf litter, dense patchy grass cover, decorticated bark and ground timber</li> <li>This habitat has been subject to a recent (past 12 months) fire.</li> </ul>	

Habitat No.	Habitat Type	Analogous RE	Key Habitat Features	Image
2	Grey mangrove low closed forest to shrubland.	12.1.3b	<ul style="list-style-type: none"> <li>• This habitat occurs as patches on low lying intertidal banks fringing Wrights Creek and along the foreshore of Pumicestone Passage.</li> <li>• Non-juvenile koala habitat trees are absent</li> <li>• Provides suitable habitat for waders and shorebirds which utilise mangrove vegetation</li> <li>• Potential suitable foraging habitat for water mouse (<i>Xeromys myoides</i>)</li> <li>• Suitable foraging and shelter habitat for a range of crustaceans and small fish.</li> <li>• Insectivorous birds observed using this vegetation</li> <li>• Occasional small hollows (&lt;5 cm) observed in large mangroves providing suitable shelter opportunities for microbats</li> </ul>	
3	Intertidal mudflats	-	<ul style="list-style-type: none"> <li>• This habitat is only exposed outside of the high tide and fringes mangrove vegetation at the edge of the Survey Area.</li> <li>• Vegetation absent.</li> <li>• Provides foraging opportunities for waders and other shore birds.</li> <li>• Provides foraging opportunities for marine species which utilise the shallow intertidal zone i.e., stingrays, small fish.</li> </ul>	

Habitat No.	Habitat Type	Analogous RE	Key Habitat Features	Image
4	Non-remnant regrowth vegetation and mown park	-	<ul style="list-style-type: none"> <li>• The majority of this habitat occurs south of White Patch Esplanade and east of Wrights Creek, although mown verges are also present along White Patch Esplanade as it transits through the Survey Area.</li> <li>• Non-juvenile koala habitat trees are present, with the majority planted.</li> <li>• Vegetation structure and species composition is highly variable, however, a limited variety foraging and sheltering opportunities for woodland bird species is present.</li> <li>• Leaf litter and dense grass cover is largely absent, reducing the foraging and shelter opportunities for small reptiles.</li> <li>• Tree hollows and stags are absent.</li> </ul>	





**Figure 6: Fauna Habitat Types**

0 20 40 60 80 m

Scale @ A3: 1:2000  
 Date: 27/05/2022  
 Job: J0210  
 Drawn: Isaac Witten  
 DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIIP



- Project Area
- Fauna Habitat Types**
- Eucalypt and Corymbia dominated open forest or woodland on sandy soils
- Grey mangrove low closed forest to shrubland
- Intertidal mudflats
- Non-remnant regrowth vegetation and mown park





## 6.2 Fauna Species Diversity

A total of thirty-five (35) fauna species were recorded during the field survey, comprising thirty-four (34) bird species and one (1) fish species and are listed in Appendix E. All observed fauna was typical for the region and habitat types recorded on site. No species observed within the Survey Area are considered conservation significant.

## 6.3 Conservation Significant Fauna Species

The desktop assessment identified seventy (70) fauna species of conservation significance, protected either under the Commonwealth EPBC Act and or the Queensland NC Act, with the potential to occur within the Survey Area. This includes thirty-five (35) threatened bird, four (4) amphibians, ten (10) mammals, ten (10) fish, eight (8) reptiles, two (2) crustaceans and one (1) insect species. Forty (40) migratory species protected under the Commonwealth EPBC Act are also potentially occurring. The short-beaked echidna (*Tachyglossus aculeatus*), which is Special Least Concern species protected under the NC Act may also occur.

No threatened fauna species were recorded during the field survey

Of the species identified during the desktop assessment, thirty-eight (38) were determined likely to or may occur within the Survey Area (Table 9). This assessment was based on the habitat encountered during the field assessment as well as species records from publicly available databases.

The full Likelihood of Occurrence Assessments for all conservation significant species is presented in Appendix D and includes which habitats within the Survey Area are suitable, and the potential utilisation of such habitats.

Table 9 Likelihood of Occurrence Assessment Summary

Value	Likelihood of Occurrence	
	Likely to Occur	May Occur
<b>Conservation Significant Fauna</b>	<i>Esacus magnirostris</i> (Beach Stone-Curlew) <i>Hirundapus caudacutus</i> (White-Throated Needletail) <i>Numenius madagascariensis</i> (Eastern Curlew) <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	<i>Calidris canutus</i> (Red Knot) <i>Calidris ferruginea</i> (Curlew Sandpiper) <i>Calidris tenuirostris</i> (Great Knot) <i>Charadrius leschenaultia</i> (Greater Sand Plover) <i>Charadrius mongolus</i> (Lesser Sand Plover) <i>Limosa lapponica baueri</i> (Western Alaskan Bar-tailed Godwit) <i>Ninox strenua</i> (powerful owl) <i>Turnix melanogasta</i> (Black-Breasted Button quail) <i>Phascolarctos cinereus</i> (Koala) <i>Xeromys myoides</i> (Water Mouse)

Value	Likelihood of Occurrence	
	Likely to Occur	May Occur
<b>Migratory Fauna</b>	<i>Apus pacificus</i> (Fork-Tailed Swift) <i>Cuculus optatus</i> (Oriental Cuckoo) <i>Monarcha melanopsis</i> (Black-Faced Monarch) <i>Myiagra cyanoleuca</i> (Satin Flycatcher) <i>Rhipidura rufifrons</i> (Rufous Fantail) <i>Calidris falcinellus</i> (Broad-Billed Sandpiper) <i>Limosa lapponica</i> (Bar-Tailed Godwit) <i>Numerius phaeopus</i> (Whimbrel) <i>Pluvialis fulva</i> (Pacific Golden Plover)	<i>Sternula albifrons</i> (Little Tern) <i>Monarcha trivirgatus</i> (Spectacled Monarch) <i>Calidris acuminata</i> (Sharp-Tailed Sandpiper) <i>Calidris melanotos</i> (Pectoral Sandpiper) <i>Calidris ruficollis</i> (Red-Necked Stint) <i>Charadrius bicinctus</i> (Double-Banded Plover) <i>Charadrius veredus</i> (Oriental Plover) <i>Limnodromus semipalmatus</i> (Asian Dowitcher) <i>Limosa limosa</i> (Black-Tailed Godwit) <i>Numerius minutus</i> (Little Curlew) <i>Pandion haliaetus</i> (Osprey) <i>Pluvialis squatarola</i> (Grey Plover) <i>Tringa brevipes</i> (Grey-Tailed Tattler) <i>Tringa nebularia</i> (Common Greenshank) <i>Tringa stagnatilis</i> (Marsh Sandpiper) <i>Xenus cinereus</i> (Terek Sandpiper)

## 6.4 Introduced Fauna

Two introduced fauna species were observed during field surveys, with neither species considered a restricted matter under the *Biosecurity Act 2014*. Introduced species observed within the Survey Area:

- Feral pigeon (*Columba livia*)
- Spotted dove (*Spilopelia chinensis*).

Other introduced fauna species likely to occur within the Survey Area include cane toad (*Rhinella marina*), black rat (*Rattus rattus*), and house mouse (*Mus musculus*).

## 6.5 Koala Occurrence and Habitat

A wildnet search with a radius within 5 km of the Survey Area found seven records of this species. It is not known whether any records are from Bribie Island, or all records are from the mainland with known occurrences from Toorbul point across Pumicestone Passage within the 3 km of the Survey Area. An examination of Atlas of Living Australia (ALA) records indicates three observed occurrences of this species on Bribie Island. Unfortunately, all three records have a high degree of spatial uncertainty (>9 km), with one record from 1965 and two records undated.

A Koala SAT was conducted in suitable habitat within the Survey Area. No koalas or signs of their presence (i.e., characteristic scats and scratches) were detected during the field assessment. However,



should this species occur on Bribie Island, it may occasionally utilise habitats within the Survey Area given the proximity to a moderately-sized patch of vegetation within Bribie Island National Park, and the ability for the species to move periodically through suitable vegetation. Key threats to the koala that are present in the Survey Area which may reduce utilisation include the traffic along the White Patch Esplanade and the presence of domestic dogs.

## 6.6 Wetlands or Watercourses

An examination of MSES wetlands and MSES declared higher ecological value waters (wetlands and watercourses) mapping was examined as part of the desktop assessment. MSES declared higher ecological value waters (wetlands and watercourses) are absent from within the Survey Area. MSES wetlands are mapped as occurring within the Survey Area along Wrights Creeks on the eastern side of the existing causeway infrastructure as well as a very small portion adjacent to the mouth of Wrights Creek on the western side of White Patch Esplanade (Figure 7).

## 6.7 Essential Habitat Mapping

A review of the Department of Resources (DoR) vegetation management support mapping, based on the central coordinates of the Survey Area, was used as a guideline to identify mapped essential habitat. Mapping has been developed using a combination of species habitat models and buffered species records. Essential habitat for protected wildlife is defined under the VM Act, and refers to an area of vegetation shown on the Regulated Vegetation Management Map as assessable vegetation –

1. That has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
2. In which the protected wildlife, at any stage of its life cycle, is located.

The outcome of the review revealed 12 species with potential essential habitat within the Survey Area. This list was refined via field surveys and regional ecosystem spatial analysis, resulting in nine (9) species with essential habitat occurring within the Survey Area (see Table 10 below and Figure 7b).

Table 10 Essential habitat mapped within the Survey Area

Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
Wallum froglet ( <i>Crinia tinnula</i> )	<b>REs</b> – 12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.12, 12.3.14, 12.3.20, 12.5.2, 12.5.10. These regional ecosystems are not a mandatory essential habitat factor for this species.	Yes 12.2.5 – not a mandatory essential habitat factor	Survey Area does not support essential habitat for this species as the vegetation community does not occur and it is a mandatory essential habitat factor.
	<b>Vegetation Community</b> – Vegetation community is a mandatory essential habitat factor for this species. Permanent to ephemeral acidic (pH 4.3 - 5.2), soft freshwater in Melaleuca (e.g. <i>M. quinquenervia</i> ) swamps, sedgeland, wet and dry heathland (e.g. <i>Banksia robur</i> , <i>Xanthorrhoea</i> ) and wallum ( <i>Banksia aemula</i> shrubland/woodland) areas coastal lowlands on sand or sandstone, occasionally in adjacent open forest/woodland (e.g. <i>Eucalyptus racemosa</i> , <i>Corymbia citriodora</i> ) with heathy understorey; known to persist in small remnants (<10ha); may be found well away from water.	No	
	<b>Altitude</b> – Sea level to 150m	Yes	
	<b>Soils</b> – Sandy and sandy-alluvial substrates	Yes	
	<b>Position in landscape</b> – None	N/a	
Wallum rocketfrog ( <i>Litoria freycineti</i> )	<b>REs</b> – 12.2.2, 12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.13, 12.2.15, 12.3.4, 12.3.5, 12.3.61, 12.3.11, 12.3.12, 12.3.13, 12.3.14, 12.3.20, 12.5.4, 12.5.9, 12.9-10.4, 12.9-10.10, 12.9-10.22. These regional ecosystems are not a mandatory essential habitat factor for this species.	Yes 12.2.5 – not a mandatory essential habitat factor	Survey Area does not support essential habitat for this species as the vegetation community does not occur and it is a mandatory essential habitat factor.
	<b>Vegetation Community</b> – Vegetation community is a mandatory essential habitat factor for this species. Freshwater acidic swamps/lagoons (permanent or temporary still water) dominated by sedges (e.g. <i>Baumea</i> and <i>Eleocharis</i> spp.) in heathland (e.g. <i>Banksia/Xanthorrhoea</i> ), wallum ( <i>Banksia aemula</i> shrubland/woodland) or Melaleuca open forest (e.g. <i>M. quinquenervia</i> ), and adjacent <i>Eucalyptus racemosa</i> forest, also found around acidic coastal lakes; on sand and sandstone; can be found well away from water during non-breeding season.	No	

Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
	<b>Altitude</b> – Sea level to 200m	Yes	
	<b>Soils</b> – Sandy and sandy-alluvial substrates	Yes	
	<b>Position in landscape</b> – None	N/a	
Wallum sedgefrog ( <i>Litoria olongburensis</i> )	<b>REs</b> - 12.2.5, 12.2.7, 12.2.12, 12.2.15, 12.3.5, 12.3.20. These regional ecosystems are not a mandatory essential habitat factor for this species	Yes 12.2.5 – not a mandatory essential habitat factor	Survey Area does not support essential habitat for this species as the vegetation community does not occur and it is a mandatory essential habitat factor.
	<b>Vegetation Community</b> - Vegetation community is a mandatory essential habitat factor for this species. Well vegetated permanent to ephemeral freshwater swamp, sedgeland, lake or creek, e.g. dense reed beds (including <i>Baumea</i> , <i>Restio</i> spp.) occasionally with <i>Melaleuca quinquenervia</i> or <i>Callistemon pachyphyllus</i> , acidic wallum swamps and wallum creeks on coastal sand masses; most abundant in wallum ( <i>Banksia aemula</i> ) swamps that seasonally flood where they are found year-round; recorded in adjacent wet heath, dry heath, <i>Gahnia</i> heath and Melaleuca swamp forest/open forest.	No	
	<b>Altitude</b> - Sea level to 200m	Yes	
	<b>Soils</b> - Sandy substrates	Yes	
	<b>Position in landscape</b> – Near/in waterbodies	Yes	
Water mouse ( <i>Xeromys myoides</i> )	<b>REs</b> - 7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.5, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 11.2.4, 11.2.5, 11.3.27, 12.1.1, 12.1.2, 12.1.3, 12.2.5, 12.2.7, 12.2.11, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.8, 12.3.12, 12.3.13, 12.3.20	Yes – 12.1.3 and 12.2.5	The Survey Area supports essential habitat for the water mouse. Regional Ecosystems 12.1.3 and 12.2.5 both occur within the Survey Area. The vegetation community specified is present within the Survey Area. The species altitude range is consistent with the Survey Area.
	<b>Vegetation Communities</b> – Sedgeland ( <i>Juncus</i> , <i>Baumea</i> , <i>Lepironia</i> , <i>Cyperus</i> , <i>Eleocharis</i> ), salt meadow/saline grassland ( <i>Sporobolus virginicus</i> ), wet heathland ( <i>Banksia robur</i> , <i>Gahnia</i> spp.) and saltmarsh-chenopod grassland behind mangroves; and in open-closed mangrove scrub-forest (e.g. <i>Avicennia marinus</i> subsp. <i>australasica</i> in SEQ, <i>Ceriops tagal</i> ± <i>Bruguiera</i> spp. but forage in adjacent <i>Avicennia</i> and saltpan areas in CQC),	Yes	



Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
	<i>Melaleuca quinquenervia</i> swamp forest or fresh-water mangrove, and supralittoral banks with <i>Callitris</i> and <i>Casuarina</i>		
	<b>Altitude</b> – Sea level to 100m	Yes	
	<b>Soils</b> – None	N/a	
	<b>Position in landscape</b> – Coastal areas near mangroves/swamps	Yes	
Regent honeyeater ( <i>Anthochaera Phrygia</i> )	<p><b>REs</b> - 8.2.1, 8.2.3, 8.2.4, 8.2.6, 8.2.7, 8.2.8, 8.2.12, 8.2.13, 8.2.14, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.9.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.31, 8.12.32, 11.2.1, 11.2.2, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.16, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.4, 11.7.6, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.6, 11.9.7, 11.9.9, 11.9.10, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.19, 11.12.20, 11.12.21, 12.2.4, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.10, 12.2.11, 12.3.1, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.12, 12.3.14, 12.3.15, 12.3.16, 12.3.17, 12.3.18, 12.3.19, 12.3.20, 12.3.21, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.5, 12.5.6, 12.5.7, 12.5.8, 12.5.11, 12.5.12, 12.7.1, 12.7.2, 12.8.1, 12.8.2, 12.8.8, 12.8.9, 12.8.10, 12.8.11, 12.8.12, 12.8.14, 12.8.16, 12.8.17, 12.8.19, 12.8.23, 12.8.24, 12.8.25, 12.8.26, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.6, 12.9-10.7, 12.9-10.8, 12.9-10.12, 12.9-10.13, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.20, 12.9-10.21, 12.9-10.23, 12.9-10.24, 12.9-10.25, 12.9-10.26, 12.9-10.28, 12.9-10.29, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.19, 12.11.20, 12.11.21, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.2, 12.12.3, 12.12.4, 12.12.5, 12.12.6, 12.12.7, 12.12.8, 12.12.9, 12.12.11, 12.12.12, 12.12.14, 12.12.15, 12.12.20, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.26, 12.12.27, 12.12.28,</p>	Yes – 12.2.5	The Survey Area supports essential habitat for the Regent honeyeater. Regional Ecosystem 12.2.5 is present within the Survey Area. The vegetation community specified is present within the Survey Area. The species altitude range is consistent with the Survey Area.

Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
	13.3.1, 13.3.2, 13.3.3, 13.3.4, 13.3.5, 13.3.7, 13.9.2, 13.11.1, 13.11.2, 13.11.3, 13.11.4, 13.11.5, 13.11.6, 13.11.8, 13.12.1, 13.12.2, 13.12.3, 13.12.4, 13.12.5, 13.12.8, 13.12.9, 13.12.10		
	<b>Vegetation Community</b> - Dry eucalypt woodland and open forest, woodland, rural and urban areas with mature eucalypts; favours box-ironbark associations including <i>Eucalyptus sideroxylon</i> , <i>E. albens</i> , <i>E. melliodora</i> , <i>E. moluccana</i> , <i>E. robusta</i> , <i>E. caliginosa</i> , <i>E. maculata</i> occasionally with <i>Angophora leiocarpa</i> , and <i>Casuarina cunninghamiana</i> in riparian forest; generally comprise large/mature trees that are reliable nectar producers (both in timing and quantity) with tall shrub layer on moist fertile sites (lower foothills/river valleys/creeklines). Nest in mistletoe, usually on horizontal branch or in vertical fork of rough-barked tree 1-30m above ground.	Yes	
	<b>Altitude</b> – Sea level to 550m.	Yes	
	<b>Soils</b> - None	N/a	
	<b>Position in landscape</b> - None	N/a	
Eastern curlew ( <i>Numenius madagascariensis</i> )	<b>REs</b> - 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 7.1.1, 7.1.2, 7.1.3, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 12.1.2, 12.1.3	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.
	<b>Vegetation Community</b> - Foraging on soft, intertidal mudflat, with a preference for broad flats, often in sheltered areas near mangroves and estuaries/creeks, also on sandflats and occasionally ocean beaches, rock platforms and coral reefs. Roost on salt flat, saltmarsh, mangroves, reef flat, sandy spits and grassland near water.	Yes	
	<b>Altitude</b> – Sea level to 100m	Yes	
	<b>Soils</b> – Sand, sandy mud and mud substrates	Yes	
	<b>Position in landscape</b> – Associated with coastlines and wetlands	Yes	
Great knot ( <i>Calidris tenuirostris</i> )	<b>REs</b> - 2.1.1, 2.1.2, 2.1.3, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 7.1.1, 7.1.3, 8.1.2, 11.1.2, 11.1.4, 12.1.3	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.



Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
	<p><b>Vegetation Community</b> - Foraging on intertidal mudflat/sandflat in sheltered coastal areas, exposed reef, rock platform, mangrove, near coastal swamp/lagoon and salt lake. Roost on sandy beach, mudflat and coastal claypan.</p>	Yes	
	<p><b>Altitude</b> - Sea level to 100m</p>	Yes	
	<p><b>Soils</b> - Sand, sandy mud and mud substrates</p>	Yes	
	<p><b>Position in landscape</b> - Associated with coastlines and wetlands</p>	Yes	
Western Alaskan bar-tailed godwit ( <i>Limosa lapponica</i> )	<p><b>REs</b> - 2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3</p>	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.
	<p><b>Vegetation Community</b> - Foraging on large intertidal mudflat/sandflat, banks in estuaries, inlets, bays and coastal lagoons; also saline wetlands, saltmarsh, sandy beach, rock platform and coral reef-flat. Roost on sandy beach/spit and near saltmarsh.</p>	Yes	
	<p><b>Altitude</b> - Sea level to 100m</p>	Yes	
	<p><b>Soils</b> - Sand, sandy mud and mud substrates</p>	Yes	
	<p><b>Position in landscape</b> - Associated with coastlines and wetlands</p>	Yes	
Red knot ( <i>Calidris canutus</i> )	<p><b>REs</b> - 2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3</p>	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.
	<p><b>Vegetation Community</b> - Foraging on intertidal mudflat/sandflat and sandy beach of sheltered coastal areas, also saline wetlands/saltmarsh. Roost on sandy beach or spit, mudflat and coastal claypan.</p>	Yes	
	<p><b>Altitude</b> - Sea level to 100m</p>	Yes	
	<p><b>Soils</b> - Sand, sandy mud and mud substrates</p>	Yes	

Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
	<b>Position in landscape</b> - Associated with coastlines and wetlands	Yes	
Curlew sandpiper ( <i>Calidris ferruginea</i> )	<b>REs</b> - 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 7.1.1, 7.1.2, 7.1.3, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 12.1.2, 12.1.3	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.
	<b>Vegetation Community</b> - Foraging on intertidal mudflat in sheltered estuaries, bays, inlets and lagoons; non-tidal swamps and inland ephemeral and permanent lakes, dams or waterholes. Roost on shingle/sand/shell beaches, saltmarsh, mangrove and close to wetlands.	Yes	
	<b>Altitude</b> - Sea level to 100m	Yes	
	<b>Soils</b> - Sand, sandy mud and mud substrates	Yes	
	<b>Position in landscape</b> - Associated with coastlines and wetlands	Yes	
Lesser sand plover ( <i>Charadrius mongolus</i> )	<b>REs</b> - 2.1.1, 2.1.2, 2.1.3, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 7.1.1, 7.1.3, 8.1.2, 11.1.2, 11.1.4, 12.1.3	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.
	<b>Vegetation Community</b> - Foraging on sandy beach, intertidal mudflat/sandflat and mangrove mudflat of coastal bays and estuaries. Also inland at lakes and soaks. Roost on beach, banks, sand/shell spits, rocky spits and exposed reef.	Yes	
	<b>Altitude</b> - Sea level to 100m	Yes	
	<b>Soils</b> - Sand, sandy mud and mud substrates	Yes	
	<b>Position in landscape</b> - Associated with coastlines and wetlands	Yes	
	<b>REs</b> – 2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3	Yes – 12.1.3	The Survey Area contains all 5 essential habitat factors, therefore is classed as essential habitat.



Significant Species	Essential Habitat Requirements VM Property Report	Habitat Factor Present	Habitat Present
Greater sand piper <i>(Charadrius leschenaultia)</i>	<b>Vegetation Community</b> - Foraging on intertidal mudflats, sandbank, sandy/shelly/muddy beaches, rock platforms, coral reefs and tidal lagoons. Roost on sandspit, beach, lagoons edge, rocky points, coastal saltmarsh and claypan.	Yes	
	<b>Altitude</b> - Sea level to 100m	Yes	
	<b>Soils</b> - Sand, sandy mud and mud substrates	Yes	
	<b>Position in landscape</b> - Associated with coastlines and wetlands	Yes	

## 6.8 Ecological Corridors and Connectivity

The Queensland Government has identified Bioregional Wildlife Corridors across Queensland. These are not statutory areas but are priority conservation areas to be accorded special consideration when development applications are lodged. The eastern portion of the Survey Area is identified falling within a terrestrial corridor buffer area.

Habitat connectivity across the Survey Area is reasonably high with remnant vegetation covering the majority of the Survey Area. Pumicestone Passage and Wrights creek present natural corridors and flyways for a range of species such as birds, mammals and bats. The surrounding landscape (north and west of Wrights Creek) is composed of large areas of either Corymbia or Eucalypt dominated woodland (Bribie Island National Park) or mangrove vegetation. This contiguous habitat provides significant dispersal opportunities for a range of species, particularly birds, macropods and reptiles. The mown portion of the Survey Area provides limited habitat connectivity for terrestrial species; being isolated by White Point Esplanade and surrounded by the current residential extent.

## 6.9 Declared Fish Habitat Areas and Waterways Providing for Fish Passage

The DAF 'Queensland waterways for waterway barrier works' and 'Fish habitat areas' mapping was reviewed as part of the desktop assessment. Within the Survey Area, Pumicestone Passage and Wrights Creek are both mapped as a 'tidal waterway' providing for fish passage. Additionally, there is a fish pass level 1 waterway mapped on the eastern extent of the Survey Area, field surveys ground truthed this to be a mapping error and is likely a feature of the drainage line south of the Survey Area.

Declared fish habitat areas (Management Area B) are located within Pumicestone Passage to the north and west of the Survey Area. However, the current extent of the Survey Area is not located within a declared fish habitat area.

## 6.10 Highly Protected Zones of State Marine Parks

An examination of the MSES Marine Park – highly protected zones mapping was reviewed as part of the desktop assessment. Pumicestone Passage and Wrights Creek both form part of the Moreton Bay Marine Park (Pumicestone Channel-Godwin Beach Section) which correspondingly are also within the Survey Area (Figure 7b).





**Figure 7a: MSES Wetland Values**

0 20 40 60 80 m



Scale @ A3: 1:2000  
 Date: 31/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

- Project Area
- MSES regulated vegetation [defined watercourse]
- MSES declared high ecological value waters [watercourse]
- MSES declared high ecological value waters [wetland]
- MSES high ecological significance wetlands
- MSES strategic environmental area [designated precinct]







**Figure 7b: MSES Conservation Areas and Wildlife Habitat**

0 20 40 60 80 m

Scale @ A3: 1:2000  
 Date: 31/05/2022  
 Job: J0210  
 Drawn: Isaac Witten



DATA SOURCE:  
 QSPATIAL 2022;  
 The State of Queensland (Department of Resources) 2022; Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, DATSIP

- |   |   |
|---|---|
| Project Area  | MSES protected area [nature refuges]                        |
| MSES declared fish habitat area [A and B areas]       | MSES protected area [special wildlife reserves]             |
| MSES legally secured offset area [offset register]    | MSES wildlife habitat [special least concern animal]        |
| MSES legally secured offset area [vegetation offsets] | MSES wildlife habitat [endangered or vulnerable]            |
| MSES marine park [highly protected]                   | MSES wildlife habitat [SEQ koala habitat - core]            |
| MSES protected area [estates]                         | MSES wildlife habitat [SEQ koala habitat - locally refined] |

**BASE/**



## 7.0 Environmental Significance Summary

### 7.1 Matters of National Environmental Significance (MNES)

The EPBC Act establishes a process for environmental assessment and approval of proposed actions that have, will have or are likely to have a significant impact on MNES or on Commonwealth land. Outlined in Table 11 are the prescribed MNES and their occurrence within the Survey Area.

Table 11 MNES Values within the Survey Area

Prescribed MNES	Presence in Survey Area
World Heritage Properties	Not present within the Survey Area
National Heritage Places	Not present within the Survey Area
Wetlands of International Importance (Ramsar)	Moreton Bay Wetland occurs within the Survey Area
Listed Threatened Ecological Communities	<p>There are four (4) Threatened Ecological Communities mapped with the potential to occur within the Survey Area.</p> <ul style="list-style-type: none"> <li>• Subtropical and Temperate Coastal Saltmarsh</li> <li>• Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</li> <li>• Lowland Rainforest of Subtropical Australia</li> <li>• Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community</li> </ul> <p>Field surveys confirmed that no TEC's were present within the Survey Area.</p>
Listed Threatened Species	<p>Desktop searches of the Survey Area identified 83 species with the potential to occur within the Survey Area. Field surveys identified four (4) species likely to occur:</p> <ul style="list-style-type: none"> <li>• <i>Esacus magnirostris</i> (Beach Stone-Curlew)</li> <li>• <i>Hirundapus caudacutus</i> (White-Throated Needletail)</li> <li>• <i>Numenius madagascariensis</i> (Eastern Curlew)</li> <li>• <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)</li> </ul> <p>A further ten (10) species may occur within the Survey Area (Table 9).</p>
Listed Migratory Species	<p>Desktop searches of the Survey Area identified 80 migratory species with the potential to occur within the Survey Area. Field surveys of the vegetation communities and habitat types refined this to nine (9) species likely to occur within the Survey Area and sixteen (16) species that may occur within the Survey Area.</p>
Commonwealth Marine Area	Not present within the Survey Area
Great Barrier Reef Marine Park	Not present within the Survey Area
Nuclear actions (including uranium mining)	Not present within the Survey Area

Prescribed MNES	Presence in Survey Area
A water resource, in relation to coal seam gas development and large coal mining development.	Not present within the Survey Area

## 7.2 Matters of State Environmental Significance (MSES)

MSES include certain environmental values that are protected under Queensland legislation including:

- *Nature Conservation Act 1992*
- *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Vegetation Management Act 1999*
- *Marine Parks Act 2004*
- *Environmental Offsets Act 2014.*
- *Regional Interests Planning Act 2014*

MSES that could be relevant to the Survey Area include those listed in Schedule 2 of the *EO Regulations*. Most of these MSES include flora and fauna values that have been previously discussed throughout Section 5.0 and 6.0. These values within the Survey Area, along with others that are considered MSES have been summarised in Table 12.

Table 12 MSES values within the Survey Area

Prescribed MSES	Definition	Presence in Survey Area
Regulated Vegetation	Prescribed regional ecosystems that are 'endangered' or 'of concern' regional ecosystems, as defined under the VM Act.	<b>No</b> Not present within the Survey Area
	Prescribed regional ecosystem that intersects with an area shown on the vegetation management wetlands map	<b>No</b> Not present within the Survey Area
	Prescribed regional ecosystem that is located within the defined distance from the defining banks of a watercourse identified on the vegetation management watercourse map	<b>Yes</b> Present either side of Wrights Creek within the Survey Area.
	Prescribed regional ecosystem that is an area of essential habitat on the essential habitat map for an animal that is critically endangered wildlife, endangered wildlife or vulnerable wildlife or a plant that is critically endangered wildlife, endangered wildlife or vulnerable wildlife	<b>Yes</b> Areas of prescribed regional ecosystems that are also considered essential habitat for threatened species' occur within the Survey Area.
Marine Plants	Marine plants are part of the mosaic of fish habitats and are an integral and usually highly visible feature of the coastline. Fish habitat is defined under the <i>Fisheries Act 1994</i> and includes land, waters and plants associated with	<b>Yes</b> Marine plants species below the Highest Astronomical Tide (HAT) are present within the Survey Area



Prescribed MSES	Definition	Presence in Survey Area
	<p>the life cycle of fish, and includes land and waters not presently occupied by fisheries resources.</p> <p>Marine plants are defined under the Fisheries Act and include the following:</p> <p>a. a plant (a tidal plant) that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen;</p> <p>b. material of a tidal plant, or other plant material on tidal land;</p> <p>c. a plant, or material of a plant, prescribed under regulation or management plan to be a marine plant.</p>	
Connectivity	<p>Prescribed regional ecosystem that:</p> <p>a. is of sufficient size or configured in a way that maintains ecosystem functioning; and</p> <p>b. will remain despite a threatening process within the meaning of the NC Act</p>	<p><b>No</b></p> <p>The Survey Area occurs in a peri-urban area and no significant impacts to connectivity are expected.</p>
Wetlands and watercourses	<p>Wetland in a wetland protection area as shown on the map of referable wetlands under the <i>Environmental Protection Regulation 2019</i></p>	<p><b>Yes</b></p> <p>Estuarine - Mangroves and related tree communities</p> <p>Estuarine – water</p> <p>Coastal/ Sub-Coastal non-floodplain tree swamps (Melaleuca and Eucalypt)</p> <p>Artificial/ highly modified wetlands (dams, ring tanks, irrigation channel)</p>
	<p>Wetlands of high ecological significance as shown on the map of referable wetlands under the <i>Environmental Protection Regulation 2008</i></p>	<p><b>Yes</b></p> <p>Present either side of Wright Creek to the north of White Patch Esplanade (Figure 7a).</p>
	<p>Wetland or watercourse in a high ecological value waters as identified under the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i></p>	<p><b>No</b></p> <p>Not present within the Survey Area</p>
Protected Areas	<p>Protected areas are declared under the NC Act for the conservation of Queensland's natural and cultural resources. They include:</p> <ul style="list-style-type: none"> <li>• national parks</li> <li>• national parks (Aboriginal land)</li> <li>• national parks (Torres Strait Islander land)</li> <li>• national parks (Cape York Peninsula Aboriginal land)</li> <li>• regional parks</li> <li>• nature refuges</li> </ul>	<p><b>Yes</b></p> <p>Bribie Island National Park is present to north of White Patch Esplanade within the Survey Area</p>
Fish habitat areas and highly	<ul style="list-style-type: none"> <li>• Fish Habitat Areas are declared under the <i>Fisheries Act 1994</i></li> </ul>	<p><b>Yes</b></p>

Prescribed MSES	Definition	Presence in Survey Area
protected zones of state marine parks	<ul style="list-style-type: none"> <li>Marine parks are declared under the <i>Marine Parks Act 2004</i></li> </ul>	Moreton Bay Marine Park (Pumicestone Channel-Godwin Beach) occurs within the Survey Area (Figure 7b)
Waterways proving for fish passage	Any part of a waterway that provides for passage of fish regulated under the <i>Fisheries Act 1994</i> for the natural movement patterns of fish species required to maintain the biological integrity of the species.	<p><b>Yes</b></p> <p>Wrights Creek and Pumicestone Passage are both classed as tidal waterways that provide for fish passage.</p>
Legally secured offset areas	Legally secured offset areas are any areas declared as an environmental offset protection area, high nature conservation value under the VM Act or another area prescribed under a regulation.	<p><b>No</b></p> <p>Not present within the Survey Area.</p>
Protected wildlife habitat	<ul style="list-style-type: none"> <li>an area that is shown as a high risk area on the flora survey trigger map that contains plants that are endangered wildlife or vulnerable wildlife</li> <li>an area that is not shown as a high risk area on the flora survey trigger map, to the extent the area contains plants that are endangered wildlife or vulnerable wildlife</li> <li>a koala habitat area as defined by the Nature Conservation (Koala) Conservation Plan 2017</li> <li>an area of habitat (e.g., foraging, roosting, nesting or breeding habitat) for an animal that is Endangered, Vulnerable or a Special Least Concern animal.</li> </ul>	<p><b>Yes</b></p> <p>Protected wildlife habitat occurs within the Survey Area for multiple species including:</p> <ul style="list-style-type: none"> <li>Water mouse (<i>Xeromys myoides</i>)</li> <li>Regent honeyeater (<i>Anthochaera Phrygia</i>)</li> <li>Eastern curlew (<i>Numenius madagascariensis</i>)</li> <li>Great knot (<i>Calidris tenuirostris</i>)</li> <li>Western Alaskan bar-tailed godwit (<i>Limosa lapponica</i>)</li> <li>Red knot (<i>Calidris canutus</i>)</li> <li>Curlew sandpiper (<i>Calidris ferruginea</i>)</li> <li>Lesser sand plover (<i>Charadrius mongolus</i>)</li> <li>Greater sand piper (<i>Charadrius leschenaultia</i>)</li> </ul>
Designated precinct in a strategic environmental area	An area identified on the Strategic Environmental Area map. Designated precincts include the Channel Country, Fraser Island, Gulf Rivers and Hinchinbrook Island	<p><b>No</b></p> <p>There are no Strategic Environmental Areas mapped within or adjacent to the Survey Area</p>



## 8.0 Conclusions and Recommendations

This report documents the finding of a terrestrial ecological assessment undertaken for the proposed White Patch Esplanade causeway upgrade. The environmental values have been assessed under the assumption that the entirety of the Survey Area will be utilised as part of this project.

Key environmental values relevant to the Project that have been identified from desktop information and confirmed during field surveys include:

- The Survey Area incorporates three (3) distinct vegetation communities the most prevalent being non-remnant mown parklands and road verges covering 2.2 ha, followed by an area of remnant open forest to woodland vegetation dominated by *Corymbia intermedia*, *Lophostemon confertus* and locally dominant *Callitris columellaris* which covers 2.0 ha of the Survey Area. Lastly, a low closed mangrove forest dominated by *Avicennia marina* covered 1.1 ha of the Survey Area. The remaining area (0.6 ha) comprises intertidal mudflats adjacent the low closed mangrove forest and deeper water associated with Wrights Creek and the culvert under White Patch Esplanade.
- A total of 1.11 ha of marine plants occurs as fringing vegetation immediately adjacent to the Pumicestone Passage and Wrights Creek generally below the Highest Astronomical Tide (HAT). Small patches of saltwater couch were present above the HAT and were considered marine plants under the definition set by the *Fisheries Act*.
- A total of 24 invasive species were recorded within the Survey Area, of these five (5) are classed as restricted matter under the *Biosecurity Act*. Three (3) are considered Weeds of National Significance. Restricted invasive species were predominantly confined to the remnant open forest to woodland vegetation communities with the highest densities occurring north of White Patch Esplanade within Bribie Island National Park.
- The Survey Area supports four (4) habitat types; Eucalypt and *Corymbia* dominated open forest or woodland on sandy soils, low closed mangrove forests, intertidal mudflats and mown grass parklands.
- No Threatened flora or fauna were sighted during field surveys.
- There are three (3) historic record of koala on Bribie Island, however all three records have a high degree of spatial uncertainty (>9 km), with one record from 1965 and two records undated. Koala habitat is present within the Survey Area, nevertheless a koala SAT survey failed to find any evidence of usage.
- MSES wetlands are mapped as occurring within the Survey Area along Wrights Creeks on the eastern side of the existing causeway infrastructure as well as a very small portion adjacent to the mouth of Wrights Creek on the western side of White Patch Esplanade. The Survey Area is part of Moreton Bay Wetlands which is a Wetland of International Significance (RAMSAR).
- Desktop results found that essential habitat for threatened species was mapped for 12 species across the Survey Area. This was refined from field surveys and regional ecosystem spatial analysis resulting in the removal of three (3) species leaving nine (9) species with essential habitat within the Survey Area.
- Desktop searches of the Protected Matters Search Tool (PMST) indicated various Matters of National Environmental Significance (MNES) with the potential to occur within the Survey Area including;
  - Wetlands of International Significance (RAMSAR) (1)
  - Threatened Ecological Communities (4)

- Threatened Flora and Fauna (83)
- And threatened migratory species which may utilise the Survey Area (80)
- Desktop review and field surveys focusing on Matters of State Environmental Significance (MSES) indicated the presence or likely presence of multiple MSES including;
  - Regulated vegetation
  - Marine plants
  - Wetlands and watercourses
  - Protected areas (National Park)
  - Fish habitat areas and highly protected zones of state marine parks
  - Waterways proving for fish passage
  - Protected wildlife habitat

The final footprint of the Project will determine the significant impacts to environmental values, potentially reducing further surveys towards MNES and MSES. Key recommendations include:

- Examine the EPBC referral guidelines/checklist for MNES after further option and design have been established
- Further option and design parameters allow targeted surveys for threatened or migratory species as required.



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## **Appendix A**

# EPBC Act Protected Matters Search



# EPBC Act Protected Matters Report

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

Report created: 05-May-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

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

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	83
<a href="#">Listed Migratory Species:</a>	80

## Other Matters Protected by the EPBC Act

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

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

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

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	115
<a href="#">Whales and Other Cetaceans:</a>	13
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	1

## Extra Information

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

<a href="#">State and Territory Reserves:</a>	3
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	3
<a href="#">EPBC Act Referrals:</a>	13
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	6
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Wetlands of International Importance (Ramsar Wetlands)

[ [Resource Information](#) ]

Ramsar Site Name	Proximity	Buffer Status
<a href="#">Moreton bay</a>	Within Ramsar site	In feature area

### Listed Threatened Ecological Communities

[ [Resource Information](#) ]

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

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community</a>	Endangered	Community likely to occur within area	In feature area
<a href="#">Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</a>	Endangered	Community may occur within area	In buffer area only
<a href="#">Lowland Rainforest of Subtropical Australia</a>	Critically Endangered	Community may occur within area	In buffer area only
<a href="#">Subtropical and Temperate Coastal Saltmarsh</a>	Vulnerable	Community likely to occur within area	In buffer area only

### Listed Threatened Species

[ [Resource Information](#) ]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>BIRD</b>			
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
<a href="#">Cyclopsitta diophthalma coxeni</a> Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Diomedea antipodensis gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Fregetta grallaria grallaria</a> White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Limosa lapponica baueri</a> Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Pterodroma neglecta neglecta</a> Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Turnix melanogaster</a> Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<b>FISH</b>			
<a href="#">Epinephelus daemeli</a> Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Nannoperca oxleyana</a> Oxleyan Pygmy Perch [64468]	Endangered	Species or species habitat may occur within area	In buffer area only
<a href="#">Pseudomugil mellis</a> Honey Blue Eye, Honey Blue-eye [26180]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thunnus maccoyii</a> Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
<b>FROG</b>			
<a href="#">Litoria olongburensis</a> Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Mixophyes fleayi</a> Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In buffer area only
<b>INSECT</b>			
<a href="#">Argynnis hyperbius inconstans</a> Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
<b>MAMMAL</b>			
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Chalinolobus dwyeri</a> Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Dasyurus hallucatus</a> Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In buffer area only



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Petauroides volans</a> Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Petaurus australis australis</a> Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
<a href="#">Xeromys myoides</a> Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area	In feature area
<b>PLANT</b>			
<a href="#">Acacia attenuata</a> [10690]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Acronychia littoralis</a> Scented Acronychia [8582]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Arthraxon hispidus</a> Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Bosistoa transversa</a> Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Cryptocarya foetida</a> Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Cryptostylis hunteriana</a> Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Cupaniopsis shirleyana</a> Wedge-leaf Tuckerroo [3205]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macadamia integrifolia</a> Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macadamia ternifolia</a> Small-fruited Queensland Nut, Gympie Nut [7214]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Macadamia tetraphylla</a> Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Persicaria elatior</a> Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Phaius australis</a> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Phaius bernaysii</a> Yellow Swamp-orchid [4918]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Rhodamnia rubescens</a> Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
<a href="#">Rhodomyrtus psidioides</a> Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Samadera bidwillii</a> Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thesium australe</a> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<b>REPTILE</b>			
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area	In feature area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area
<a href="#">Coeranoscincus reticulatus</a> Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area	In feature area
<a href="#">Delma torquata</a> Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In buffer area only
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<b>SHARK</b>			
<a href="#">Carcharias taurus (east coast population)</a> Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Sphyrna lewini</a> Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

### Listed Migratory Species [ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text	Buffer Status
<b>Migratory Marine Birds</b>			
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area	In feature area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
<b>Migratory Marine Species</b>			
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area	In feature area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#"><i>Eretmochelys imbricata</i></a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#"><i>Eubalaena australis</i> as <i>Balaena glacialis australis</i></a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#"><i>Lamna nasus</i></a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
<a href="#"><i>Lepidochelys olivacea</i></a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#"><i>Megaptera novaeangliae</i></a> Humpback Whale [38]		Congregation or aggregation known to occur within area	In feature area
<a href="#"><i>Mobula alfredi</i> as <i>Manta alfredi</i></a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
<a href="#"><i>Mobula birostris</i> as <i>Manta birostris</i></a> Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
<a href="#"><i>Natator depressus</i></a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#"><i>Orcaella heinsohni</i></a> Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In feature area
<a href="#"><i>Orcinus orca</i></a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
<a href="#"><i>Pristis zijsron</i></a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Breeding known to occur within area	In feature area
<b>Migratory Terrestrial Species</b>			
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
<a href="#">Symposiachrus trivirgatus as Monarcha trivirgatus</a> Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
<b>Migratory Wetlands Species</b>			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
<a href="#">Calidris alba</a> Sanderling [875]		Roosting known to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area	In feature area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area	In feature area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area	In feature area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area	In feature area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area	In feature area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area	In feature area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area	In feature area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area	In feature area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Roosting known to occur within area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Roosting known to occur within area	In feature area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area	In feature area
<a href="#">Philomachus pugnax</a> Ruff (Reeve) [850]		Roosting known to occur within area	In feature area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Roosting known to occur within area	In feature area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Roosting known to occur within area	In feature area
<a href="#">Tringa incana</a> Wandering Tattler [831]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area	In feature area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area	In feature area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Roosting known to occur within area	In feature area

## Other Matters Protected by the EPBC Act

Listed Marine Species			[ Resource Information ]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
<a href="#">Anseranas semipalmata</a> Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
<a href="#">Ardenna carneipes as Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Ardenna grisea as Puffinus griseus</a> Sooty Shearwater [82651]		Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Roosting known to occur within area	In feature area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In buffer area only
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Roosting known to occur within area	In feature area
<a href="#">Calidris alba</a> Sanderling [875]		Roosting known to occur within area	In feature area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area overfly marine area	In feature area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area	In feature area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area	In feature area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Diomedea antipodensis gibsoni as Diomedea gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area	In feature area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area	In feature area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area	In feature area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area	In feature area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
<a href="#">Philomachus pugnax</a> Ruff (Reeve) [850]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Sternula albifrons as Sterna albifrons</a> Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
<a href="#">Symposiachrus trivirgatus as Monarcha trivirgatus</a> Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche eremita</a> Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In feature area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
<a href="#">Tringa brevipes as Heteroscelus brevipes</a> Grey-tailed Tattler [851]		Roosting known to occur within area	In feature area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Tringa incana as Heteroscelus incanus</a> Wandering Tattler [831]		Roosting known to occur within area	In feature area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area overfly marine area	In feature area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area	In feature area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Roosting known to occur within area overfly marine area	In feature area
<b>Fish</b>			
<a href="#">Acentronura tentaculata</a> Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
<a href="#">Campichthys tryoni</a> Tryon's Pipefish [66193]		Species or species habitat may occur within area	In feature area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Corythoichthys ocellatus</a> Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area	In feature area
<a href="#">Festucalex cinctus</a> Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area	In feature area
<a href="#">Hippichthys cyanospilos</a> Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area	In feature area
<a href="#">Hippichthys heptagonus</a> Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area	In feature area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
<a href="#">Hippocampus kelloggi</a> Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area	In feature area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area	In feature area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area	In feature area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
<a href="#">Micrognathus andersonii</a> Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area	In feature area
<a href="#">Micrognathus brevirostris</a> thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area	In feature area
<a href="#">Microphis manadensis</a> Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area	In feature area
<a href="#">Solegnathus dunckeri</a> Duncker's Pipehorse [66271]		Species or species habitat may occur within area	In feature area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area	In feature area
<a href="#">Solegnathus spinosissimus</a> Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area
<a href="#">Solenostomus paradoxus</a> Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
<b>Mammal</b>			
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area	In feature area
<b>Reptile</b>			
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area	In buffer area only
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area	In feature area
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area	In feature area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area	In feature area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area	In feature area



Scientific Name	Threatened Category	Presence Text	Buffer Status
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area	In buffer area only
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area	In buffer area only
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area	In feature area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area	In feature area
<a href="#">Laticauda laticaudata</a> a sea krait [1093]		Species or species habitat may occur within area	In feature area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area	In feature area

## Whales and Other Cetaceans

[ [Resource Information](#) ]

Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			

Current Scientific Name	Status	Type of Presence	Buffer Status
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area	In feature area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In feature area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Congregation or aggregation known to occur within area	In feature area
<a href="#">Orcaella heinsohni as Orcaella brevirostris</a> Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area	In feature area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Breeding known to occur within area	In feature area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area

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

### Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence	Buffer Status
Nov-Feb			
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Nesting	Known to occur	In feature area

### Extra Information

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

Protected Area Name	Reserve Type	State	Buffer Status
Bribie Island	National Park	QLD	In feature area
Moreton Bay	Marine Park	QLD	In feature area
Pumicestone Channel	Fish Habitat Area (B)	QLD	In buffer area only

#### Nationally Important Wetlands [\[ Resource Information \]](#)

Wetland Name	State	Buffer Status
<a href="#">Bribie Island</a>	QLD	In feature area
<a href="#">Moreton Bay</a>	QLD	In buffer area only
<a href="#">Pumicestone Passage</a>	QLD	In buffer area only

#### EPBC Act Referrals [\[ Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
<a href="#">Banksia Beach Water Treatment Plant</a>	2007/3396	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
<a href="#">Bongaree Seawall Renewal Project</a>	2012/6688	Not Controlled Action	Completed	In buffer area only
<a href="#">Construction of Sewerage Pipeline</a>	2009/4868	Not Controlled Action	Completed	In buffer area only
<a href="#">First Avenue Stormwater Discharge Improvement</a>	2002/604	Not Controlled Action	Completed	In buffer area only



Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
<b>Not controlled action</b>				
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed	In feature area
<a href="#">Installation of a sewer rising main and replacement of the existing PVC rising m</a>	2005/2058	Not Controlled Action	Completed	In buffer area only
<a href="#">Kakadu Beach high tide shore bird roost maintenance, Bribie Island, QLD</a>	2014/7181	Not Controlled Action	Completed	In buffer area only
<a href="#">Moreton Bay Regional Council/Natural resources management/Lot 4 Esplanade Toorbul QLD 4510/QLD/Maintenance of a high tide shore bird roost</a>	2014/7188	Not Controlled Action	Completed	In buffer area only
<a href="#">Pacific Harbour Project</a>	2000/53	Not Controlled Action	Completed	In buffer area only
<a href="#">Residential Viewing Corridor Overlooking Moreton Bay</a>	2007/3775	Not Controlled Action	Completed	In buffer area only
<a href="#">Spitfire Channel Dredging</a>	2005/2247	Not Controlled Action	Completed	In buffer area only
<a href="#">Toorbul Foreshore Wader Roost Enhancement</a>	2004/1349	Not Controlled Action	Completed	In feature area
<b>Referral decision</b>				
<a href="#">Bongaree Seawall Renewal Project, Qld</a>	2012/6671	Referral Decision	Completed	In buffer area only
<b>Biologically Important Areas</b>				
Scientific Name		Behaviour	Presence	Buffer Status
<b>Dolphins</b>				
<a href="#">Sousa chinensis</a>				
Indo-Pacific Humpback Dolphin [50]		Breeding	Known to occur	In feature area
<a href="#">Tursiops aduncus</a>				
Indo-Pacific/Spotted Bottlenose Dolphin [68418]		Breeding	Known to occur	In feature area
<b>Marine Turtles</b>				
<a href="#">Caretta caretta</a>				
Loggerhead Turtle [1763]		Nesting	Known to occur	In feature area
<a href="#">Chelonia mydas</a>				
Green Turtle [1765]		Foraging	Known to occur	In feature area

Scientific Name	Behaviour	Presence	Buffer Status
<b>Sharks</b>			
<a href="#">Carcharias taurus</a>			
Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
<b>Whales</b>			
<a href="#">Megaptera novaeangliae</a>			
Humpback Whale [38]	Resting on migration (southbound)	Known to occur	In buffer area only

# Caveat

## 1 PURPOSE

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

The report contains the mapped locations of:

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

## 2 DISCLAIMER

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

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

## 3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

## 4 LIMITATIONS

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

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

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

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

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

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



# Acknowledgements

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

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

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

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

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## **Appendix B**

# Wildlife Online Extract



Class	Scientific Name	Common Name	NC Act class	EPBC Act Class	Sighting Records	Specimen Records
amphibians	<i>Litoria freycineti</i>	wallum rocketfrog	V		38	3
amphibians	<i>Litoria olongburensis</i>	wallum sedgefrog	V	V	628	5
amphibians	<i>Crinia tinnula</i>	wallum froglet	V		259	2
birds	<i>Hirundapus caudacutus</i>	white-throated needletail	V	V	21	0
birds	<i>Botaurus poiciloptilus</i>	Australasian bittern	E	E	2	0
birds	<i>Esacus magnirostris</i>	beach stone-curlew	V		248	0
birds	<i>Charadrius leschenaultii</i>	greater sand plover	V	V	269	0
birds	<i>Charadrius mongolus</i>	lesser sand plover	E	E	571	0
birds	<i>Thalassarche cauta</i>	shy albatross	E	V	3	1
birds	<i>Anthochaera phrygia</i>	regent honeyeater	CR	CE	5	0
birds	<i>Macronectes giganteus</i>	southern giant-petrel	E	E	1	1
birds	<i>Rostratula australis</i>	Australian painted-snipe	E	E	1	0
birds	<i>Calidris canutus</i>	red knot	E	E	402	0

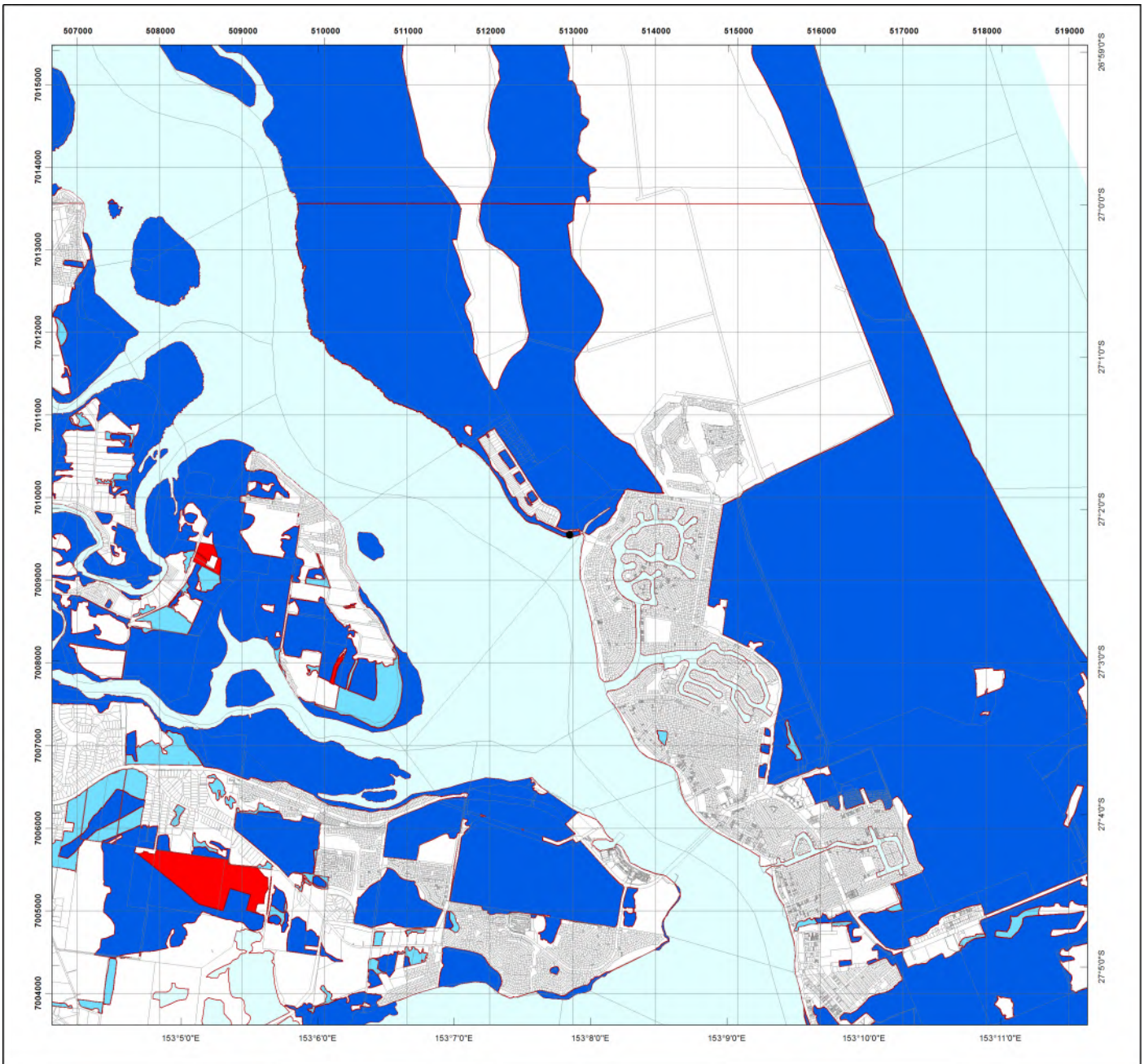
Class	Scientific Name	Common Name	NC Act class	EPBC Act Class	Sighting Records	Specimen Records
birds	<i>Calidris ferruginea</i>	curlew sandpiper	CR	CE	862	0
birds	<i>Calidris tenuirostris</i>	great knot	CR	CE	1210	0
birds	<i>Limosa lapponica baueri</i>	Western Alaskan bar-tailed godwit	V	V	2009	0
birds	<i>Numenius madagascariensis</i>	eastern curlew	E	CE	1566	0
birds	<i>Ninox strenua</i>	powerful owl	V		1	0
malacostracans	<i>Cherax robustus</i>		V		2	0
malacostracans	<i>Tenuibranchiurus glypticus</i>	swamp crayfish	E		5	0
mammals	<i>Sousa sahalensis</i>	Australian humpback dolphin	V		7	0
mammals	<i>Dugong dugon</i>	dugong	V		9	0
mammals	<i>Xeromys myoides</i>	water mouse	V	V	7	0
mammals	<i>Phascolarctos cinereus</i>	koala	E	E	7	0
reptiles	<i>Caretta caretta</i>	loggerhead turtle	E	E	1	0

Class	Scientific Name	Common Name	NC Act class	EPBC Act Class	Sighting Records	Specimen Records
reptiles	<i>Chelonia mydas</i>	green turtle	V	V	1	0
land plants	<i>Acacia baueri</i> subsp. <i>baueri</i>	tiny wattle	V		2	0



## **Appendix C**

# Vegetation Management Support Mapping



## Regulated Vegetation Management Map

### Legend

- Coordinates
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Area not categorised
- Other land parcel boundaries



This product is projected into:  
 GDA 1994 MGA Zone 56

### Disclaimer:

While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: [www.resources.qld.gov.au](http://www.resources.qld.gov.au) or contact the Department of Resources.

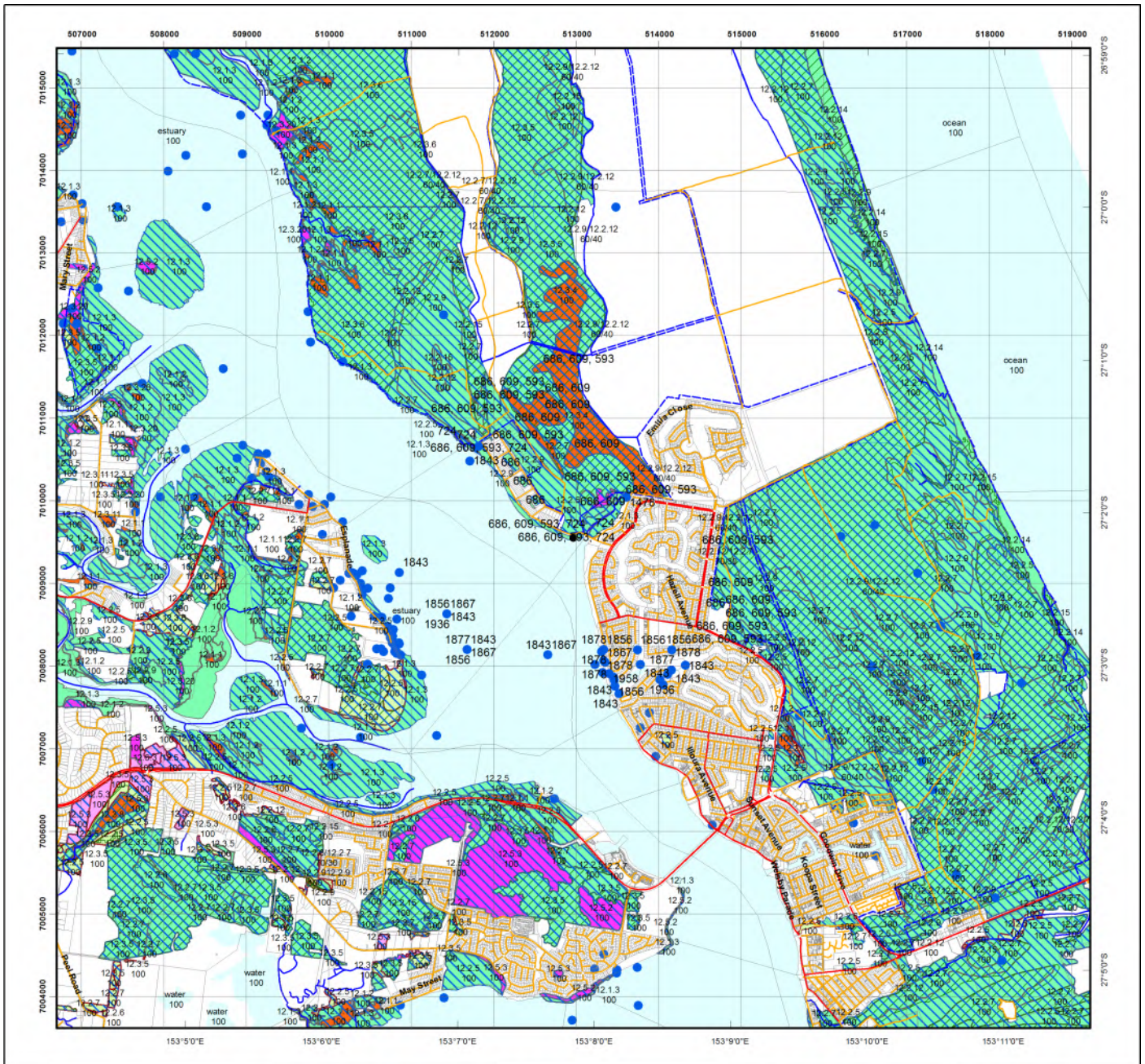
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.







## Vegetation Management Supporting Map

### Legend

- Coordinates
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map  
(Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries



This product is projected into:  
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

#### Disclaimer:

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Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: [www.resources.qld.gov.au](http://www.resources.qld.gov.au) or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

Land parcel boundaries are provided as locational aid only.



# Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - State Code 16: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Planning Act 2016*, and
- Accepted development vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Resources website (<http://www.resources.qld.gov.au>) has more information on how the layer is applied under the State Development Assessment Provisions - State Code 16: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

- 1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
- 2) in which the protected wildlife, at any stage of its life cycle, is located.

Protected wildlife includes critically endangered, endangered, vulnerable or near-threatened native wildlife prescribed under the *Nature Conservation Act 1992*.

## Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
686	<i>Crinia tinnula</i>	wallum froglet	V	Vegetation community is a mandatory essential habitat factor for this species. Permanent to ephemeral acidic (pH 4.3 - 5.2), soft freshwater in Melaleuca (e.g. <i>M. quinquenervia</i> ) swamps, sedgeland, wet and dry heathland (e.g. <i>Banksia robur</i> , <i>Xanthorrhoea</i> ) and wallum ( <i>Banksia aemula</i> shrubland/woodland) areas coastal lowlands on sand or sandstone, occasionally in adjacent open forest/woodland (e.g. <i>Eucalyptus racemosa</i> , <i>Corymbia citriodora</i> ) with heathy understorey; known to persist in small remnants (<10ha); may be found well away from water.	Sea level to 150m.	Sandy and sandy-alluvial substrates.	None
609	<i>Litoria freycineti</i>	wallum rocketfrog	V	Vegetation community is a mandatory essential habitat factor for this species. Freshwater acidic swamps/lagoons (permanent or temporary still water) dominated by sedges (e.g. <i>Baumea</i> and <i>Eleocharis</i> spp.) in heathland (e.g. <i>Banksia/Xanthorrhoea</i> ), wallum ( <i>Banksia aemula</i> shrubland/woodland) or Melaleuca open forest (e.g. <i>M. quinquenervia</i> ), and adjacent <i>Eucalyptus racemosa</i> forest, also found around acidic coastal lakes; on sand and sandstone; can be found well away from water during non-breeding season.	Sea level to 200m.	Sandy and alluvial substrates.	None
593	<i>Litoria olongburensis</i>	wallum sedgefrog	V	Vegetation community is a mandatory essential habitat factor for this species. Well vegetated permanent to ephemeral freshwater swamp, sedgeland, lake or creek, e.g. dense reed beds (including <i>Baumea</i> , <i>Restio</i> spp.) occasionally with Melaleuca <i>quinquenervia</i> or <i>Callistemon pachyphyllus</i> , acidic wallum swamps and wallum creeks on coastal sand masses; most abundant in wallum ( <i>Banksia aemula</i> ) swamps that seasonally flood where they are found year-round; recorded in adjacent wet heath, dry heath, <i>Gahnia</i> heath and Melaleuca swamp forest/open forest.	Sea level to 200m.	Sandy substrates.	Near/in waterbodies.
724	<i>Xeromys myoides</i>	water mouse	V	Sedgeland ( <i>Juncus</i> , <i>Baumea</i> , <i>Lepironia</i> , <i>Cyperus</i> , <i>Eleocharis</i> ), salt meadow/saline grassland ( <i>Sporobolus virginicus</i> ), wet heathland ( <i>Banksia robur</i> , <i>Gahnia</i> spp.) and saltmarsh-chenopod grassland behind mangroves; and in open-closed mangrove scrub-forest (e.g. <i>Avicennia marinus</i> subsp. <i>australasica</i> in SEQ, <i>Cerriops tagal</i> ± <i>Bruguiera</i> spp. but forage in adjacent <i>Avicennia</i> and saltpan areas in CQC), Melaleuca <i>quinquenervia</i> swamp forest or fresh-water mangrove, and supralittoral banks with <i>Callitris</i> and <i>Casuarina</i> .	Sea level to 100m.	None	Coastal areas near mangroves/swamps.
1478	<i>Anthochaera phrygia</i>	regent honeyeater	CE	Dry eucalypt woodland and open forest, woodland, rural and urban areas with mature eucalypts; favours box-ironbark associations including <i>Eucalyptus sideroxylon</i> , <i>E. albens</i> , <i>E. melliodora</i> , <i>E. moluccana</i> , <i>E. robusta</i> , <i>E. caliginosa</i> , <i>E. maculata</i> occasionally with <i>Angophora leiocarpa</i> , and <i>Casuarina cunninghamiana</i> in riparian forest; generally comprise large/mature trees that are reliable nectar producers (both in timing and quantity) with tall shrub layer on moist fertile sites (lower foothills/river valleys/creeklines). Nest in mistletoe, usually on horizontal branch or in vertical fork of rough-barked tree 1-30m above ground.	Sea level to 550m.	None	None
1843	<i>Numenius madagascariensis</i>	eastern curlew	E	Foraging on soft, intertidal mudflat, with a preference for broad flats, often in sheltered areas near mangroves and estuaries/creeks, also on sandflats and occasionally ocean beaches, rock platforms and coral reefs. Roost on saltflat, saltmarsh, mangroves, reef flat, sandy spits and grassland near water.	Sea level to 100m.	Sand, sandy mud and mud substrates.	Associated with coastlines and wetlands.
1856	<i>Calidris tenuirostris</i>	great knot	CE	Foraging on intertidal mudflat/sandflat in sheltered coastal areas, exposed reef, rock platform, mangrove, near coastal swamp/lagoon and salt lake. Roost on sandy beach, mudflat and coastal claypan .	Sea level to 100m.	Mud and sand substrates.	Associated with coastlines and wetlands.
1867	<i>Limosa lapponica baueri</i>	Western Alaskan bar-tailed godwit	V	Foraging on large intertidal mudflat/sandflat, banks in estuaries, inlets, bays and coastal lagoons; also saline wetlands, saltmarsh, sandy beach, rock platform and coral reef-flat. Roost on sandy beach/spit and near saltmarsh.	Sea level to 100m.	Sand and mud substrates.	Associated with coastlines and wetlands.
1877	<i>Calidris canutus</i>	red knot	E	Foraging on intertidal mudflat/sandflat and sandy beach of sheltered coastal areas, also saline wetlands/saltmarsh. Roost on sandy beach or spit, mudflat and coastal claypan .	Sea level to 100m.	Sand and mud substrates.	Associated with coastlines and wetlands.

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
1878	<i>Calidris ferruginea</i>	curlew sandpiper	CE	Foraging on intertidal mudflat in sheltered estuaries, bays, inlets and lagoons; non-tidal swamps and inland ephemeral and permanent lakes, dams or waterholes. Roost on shingle/sand/shell beaches, saltmarsh, mangrove and close to wetlands.	Sea level to 100m.	Sand and mud substrates.	Associated with coastlines and coastal and inland wetlands.
1936	<i>Charadrius mongolus</i>	lesser sand plover	E	Foraging on sandy beach, intertidal mudflat/sandflat and mangrove mudflat of coastal bays and estuaries. Also inland at lakes and soaks. Roost on beach, banks, sand/shell spits, rocky spits and exposed reef.	Sea level to 100m.	Sand and mud substrates.	Associated with coastlines and coastal and inland wetlands.
1948	<i>Charadrius leschenaultii</i>	greater sand plover	V	Foraging on intertidal mudflats, sandbank, sandy/shelly/muddy beaches, rock platforms, coral reefs and tidal lagoons. Roost on sandspit, beach, lagoons edge, rocky points, coastal saltmarsh and claypan.	Sea level to 100m.	Sand and mud substrates.	Associated with coastlines and wetlands.

Label	Regional Ecosystem (mandatory unless otherwise specified)
686	12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.12, 12.3.14, 12.3.20, 12.5.2, 12.5.10. These regional ecosystems are not a mandatory essential habitat factor for this species.
609	12.2.2, 12.2.5, 12.2.7, 12.2.9, 12.2.10, 12.2.12, 12.2.13, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.11, 12.3.12, 12.3.13, 12.3.14, 12.3.20, 12.5.4, 12.5.9, 12.9-10.4, 12.9-10.10, 12.9-10.22. These regional ecosystems are not a mandatory essential habitat factor for this species.
593	12.2.5, 12.2.7, 12.2.12, 12.2.15, 12.3.5, 12.3.20. These regional ecosystems are not a mandatory essential habitat factor for this species.
724	7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 8.1.5, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 11.2.4, 11.2.5, 11.3.27, 12.1.1, 12.1.2, 12.1.3, 12.2.5, 12.2.7, 12.2.11, 12.2.12, 12.2.15, 12.3.4, 12.3.5, 12.3.6, 12.3.8, 12.3.12, 12.3.13, 12.3.20
1478	8.2.1, 8.2.3, 8.2.4, 8.2.6, 8.2.7, 8.2.8, 8.2.12, 8.2.13, 8.2.14, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.9.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.31, 8.12.32, 11.2.1, 11.2.2, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.23, 11.3.25, 11.3.26, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.7, 11.4.8, 11.4.9, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.7, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.16, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.4, 11.7.6, 11.8.1, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.6, 11.9.7, 11.9.9, 11.9.10, 11.9.13, 11.9.14, 11.10.1, 11.10.2, 11.10.4, 11.10.5, 11.10.6, 11.10.7, 11.10.9, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.19, 11.12.20, 11.12.21, 12.2.4, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.10, 12.2.11, 12.3.1, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.12, 12.3.14, 12.3.15, 12.3.16, 12.3.17, 12.3.18, 12.3.19, 12.3.20, 12.3.21, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.5, 12.5.6, 12.5.7, 12.5.8, 12.5.11, 12.5.12, 12.7.1, 12.7.2, 12.8.1, 12.8.2, 12.8.8, 12.8.9, 12.8.10, 12.8.11, 12.8.12, 12.8.14, 12.8.16, 12.8.17, 12.8.19, 12.8.23, 12.8.24, 12.8.25, 12.8.26, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.6, 12.9-10.7, 12.9-10.8, 12.9-10.12, 12.9-10.13, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.20, 12.9-10.21, 12.9-10.23, 12.9-10.24, 12.9-10.25, 12.9-10.26, 12.9-10.28, 12.9-10.29, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.19, 12.11.20, 12.11.21, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.2, 12.12.3, 12.12.4, 12.12.5, 12.12.6, 12.12.7, 12.12.8, 12.12.9, 12.12.11, 12.12.12, 12.12.14, 12.12.15, 12.12.20, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.26, 12.12.27, 12.12.28, 13.3.1, 13.3.2, 13.3.3, 13.3.4, 13.3.5, 13.3.7, 13.9.2, 13.11.1, 13.11.2, 13.11.3, 13.11.4, 13.11.5, 13.11.6, 13.11.8, 13.12.1, 13.12.2, 13.12.3, 13.12.4, 13.12.5, 13.12.8, 13.12.9, 13.12.10
1843	2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 7.1.1, 7.1.2, 7.1.3, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 12.1.2, 12.1.3
1856	2.1.1, 2.1.2, 2.1.3, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 7.1.1, 7.1.3, 8.1.2, 11.1.2, 11.1.4, 12.1.3
1867	2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3
1877	2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3
1878	2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 7.1.1, 7.1.2, 7.1.3, 8.1.1, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 12.1.2, 12.1.3
1936	2.1.1, 2.1.2, 2.1.3, 2.1.5, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 7.1.1, 7.1.3, 8.1.2, 11.1.2, 11.1.4, 12.1.3
1948	2.1.1, 2.1.4, 2.1.5, 3.1.6, 7.1.2, 7.1.3, 8.1.2, 8.1.3, 8.1.4, 11.1.1, 11.1.2, 11.1.3, 12.1.2, 12.1.3

## **Appendix D**

# Likelihood of Occurrence



A likelihood of occurrence assessment for conservation significant species identified during the desktop review was undertaken. The assessment considered known habitat and ecological requirements of the species against the vegetation and habitat types identified in the field survey.

Each species was assessed against the categories defined below.

- **Known:** Species was positively identified and recorded in the Project site during the field assessment; or previous, reliable records occur within the Project site.
- **Likely to occur:** Species was not recorded during the field survey or previously, however there are known records within the nearby surrounding area and suitable habitat exists in the Project site.
- **May occur:** Species was not recorded during the field survey or previously, however known records occur in the surrounding area and/or habitat in the Project site is marginal or degraded.
- **Unlikely to occur:** Habitat in the Project site might be suitable or marginal; however, species was not recorded during the field survey, and no known records of the species exist within the surrounding area.

This process is to be used as a guide and is not to be used as indicating species presence or absence other than where observed presence is indicated.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<b>Plants</b>				
<i>Acacia attenuata</i> (whipstick wattle)	V	V	<i>This species</i> is endemic to southeast Queensland and is found from Bundaberg to Burleigh Heads on the Gold Coast and within 30 km of the coastline. <i>Acacia attenuata</i> is a slender shrub that grows 3 to 4 m tall. It is found in wet heathland and open eucalypt forest communities in low-lying coastal habitats where soils are sandy / peaty and subject to seasonal waterlogging. It is also found in open woodland and open forest communities, usually with a heath understorey (DES, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Acacia baueri</i> <i>subsp. Baueri</i> (tiny wattle)	V		<i>Acacia baueri</i> subsp. <i>baueri</i> is an erect shrub growing to 50cm tall. This species is found in coastal areas from the Burrum Coast just south of Bundaberg, Queensland to north of Botany Bay, New South Wales. It is found on infertile and often seasonally waterlogged sands in coastal heath (wallum) habitat and adjacent plateaus and low open woodland (DES, 2022).	<b>Unlikely to occur</b> – A single record of this species on southern tip Bribie Island in 2000 (ALA, 2022). Suitable habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Acronychia littoralis</i> (scented acronychia)	E	E	<p>Scented <i>Acronychia</i> occurs in coastal areas (&lt;2 km from the sea) in sub-littoral rainforest, usually in transitional zones between littoral rainforest and swamp sclerophyll forest, littoral and coastal cypress pine communities or on the margin of littoral forest and cleared land (DAWE, 2022).</p> <p>Scented <i>Acronychia</i> has a narrow coastal distribution in eastern Australia between Fraser Island in Queensland and Port Macquarie on the north coast of NSW. In Queensland there are two, small, genetically isolated populations that consist of two trees at a single site on the Gold Coast and some trees in and near the Cooloola Section of Great Sandy National Park (DAWE, 2022).</p>	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Arthraxon hispidus</i> (hairy-joint grass)	V	V	<i>Arthraxon hispidus</i> is a slender, tufted, creeping perennial grass found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps and occasionally in woodlands. This species has been recorded from scattered locations throughout Queensland and occurs north to Port Douglas, and west to disjunct occurrences around springs in Carnarvon National Park (NP); however, most occurrences are from Noosa southwards (DES, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Bosistoa transversa</i> (three leaved bosistoa)		V	<i>Bosistoa transversa</i> is a small tree which grows in wet sclerophyll forest, dry sclerophyll forest and rainforest up to 300 m in altitude. This species is often associated with vegetation which includes <i>Argyrodendron trifoliolatum</i> , <i>Syzygium hodgkinsoniae</i> , <i>Endiandra pubens</i> , <i>Dendrocnide photinophylla</i> , <i>Acmena ingens</i> , <i>Diploglottis australis</i> and <i>Diospyros mabacea</i> (DES, 2022). This species is known from coastal districts from the Richmond River, NSW, to Mt Larcom near Gladstone, Queensland	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Cryptocarya foetida</i> (stinking Cryptocarya)	V	V	<i>Cryptocarya foetida</i> is known from Iluka, New South Wales, to Fraser Island and east of Gympie, southern Queensland. This species grows in littoral rainforest, usually on sandy soils, with mature trees also growing on basalt soils (DAWE, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<p><i>Cryptostylis hunteriana</i></p> <p>(leafless tongue-orchid)</p>		V	<p>The Leafless Tongue-orchid has been reported to occur in a wide variety of habitats including heathlands, heathy woodlands, sedgelands, <i>Xanthorrhoea</i> spp. plains, dry sclerophyll forests (shrub/grass sub-formation and shrubby sub-formation), forested wetlands, freshwater wetlands, grasslands, grassy woodlands, rainforests and wet sclerophyll forests (grassy sub-formation). Soils are generally considered to be moist and sandy, however, this species is also known to grow in dry or peaty soils (DAWE, 2022).</p> <p>In Queensland, populations are located within the Moreton and Wide Bay Pastoral Districts; and records indicate that the species has been collected from around Toowoomba, Cooloola, Maroochydore, D'agular Range and Tin Can Bay (DAWE, 2022).</p>	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<p><i>Cupaniopsis shirleyana</i></p> <p>(wedge leaf tuckeroo)</p>	V	V	<p><i>Cupaniopsis shirleyana</i> is a shrub or small tree that grows up to 6 m in height on a variety of soils and occurs in a variety of rainforest types including vine thicket and dry rainforest. This species has been recorded on hillsides, mountain tops, lower slopes of valleys, stream beds and along riverbanks at elevations between 20 to 550m. <i>Cupaniopsis shirleyana</i> is restricted to south east Queensland, from Brisbane, north to Bundaberg (DES, 2022).</p>	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<p><i>Macadamia integrifolia</i></p> <p>(macadamia nut)</p>	V	V	<p><i>Macadamia integrifolia</i> occurs from Mount Bauple, near Gympie, to Currumbin Valley in the Gold Coast Hinterland, south-east Queensland. The flowering period for this species is August to October, with fruiting December to March. This species occurs in remnant rainforest, including complex mixed notophyll forest, and prefers partially open areas such as rainforest edges (DAWE, 2021)</p>	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<p><i>Macadamia ternifolia</i></p> <p>(bopple nut)</p>	V	V	<p><i>Macadamia ternifolia</i> is restricted to an area between Mountt Pinbarren, south to Mary Cairncross Park, near Maleny. This species occurs in fertile, basalt-derived soils on steep southern slopes in association with <i>Argyrodendron trifoliatum</i>-<i>Dissiliaria baloghioides</i> alliance in the Blackall Range area and Araucarian microphyll-notophyll mixed tall closed forest at Mt Pinbarren (DAWE, 2021)</p>	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Macadamia tetraphylla</i> (rough shelled bush nut)	V	V	This species occurs from northern NSW to south-east Queensland. Flowers late winter to mid spring. Fruits mid-summer. It generally occurs in subtropical rainforest and complex notophyll vineforest, at the margins of these forests and in mixed sclerophyll forest. It occurs in restricted habitat, growing on moderate to steep hillslopes on alluvial soils at well-drained sites (DAWE, 2021).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Persicaria elatior</i> (tall knotweed)	V	V	This species normally grows on sandy, alluvial soil in swampy areas and riparian herblands along watercourses and lake edges. Occasionally in swamp forest or associated with disturbance. Occurs in the Moreton District of south east Queensland (DES, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Phaius australis</i> (lesser swamp-orchid)	E	E	<i>Phaius australis</i> is endemic to Australia and occurs in eastern Queensland and northern New South Wales. This species is commonly associated with coastal wet heath/sedgeland wetlands, swampy grassland or swampy forest and often where broad-leaved paperbark ( <i>Melaleuca leucadendra</i> ) or swamp Mahogany ( <i>Lophostemon suaveolens</i> ) grows. It is typically restricted to swamp-forest margins, where it occurs in swamp sclerophyll forest, swampy rainforest, or fringing open forest. <i>Phaius australis</i> grows in areas where soils are almost always damp, but not flooded for lengthy periods. They often grow in deep shade but can also occur in full sun. The flowering season of <i>Phaius australis</i> is mainly between August and December (DAWE, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Phaius bernaysii</i> (yellow swamp orchid)	E	E	<i>Phaius bernaysii</i> is known to grow along the margins between open forest/woodland and closed sedgeland, along the perimeter of a swamp, often in a fairly shady environment in <i>Melaleuca quinquenervia</i> – <i>Eucalyptus robusta</i> open forest in sandy or peaty soil. This species is currently known to occur only in one area on Stradbroke Island, near Myora in Queensland (DEWHA, 2008).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Rhodamnia rubescens</i> (scrub turpentine)	CE	CE	Occurs from areas inland of Bundaberg, south to NSW. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000 mm-1,600 mm. Found in littoral, warm temperate and subtropical rainforest, and wet sclerophyll forest usually on volcanic and sedimentary soils (TSSC, 2020). Flowering occurs from August to October, with fruit ripening from October to December (ALA, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Rhodomirtus psidioides</i> (native guava)	CE	CE	Occurs from NSW, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland. The species occurs in rainforest and its margins with sclerophyll vegetation, often near creeks and drainage lines. <i>Rhodomirtus psidioides</i> is a pioneer species in disturbed environments and is locally common in disturbed areas, such as regrowth and rainforest margins (TSSC, 2020). Flowering occurs from late spring to early summer (OEH, 2021).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Samadera bidwillii</i> (quassia)	V	V	<i>Samadera bidwillii</i> is endemic to Queensland and is currently known to occur in several localities between Scawfell Island, near Mackay, and Goomborian, north of Gympie. This species commonly occurs in lowland rainforest or on rainforest margins, but it can also be found in other forest types, such as open forest and woodland. <i>Samadera bidwillii</i> is commonly found in areas adjacent to both temporary and permanent watercourses in locations up to 510 m altitude (DAWE, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<i>Thesium australe</i> (austral toadflax)	V	V	<i>Thesium australe</i> has a widespread but sporadic distribution, occurring between the Bunya Mountains in south-east Queensland to north-east Victoria and as far west as the southern, central and northern tablelands in New South Wales and the Toowoomba region. <i>Thesium australe</i> is largely confined to moist grasslands, grassy woodlands or sub-alpine grassy heathlands, occurring in association with Kangaroo grass ( <i>Themeda triandra</i> ) and <i>Poa</i> spp. It is hemi-parasitic and often is parasitic on <i>Themeda triandra</i> (DAWE, 2022).	<b>Unlikely to occur</b> – No records of this species on Bribie Island or the nearby mainland. Suitable habitat absent from the Survey Area.
<b>Fauna</b>				
<b>Amphibians</b>				
<i>Crinia tinnula</i> (wallum froglet)	V		The species occurs in lowland coastal habitats in south-east Queensland and north-east New South Wales and on the sand islands off the Queensland coast. The species inhabits freshwater swamps in lowland coastal areas and is found in associated vegetation communities such as heath, sedgeland and woodland on nutrient-poor sandy soils (DES, 2022)	<b>Unlikely to occur</b> – Numerous records exist on Bribie Island for this species. However, suitable freshwater habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Litoria freycineti</i> (wallum rocketfrog)	V		The species occurs in confined coastal lowlands and sand islands of south-east Queensland and New South Wales, inhabiting sedge swamps, freshwater lakes and drainage lines on low nutrient soils (DES, 2022)	<b>Unlikely to occur</b> – Numerous records exist on Bribie Island for this species. However, suitable freshwater habitat absent from the Survey Area.
<i>Litoria olongburensis</i> (wallum sedgefrog)	V	V	The species occurs in south-east Queensland from Fraser Island to Woolgoola, northern New South Wales, covering 1001-80000 km <sup>2</sup> along coastal New South Wales and Queensland. The species inhabits ephemeral, seasonal and permanent wetlands with emergent reeds, ferns and/or sedges, in undisturbed coastal wallum (DAWE, 2022). Known from REs including 12.2.12 (wet heathlands), 12.2.15 (wet sedgeland), 12.2.5a (open-forest to low closed-forest on beach ridges) and 12.2.7 (open-forest to woodland on sand plains) and 11.10.4 (DAWE, 2022).	<b>Unlikely to occur</b> – Numerous records exist on Bribie Island for this species. However, suitable freshwater habitat absent from the Survey Area.
<i>Mixophyes fleayi</i> (Fleay's Frog)	E	E	The Fleay's frog is narrowly and disjunctly distributed in wet forests from the Conondale Range in south east Queensland, south to Yabbra Scrub in north east New South Wales. While the majority of records for the species are from altitudes above 400 m, Fleay's frog is also known from lowland rainforest. This species is associated with montane rainforest and open forest communities adjoining rainforest. It occurs along stream habitats from first to third order streams (i.e. small streams close to their origin through to permanent streams with grades of 1 in 50) and is not found in ponds or ephemeral pools. In Queensland, important habitat has been defined as: 'permanent and semi-permanent freshwater streams, between 100-1000 m in altitude, in rainforest and other forest communities of the McPherson, Main and Conondale Ranges, Mount Tamborine, and the Mistake and Bunya Mountains' (DAWE, 2022).	<b>Unlikely to occur</b> – Not previously recorded on Bribie Island or the adjacent mainland. Nearest recorded occurrence north of Bellthorpe National Park 50 km to the northwest (ALA, 2022). Suitable freshwater habitat absent from the Survey Area.
<b>Birds</b>				
<i>Anthochaera phrygia</i> (regent honeyeater)	CR	CE	The regent honeyeater is largely restricted to dry box-ironbark open-forest and woodland areas inland of the Great Dividing Range. In Queensland they are restricted to the south-east. Information on their movements is limited. When foraging, this species is reliant on the nectar from eucalypts such as <i>Eucalyptus sideroxylon</i> , <i>Eucalyptus albens</i> , <i>Eucalyptus melliodora</i> and <i>Eucalyptus blakelyi</i> , however will also eat arthropods and fruit. As a result, this species prefers areas of habitat close to creeks and valleys, where the soil is wet and fertile and flowering trees are reliable (DAWE, 2022)	<b>Unlikely to occur</b> – a recorded occurrence of this species from the north end of Bribie Island (ALA, 2022). However, suitable habitat for this species is marginal.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Botaurus poiciloptilus</i> (Australasian bittern)	E	E	In Australia, the Australasian bittern's core range is the south and east (including Tasmania) and the south-west of western Australia, with apparently isolated records and perhaps populations elsewhere around coastal regions. This species favours freshwater wetlands and rarely, estuarine or tidal wetlands. Its preferred microhabitats are shallow water with tall vegetation such as rushes, reeds and sedges or trampled vegetation adjacent to deep-water pools (DAWE, 2022).	<b>Unlikely to occur</b> – Recorded occurrences on Bribie Island north and south of the Survey Area from 2013 (ALA, 2022); however, only marginal suitable habitat for this species present.
<i>Calidris canutus</i> (Red Knot)	E	E/ Mi	In Australasia the species mainly inhabit intertidal mudflats, sandflats, and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps (DAWE, 2022). The Red Knot usually forage in soft substrate near the edge of water on intertidal mudflats or sandflats exposed by low tide and roosts on sandy beaches, spits, islets, and mudflats (DAWE, 2022).	<b>May occur</b> – Species previously recorded within 500m of the Survey Area as recently as 2018 (ALA, 2022).  Marginal suitable foraging habitat present within Survey Area.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	CR	CE/ Mi	In Queensland, scattered records occur in the Gulf of Carpentaria, with widespread records along the coast south of Cairns (DAWE, 2022). The species mainly occurs on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters (DAWE, 2022). The species forages on mudflats and nearby shallow water and generally roosts on bare dry shingle, shell, or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands (DAWE, 2022). This species breeds outside of Australia (DAWE, 2022).	<b>May occur</b> – Species previously within the Survey Area (1983) prior to current development and recorded within 500m of the Survey Area as recently as 2020 (ALA, 2022).  Marginal suitable foraging habitat present within Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Calidris tenuirostris</i> (Great Knot)	CR	CE/ Mi	The great knot has been recorded around the entirety of the Australian coast, with a few scattered records inland. An important site for the species is Moreton Bay in Queensland (DAWE, 2022). In Australia, the species prefer sheltered coastal habitats with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries, and lagoons. They are occasionally found on exposed reefs or rock platforms, shorelines with mangrove vegetation, ponds in saltworks, at swamps near the coast, salt lakes and non-tidal lagoons. The species rarely occurs on inland lakes and swamps (DAWE, 2021). Typically, the species roosts in large groups in open areas, often at the water's edge or in shallow water close to feeding grounds (DAWE, 2022).	<b>May occur</b> – Species previously recorded within 500m of the Survey Area as recently as 2020 (ALA, 2022).  Marginal suitable foraging habitat present within Survey Area.
<i>Charadrius leschenaultii</i> (Greater Sand Plover)	V	V	In the non-breeding grounds in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons, and inshore reefs, rock platforms, small rocky islands or sand cays on coral reefs (DAWE, 2022). They are occasionally recorded on near-coastal saltworks and salt lakes, including marginal saltmarsh, and on brackish swamps. They seldom occur at shallow freshwater wetlands (DAWE, 2022).	<b>May occur</b> – Species previously recorded within 500m of the Survey Area as recently as 2018 (ALA, 2022).  Marginal suitable foraging habitat present within Survey Area.
<i>Charadrius mongolus</i> (Lesser Sand Plover)	E	E/ Mi	In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species also inhabits saltworks and near-coastal salt pans, brackish swamps and sandy or silt islands in riverbeds (Marchant & Higgins, 1993). In north-western Australia, the species appears to use the Port Hedland saltworks in preference to nearby beaches (DAWE, 2022). This species is seldom recorded away from the coast, at margins of lakes, soaks and swamps associated with artesian bores (Marchant & Higgins 1993). This species breeds outside of Australia (DAWE, 2022).	<b>May occur</b> – Species previously recorded within 500m of the Survey Area as recently as 2020 (ALA, 2022).  Marginal suitable foraging habitat present within Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Cyclopsitta diophthalma coxeni</i> (Coxen's Fig-Parrot)		E	Recorded from the Maryborough - Gympie district in Queensland to the Macleay River on the NSW mid north coast. In NSW, the species is found in the Urbenville and Murwillumbah, and has been recorded in the Tweed, Brunswick, Richmond and Clarence valleys. Occurs in a range of habitats including lowland sub-tropical rainforest and dry rainforest, woodland, scrub, cleared land, urban and agricultural areas, from sea level to 900 metres asl. Microhabitat consists of areas where fig trees predominate. It feeds predominantly on fig seeds, but also feeds on fruit of other native and exotic trees as well as insect larvae. Nests are found in the canopy of tall trees in or near rainforest in the underside of a dead limb (DAWE, 2022).	<b>Unlikely to occur</b> – The closest recent recorded occurrence for this species is a record from near Maleny in 2001. This species has not been recorded on Bribie Island or the adjacent mainland. Suitable habitat may occur within the Survey Area.
<i>Erythrotriorchis radiatus</i> (Red Goshawk)	E	V	Endemic to northern and eastern Australia in coastal and subcoastal areas with large home ranges of up to 200km <sup>2</sup> .  The red goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia (Marchant & Higgins, 1993). This species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds), and permanent water. The vegetation types include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins. The species nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water. No breeding has been recorded in central Australia (DAWE, 2022).	<b>Unlikely to occur</b> - No nesting habitat was identified within the Project site during the field assessment. This species is considered rare, if not extinct, from Southeast Queensland. The most recent dated record from 1992 occurs 20 km to the northwest, whilst an undated record with high spatial uncertainty (accuracy to 10 km) is noted 8 km to the south west (ALA, 2022).
<i>Esacus magnirostris</i> (Beach Stone-Curlew)	V	-	Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also, among open mangroves (Knight, Pizzey, & Pizzey, 2012).	<b>Likely to occur</b> – Species has been previously recorded within the Survey Area in 2020 (ALA, 2022).  Suitable habitat is present within the Survey Area.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Falco hypoleucos</i> (Grey Falcon)	V	V	The grey falcon is sparsely distributed across most of the Australian continent. The species occurs either as a resident or nomadic visitor to inland parts of all mainland states. This species prefers lightly treed inland plains, gibber deserts, sand ridges, pastoral lands, and timbered watercourses (Knight, Pizzey, & Pizzey, 2012). Also occurs near wetlands where surface water attracts prey. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse (Knight, Pizzey, & Pizzey, 2012)	<b>Unlikely to occur</b> – Species has not been previously recorded on Bribie Island or the nearby mainland.  Suitable habitat does not occur within the Survey Area.
<i>Fregatta grallaria grallaria</i> (White-bellied Storm-Petrel (Australasian))	LC	V	This species breeds on small offshore islets and rocks in the Lord Howe Island group, including Roach Island and Balls Pyramid. Its pelagic distribution is poorly understood, but it has been recorded north and east of its breeding islands to the tropics, in the Tasman Sea, Coral Sea, and north of New Zealand and it is thought that some birds also reach the central Pacific Ocean. It has also been recorded over near-shore waters off the coasts of Queensland. It occurs across sub-tropical and tropical waters in the Tasman Sea, Coral Sea and, possibly, the central Pacific Ocean. In the non-breeding season, it reaches and forages over near-shore waters along the continental shelf of mainland Australia (DAWE, 2022)	<b>Unlikely to occur</b> – Species has not been previously recorded on Bribie Island or adjacent mainland and other northern Moreton Bay Islands (ALA, 2022).  Suitable habitat is unlikely to occur within the Survey Area.
<i>Grantiella picta</i> (Painted Honeyeater)		V	This highly nomadic species is distributed mainly west of the Great Dividing Range, and occurs from north Queensland, south to the Australian Capital Territory and Victoria where breeding populations appear to have declined. Painted honeyeaters mostly occur in woodland habitats which have an abundance of mistletoes. These woodlands are usually dominated by <i>Acacia</i> spp. e.g., brigalow ( <i>Acacia harpophylla</i> ), weeping myall ( <i>Acacia pendula</i> ), and mulga ( <i>Acacia aneura</i> ), belah ( <i>Casuarina cristata</i> ) and bull-oak ( <i>Allocasuarina luehmannii</i> ). Also found in white cypress ( <i>Callitris glaucophylla</i> ) woodlands in the eastern part of their range, if mistletoes are abundant (DAWE, 2022)	<b>Unlikely to occur</b> - No suitable habitat is found within the Survey Area and no nearby records occur. Mistletoe was recorded during the field survey on some of the dominant canopy trees; however, this species is considered a vagrant east of the Great Dividing Range in Queensland.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<p><i>Hirundapus caudacutus</i></p> <p>(White-Throated Needletail)</p>	V	V/ Mi	<p>The White-throated Needletail is widespread in eastern and south-eastern Australia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. Further south on the mainland, it is widespread in Victoria, though more so on and south of the Great Divide, and there are few records in western Victoria outside the Grampians and the Southwest (DAWE, 2022).</p> <p>This species is almost exclusively aerial, from heights of less than 1m up to more than 1000m above the ground. They are recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but less commonly recorded flying above woodland (DAWE, 2022). They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps (DAWE, 2022).</p>	<p><b>Likely to occur</b> – Species is exclusively aerial. It has been previously recorded in the Survey Area in 2014 (ALA, 2022). This species may overfly the Survey Area.</p>
<p><i>Lathamus discolor</i></p> <p>(Swift Parrot)</p>	E	CE	<p>The swift parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. This species is mostly found in Victoria and New South Wales, with small numbers recorded in southeast Queensland. Whilst on the mainland the swift parrot disperses widely to forage on flowers and psyllid lerps in Eucalyptus species. Non-breeding birds preferentially feed in inland box-ironbark and grassy woodlands, and coastal swamp mahogany (<i>Eucalyptus robusta</i>) and spotted gum (<i>Corymbia maculata</i>) woodland when in flower (DAWE, 2022).</p>	<p><b>Unlikely to occur</b> – not previously recorded on Bribie Island, and the nearest recorded occurrences is from 1983 approximately 5km to the west on the mainland (ALA, 2022). Marginal suitable foraging habitat may occur within the Survey Area.</p>
<p><i>Limosa lapponica baueri</i></p> <p>(Western Alaskan Bar-tailed Godwit)</p>	V	V	<p>The bar-tailed godwit has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria (DAWE, 2022). The species occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons, and bays. It has also been recorded in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats (DAWE, 2022). The species usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. They prefer exposed sandy or soft mud substrates on intertidal flats, banks, and beaches. The species roosts on sandy beaches, sandbars, spits and in near-coastal saltmarsh (DAWE, 2022). This species breeds outside of Australia</p>	<p><b>May occur</b> – This species has been recorded within the Survey Area (1983) prior to current development and recently recorded at Toorbul (1km to west) in 2016 (ALA, 2022).</p> <p>Marginal suitable roosting or foraging habitat occurs within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Ninox strenua</i> (powerful owl)	V		The powerful owl's distribution extends from south-east Queensland to Victoria but are primarily found on the eastern side of the Great Dividing Range. This species usually inhabits open forests and woodlands but can also be found in open areas near forests. Large old-growth trees with hollows are required for roosting. Once established, breeding pairs will remain together for life and defend their territory all year round (Birdlife Australia, 2022).	<b>May occur</b> – Recently recorded near Sandstone Point (5km south on mainland) in 2020 and at Buckleys Hole Conservation Park, Bribie Island in 2013 (ALA, 2022). Suitable habitat may occur within the Survey Area.
<i>Numenius madagascariensis</i> (Eastern Curlew)	E	CE/ Mi	Within Australia, the eastern curlew has a primarily coastal distribution across all states. During the non-breeding season in Australia, the species is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves (Marchant & Higgins, 1993). The species mainly forages on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with seagrass, often near mangroves, on salt flats and in saltmarsh, rockpools and among rubble on coral reefs, and on ocean beaches near the tideline (Marchant & Higgins, 1993). The species roosts during high tide periods on sandy spits, sandbars, and islets, especially on beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. They occasionally roost on reef-flats, in the shallow water of lagoons and other near-coastal wetlands (Marchant & Higgins, 1993).	<b>Likely to occur</b> – Species has been previously recorded within the Survey Area in 2017 (ALA, 2022). This species has also been recorded in the park adjacent in 2020 (ALA, 2022).  Suitable habitat may occur within the Survey Area.
<i>Pachyptila turtur subantarctica</i> (Fairy Prion - southern)		V	Fairy Prion (southern) is a pelagic seabird which regularly feed in large flocks, sometimes with other seabirds. The species as a whole has a circumpolar distribution, and probably frequents subtropical waters during the non-breeding period (DAWE, 2022). Breeds in sub Antarctic cool temperate islands.	<b>Unlikely to occur</b> – Species has not been previously recorded in the wider survey extent.  Suitable habitat is unlikely to occur within the Survey Area.
<i>Pterodroma neglecta neglecta</i> (Kermadec Petrel)	LC	V	The Kermadec Petrel (western) is a pelagic seabird that occurs in tropical, subtropical, and temperate waters of the Pacific Ocean. It has been recorded in waters of 15–25°C in the subtropics and in colder waters in temperate regions, with one bird sighted in the northern Pacific Ocean in waters of about 6°C. It breeds on islands, atolls, and islets in the southern Pacific Ocean (DAWE, 2022).	<b>Unlikely to occur</b> – Species has not been previously recorded in the wider survey extent.  Suitable habitat is unlikely to occur within the Survey Area.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Rostratula australis</i> (Australian Painted Snipe)	E	E	The Australian painted snipe has a scattered distribution across eastern and northern Australia (DAWE, 2022). Shallow freshwater wetlands are the main habitat for the Australian painted snipe (Marchant & Higgins, 1993). Such wetlands may include lakes, swamps, claypans, inundated / waterlogged grassland, dams, irrigated crop land and sewage ponds (Marchant & Higgins, 1993). Preferred wetland habitats boast emergent vegetation (including tussocks, grasses, sedges, rushes, reeds, cane grass and/or Melaleuca) (Marchant & Higgins, 1993). Nesting occurs amongst vegetation in or adjacent to wetlands (DAWE, 2022).	<b>Unlikely to occur</b> – Undated and spatially generalised recorded occurrences are noted from Bribie Island and the nearby mainland. However, suitable freshwater wetland habitat is absent from the Survey Area.
<i>Sternula nereis</i> (Australian Fairy Tern)		V	Within Australia, this species occurs along the coasts of Victoria, Tasmania, South Australia and Western Australia. The Australian fairy tern nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline (DAWE, 2022).	<b>Unlikely to occur</b> – No recorded occurrences on Bribie Island or the nearby mainland. Suitable habitat within the Survey Area absent

<p><b>Seabirds</b></p> <p><i>Diomedea antipodensis</i> (Antipodean Albatross) (- / V)</p> <p><i>Diomedea antipodensis gibsonii</i> (Gibson's Albatross) (- / V)</p> <p><i>Diomedea exulans</i> (Wandering Albatross) (- / V)</p> <p><i>Macronectes giganteus</i> (Southern Giant-Petrel) (E / E, Mi)</p> <p><i>Macronectes halli</i> (Northern Giant Petrel) (- / V)</p> <p><i>Thalassarche carteri</i> (Indian Yellow-nosed Albatross) (V / V)</p> <p><i>Thalassarche cauta</i> (shy albatross) (E / E)</p> <p><i>Thalassarche eremita</i> (Chatham Albatross) (- / E)</p> <p><i>Thalassarche impavida</i> (Campbell Albatross) (- / V)</p> <p><i>Thalassarche melanophris</i> (Black-browed Albatross) (- / V)</p> <p><i>Thalassarche salvini</i></p>	<p>Marine seabirds range widely in the Southern Ocean and many breed on offshore Australian and Antarctic islands. Their diets usually consist of fish and cephalopods</p>	<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Project Area.</p> <p>Suitable habitat is unlikely to occur within the Project Area.</p>
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Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
(Salvin's Albatross) (- / V) <i>Thalassarche steadi</i> (White-capped Albatross) (V / V)				
<i>Turnix melanogaster</i> (Black-Breasted Button-quail)	V	V	<p>The Black-breasted Button-quail is restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum. They prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest; however, this species may also be found in low, dense acacia thickets and, in littoral area, in vegetation behind sand dunes (DAWE, 2022).</p> <p>The Black-breasted Button-quail is endemic to eastern Australia. It is restricted to coastal and near-coastal regions of south-eastern Queensland and north-eastern New South Wales. Known distribution in Queensland extends from near Byfield in the north, south to the New South Wales border and westwards to Palm Grove National Park and Barakula State Forest (DAWE, 2022).</p>	<b>May occur</b> – The nearest recorded occurrences is from north of Donnybrook on the mainland in 2012; however this species has not been recorded on Bribie Island. Suitable habitat may occur within the Survey Area.
<b>Crustaceans</b>				
<i>Cherax robustus</i>	V		This species is semi-aquatic; burrows around perimeter of sand lakes or along small creeks. Found only in wallum heathlands; adapted to living in soft acidic waters in peaty sand areas. Restricted to coastal South-eastern Queensland as far north as Fraser Island (Queensland Museum, 2022).	<b>Unlikely to occur</b> – Recorded occurrences from Bribie Island with the nearest observation from 1993. However, suitable habitat (soft acidic streams) absent from the Survey Area.
<i>Tenuibranchiurus glypticus</i> (swamp crayfish)	E		Freshwater paperbark swamps and shallow drainage channels. Prefers to burrow into damp clay but is occasionally found in peaty sand. Woodgate, Qld, south to at least southern Brisbane area (Queensland Museum, 2022).	<b>Unlikely to occur</b> – Recorded occurrences from Bribie Island with the nearest observation from 1993. However, suitable habitat (soft acidic streams) absent from the Survey Area.
<b>Fishes</b>				

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Carcharias taurus</i> (Grey Nurse Shark - east coast population)	E	CE	Grey nurse sharks are found primarily in warm temperate (from subtropical to cool temperate) inshore waters around rocky reefs and islands, in or near deep sandy-bottomed gutters or rocky caves, and occasionally in the surf zone and shallow bays (DAWE, 2022). Grey nurse sharks have a broad inshore distribution, primarily in subtropical to cool temperate waters around the main continental land masses. The Australian east coast population is considered to extend from the Capricornia coast (central Queensland) to Narooma in southern New South Wales (DAWE, 2022).	<b>Unlikely to occur</b> – An open water species – suitable habitat within the Survey Area absent. Frequently recorded in open ocean east of Moreton Island, however, recorded occurrences absent within Moreton Bay.
<i>Carcharodon carcharias</i> (Great White Shark)	SL	V/Mi	These species are considered open pelagic marine species that are restricted to aquatic environments and are predominately in open water in southern regions of coastal and continental shelf waters of Australia. They occasionally can be found close inshore around rocky reefs, surf beaches and shallow coastal bays to outer continental shelf and slope areas. They also make open ocean excursions and can cross ocean basins (DAWE, 2022).	<b>Unlikely to occur</b> – An open water species – suitable habitat within the Survey Area absent. A single recorded occurrence of skeletal remains recorded within Moreton Bay.
<i>Epinephelus daemeli</i> (Black Rockcod)		V	Black cod generally inhabit near-shore rocky and offshore coral reefs at depths down to 50 m. In coastal waters adult black cod are found in rock caves, rock gutters and on rock reefs. In Australia, the distribution of black cod ranges from southern Queensland through NSW to northern Victoria (TSSC, 2012).	<b>Unlikely to occur</b> – Suitable habitat within the Survey Area absent. A single record in open ocean east of Moreton Island, however, recorded occurrences absent within Moreton Bay.
<i>Hippocampus whitei</i> (White's seahorse)	E	E	White's seahorse is known to occur at depths between 1-15 metres and is found utilising a wide range of habitat types (both natural and artificial); however, this species prefers underwater structure or complexity in the form of gorgonian habitats, sponges, soft corals, <i>Sargassum sp.</i> macroalgae or seagrass. More complex habitats are believed to provide better protection and more available food resources; however, habitat selection may also be influenced by prey or predators (TSSC, 2020).  <i>Hippocampus whitei</i> is known to occur in estuaries from St Georges Basin, NSW to Hervey Bay, QLD (TSSC, 2020).	<b>Unlikely to occur</b> – Recorded occurrences absent from waters surrounding Bribie Island; however, this species has been recorded in Moreton Bay (2002) and near the wrecks at Moreton Island (2018) (ALA, 2022). Suitable complex habitat absent from the Survey Area.
<i>Nannoperca oxleyana</i> (Oxleyan Pygmy Perch)	V	E	This species has a patchy distribution and is confined to dystrophic, freshwater systems draining through sandy coastal lowlands and 'wallam' heaths (Banksia dominated heathlands) between north-eastern NSW and south-eastern Queensland. Specific habitat requirements for this fish include slow-flowing, fresh, acidic waters with abundant aquatic vegetation (DAWE, 2022).	<b>Unlikely to occur</b> – Recorded occurrences absent from Bribie Island and the nearby mainland. Suitable habitat (slow flowing acidic streams) absent from the Survey Area.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Pristis zijsron</i> (Green Sawfish)	SL	V/Mi	The green sawfish are commonly found in estuaries and freshwater rivers and creeks in tropical waters such as Queensland, the Northern Territory and Western Australia. They move between fresh and salt water easily and can occur at the bottom of shallow muddy rivers (DAWE, 2022).	<b>Unlikely to occur</b> – The most recent recorded occurrence in Moreton Bay is from 1950. Suitable habitat may occur within the Survey Area, however, a lack of recent records suggest this species is unlikely to occur.
<i>Pseudomugil mellis</i> (Honey Blue Eye)		V	This species inhabits slightly acidic (pH 4.4–6.8), clear and tannin-stained lakes, streams and wetlands, with sandy or muddy bottoms in coastal heath (wallum) ecosystems (DAWE, 2022). The species usually occurs where there is little or no flow, and the fish can find shelter in dense, aquatic vegetation, such as emergent and submerged sedges, along the margins (DAWE, 2022)  The Honey Blue-eye is endemic to Queensland and recorded in the Noosa River drainage system north to Tin Can Bay. A population occurs on Fraser Island and an outlying population in a lake at the northern end of Dismal Swamp, south of Shoalwater Bay (DAWE, 2022)	<b>Unlikely to occur</b> – Recorded occurrences absent from Bribie Island and the nearby mainland. Suitable habitat (freshwater lakes, streams and wetlands) absent from the Survey Area.
<i>Rhincodon typus</i> (Whale Shark)	SL	V/Mi	The whale shark has a broad distribution in tropical and warm temperate seas, usually between latitudes 30°N and 35°S. They are known to inhabit both deep and shallow coastal waters and the lagoons of coral atolls and reefs (DAWE, 2022).	<b>Unlikely to occur</b> – recorded occurrences absent from the Moreton Bay region. Suitable habitat for this species absent from the Survey Area.
<i>Sphyrna lewini</i> (Scalloped Hammerhead)		Conser vation depend ant	Scalloped hammerhead are mobile animals that range widely over shallow coastal shelf waters, but rarely venture into or across deep ocean waters Scalloped hammerhead pups are born in shallow intertidal habitats and they remain in shallow inshore habitats for the first few years of their lives (TSSC, 2018).  The scalloped hammerhead has a circum-global distribution in tropical and sub-tropical waters. Within Australian waters the scalloped hammerhead extends from New South Wales (approximately from Wollongong, where it is less abundant), around the north of the continent and then south into Western Australia to approximately Geographe Bay (DAWE, 2022).	<b>Unlikely to occur</b> - occurrences in Moreton Bay of juvenile specimens, however, not recorded in Pumicestone Passage. Marginal suitable habitat may occur for pups within intertidal habitat at the mouth of Wrights Creek.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Thunnus maccoyii</i> (Southern Bluefin Tuna)		Conservation dependent	<p>Adult Southern Bluefin Tuna in Australian waters, ranges widely from northern Western Australia (WA) to the southern region of the continent, including Tasmania, and to northern New South Wales, appearing in eastern Australian waters mainly during winter (DAWE, 2022).</p> <p>The Southern Bluefin Tuna is described as a high-level apex predator and an opportunistic feeder, preying on a wide variety of fishes, crustaceans, cephalopods, salps, and other marine animals in deeper, colder waters (DAWE, 2022).</p>	<b>Unlikely to occur</b> – no recorded occurrences in Moreton Bay or adjacent open ocean. This species is typical of the open ocean where prey is located.
<b>Insects</b>				
<i>Argynnis hyperbius inconstans</i> (Australian Fritillary)	E	CE	<p>The Australian fritillary butterfly has been recorded in south eastern Queensland and north-eastern New South Wales between Gympie and Port Macquarie.</p> <p>The Australian fritillary butterfly is restricted to areas where its larval food plant, <i>Viola betonicifolia</i> (the arrowhead violet), occurs. The arrowhead violet is widespread throughout Queensland and New South Wales, at both high and low altitudes. However, the Australian fritillary butterfly appears to only occupy lower altitude sites (&lt;600 m) (DAWE, 2022)</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. The larval food plant <i>Viola betonicifolia</i> has not been recorded on Bribie Island. Suitable food resources are absent within the Survey Area.
<b>Mammals</b>				
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat, Large Pied Bat)	V	V	<p>The species' current distribution is also poorly known. Records exist from Shoalwater Bay, north of Rockhampton, Queensland, through to the vicinity of Ulladulla, New South Wales in the south. Despite the large range, it has been suggested that the species is far more restricted within the species' range than previously understood.</p> <p>Sandstone cliffs and fertile woodland valley habitat within close proximity of each other is habitat of importance to the large-eared pied bat. Records from south-east Queensland suggest that rainforest and moist eucalypt forest habitats on other geological substrates at high elevation are of similar importance to the species (DAWE, 2022)</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable foraging habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Dasyurus hallucatus</i> (Northern Quoll)		E	<p>The northern quoll was once widespread across northern Australia, found from Western Australia to south east Queensland. Their distribution and population suffered dramatic declines after the introduction of the cane toad. Currently in Queensland, the northern quoll is known to occur as far south as Gracemere and Mount Morgan, south of Rockhampton, as far north as Weipa in Queensland and extends as far west into central Queensland to the vicinity of Carnarvon Range National Park.</p> <p>The northern quoll occupies a diversity of habitats across its range which includes rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. Northern quoll are also known to occupy non rocky lowland habitats such as beachscrub communities in central Queensland. Northern quoll habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal (DAWE, 2022).</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable foraging and denning habitat absent from the Survey Area.
<i>Dasyurus maculatus maculatus</i> (SE mainland population) (Spot-tailed Quoll)	E	E	<p>Historically, the spot-tailed quoll was found across eastern Australia, from south east Queensland to Tasmania. However, the mainland distribution of this sub-species reduced significantly in the latter half of the 20th century. In Queensland, this species is now known to five broad regions: four from coastal ranges and the Great Dividing Range from the New South Wales border to Gladstone, and the fifth in the Brigalow Belt South Bioregion.</p> <p>The spot-tailed quoll inhabits a range of different vegetation communities, including temperate and subtropical rainforests, wet sclerophyll forest, lowland forests, open and closed eucalypt woodlands, inland riparian and River Red Gum (<i>Eucalyptus camaldulensis</i>) forests and coastal heathlands. It is reported that they prefer mature wet forest that has den sites and is relatively undisturbed from thinning (DAWE, 2022).</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable foraging and denning habitat absent from the Survey Area.
<i>Macroderma gigas</i> (Ghost Bat)	E	V	<p>The Ghost Bat is found in Northern Australia where it has a scattered distribution throughout Queensland, Northern Territory and Western Australia. It has been recorded in both arid regions (Pilbara region) and rainforest areas (north Queensland). It roosts in caves, old mine tunnels and in deep cracks in rocks. Distributed widely but patchily across the northern half of Australia and are found in a variety of tropical habitats. Largest colonies are at Mount Etna caves, near Rockhampton in Queensland (ALA, 2022).</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable roosting habitat absent from the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Petauroides volans</i> (Greater Glider)	V	V	<p>The greater glider (<i>Petauroides volans</i>) is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (TSSC, 2016).</p> <p>Since genetic taxonomic review in 2020, greater gliders are divided into three distinct species; with <i>Petauroides volans</i> distribution from Bundaberg south to Victoria, <i>Petauroides armillatus</i> populations in mid-Queensland from the Eungella Range to just north of Townsville and <i>Petauroides minor</i> north from Townsville (McGregor, 2020)</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable denning habitat absent from the Survey Area.
<i>Petaurus australis</i>  Yellow-bellied Glider (south-eastern)	V	V	<p>This species occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Yellow-bellied gliders Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. They extract sap by incising (or biting into) the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar (OEH, 2022).</p> <p>The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria (ALA, 2022).</p>	<b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable habitat absent from the Survey Area.
<i>Phascolarctos cinereus</i>  (Koala)	E	E	<p>This species feed almost entirely on eucalypts most likely in riverine and riparian habitats (DAWE, 2022). In Queensland, the species contains scattered populations throughout moist forests along the coastline, sub-humid woodlands in central and southern regions and within eucalypt woodlands along watercourses within semi-arid areas further west (DAWE, 2022). The greatest density of koalas occurs in south-east Queensland, with lower densities occurring through central and eastern areas including the Brigalow Belt, Mitchell Grass Downs, Mulga lands and the Desert Uplands (DAWE, 2022).</p>	<p><b>May occur</b> – Species has been previously recorded in the desktop search extent with the nearest recorded occurrence near Toorbul on the mainland in 2018 (ALA, 2022). ALA records on Bribie Island are undated and describe a koala skull recorded in the northern portion on the island.</p> <p>Suitable habitat may occur within the Survey Area.</p>



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<p><i>Potorous tridactylus tridactylus</i></p> <p>(Long-nosed Potoroo - northern)</p>	V	V	<p>This species' distribution covers eastern Australia, from south east Queensland to Victoria. The populations in Queensland are scattered and limited information is available; locations where this species have been recorded include Many Peaks Range, south-east of Gladstone, Bellthorpe, Border Ranges, Bilburin and in Lamington National Parks and surrounds.</p> <p>The long-nosed potoroo occurs across a range of vegetation types from subtropical and warm temperate rainforest through tall open forest with dense understorey to dense coastal heaths. Its main requirement is thick groundcover, which it needs for protection and nesting material. It also prefers light soils that are easy to dig in for the underground roots and fungi that it eats (DAWE, 2022).</p>	<p><b>Unlikely to occur</b> – This species has not been recorded on Bribie Island or the surrounding area. Suitable habitat largely absent from the Survey Area.</p>
<p><i>Pteropus poliocephalus</i></p> <p>(Grey-headed Flying-fox)</p>		V	<p>The grey-headed flying-fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from Eucalyptus and related genera (DAWE, 2022).</p> <p>The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation; however, colonies also use highly modified vegetation in urban and suburban areas (DAWE, 2022).</p>	<p><b>Likely to occur</b> – Recent recorded occurrences for this species are noted from the southern portion of Bribie Island in 2012 (ALA, 2022). Flying fox camp data (DAWE, 2022) suggests this species frequents the area with records indicating sightings at three nearby camps in 2021. No camps are noted within the Survey Area; however, seasonal usage of canopy species blossoms is likely.</p>
<p><i>Tachyglossus aculeatus (Echidna)</i></p>	SL	-	<p>Occurs throughout Australia, mostly along the eastern section over most of VIC and NSW, eastern SA and eastern QLD. Prefers habitats in forests, woodlands, heath, grasslands and arid environments (Australian Museum, 2022).</p>	<p><b>May occur</b> – Species has been previously recorded within 5km of the Survey Area, with the most recent occurrence being 2009 near Banksia Beach. The closest recorded occurrence is in White Patch approximately 1km for the Survey Area. Suitable habitat is present within the Survey Area, specifically RE 12.2.5.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Xeromys myoides</i> (Water Mouse)	V	V	The water mouse occurs in three regions of coastal Australia: The Northern Territory, central south Queensland and south-east Queensland. The species habitat includes mangrove communities and adjacent sedgelands, grasslands and freshwater wetlands. A supralittoral bank where present maybe be utilised by the Water Mouse for nesting (DAWE, 2022). The water mouse travels between nests at the supralittoral bank and the first 100 m into the mangroves (DAWE, 2022). The floor of mangrove habitats provides a variety of microhabitat features important to the water mouse including tidal pools, channels, crab holes, pneumatophores, crevices in bark and around roots, hollows in standing and fallen timber, suspended drifts of twigs and leaves and driftwood. The water mouse may nest or forage in the following Queensland Regional Ecosystems considered essential habitat for this species: 8.1.1, 11.1.1, 11.1.2, 11.1.4, 12.1.1, 12.1.2, 12.1.3, 12.2.5, 12.2.7, 12.2.11, 12.2.12 and 12.2.14 (DAWE, 2022).	<b>May occur</b> – Species has been previously recorded within 5km of the Survey Area, with the most recent occurrence being 2011 near Donnybrook on the mainland. This species has a single recorded occurrence on the eastern side of Bribie Island in 1984. Suitable habitat foraging and nesting habitat (RE 12.1.3 and 12.2.5) occur along Wright's Creek and the Bribie Island foreshore. Extensive surveys for during field surveys did not observe indicators of this species presence (nests or middens).
<b>Reptiles</b>				

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<p><b>Marine turtles:</b></p> <p><i>Caretta caretta</i> Loggerhead turtle (E / E)</p> <p><i>Chelonia mydas</i> Green turtle (V / V)</p> <p><i>Dermochelys coriacea</i> Leatherback turtle (E / E)</p> <p><i>Eretmochelys imbricata</i> Hawksbill turtle (E / V)</p> <p><i>Lepidochelys olivacea</i> Olive Ridley turtle (E / E)</p> <p><i>Natator depressus</i> Flatback turtle (V / V)</p>			<p>Six of the world's seven species of marine turtle live in the waters around Australia. While marine turtles spend most of their life in the sea, the females come ashore during the breeding season on islands and some mainland areas to lay their eggs on sandy beaches (DAWE, 2022).</p>	<p><b>Unlikely to occur</b> – recorded occurrences of all marine turtle species have been noted in Moreton Bay, particularly eastern facing beaches. Suitable foraging resources are absent from the Survey Area as are coarse or fine sand beaches for nesting.</p>
<p><i>Coeranoscincus reticulatus</i> (Three-toed Snake-tooth Skink)</p>		V	<p>The three-toed snake-tooth skink has a limited distribution, found from Fraser Island in south east Queensland to Crescent Head in north east New South Wales. Majority of records are from the Border Ranges near the New South Wales/Queensland border, however they have also been recorded in other locations including Conondale National Park (NP), Great Sandy NP, Binna Burra, Emuvale, Tambourine Mountain, Lamington NP, Cooloola State Forest and Cunningham's Gap NP.</p> <p>In Queensland they have been found in habitats with high foliage cover, including rainforest, closed forest, wet sclerophyll forest, tall open Blackbutt (<i>Eucalyptus pilularis</i>) forest, open eucalypt and closed Brush Box (<i>Lophostemon confertus</i>) forest. High ground cover and/or woody debris is likely a habitat requirement (DAWE, 2022)</p>	<p><b>Unlikely to occur</b> – The nearest recent recorded occurrence for this species is Maroochydore (Sunshine Coast), 45 km to the north in 2002. Suitable habitat for this species in the Survey Area is absent.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Delma torquata</i> (Adorned Delma, Collared Delma)	V	V	This species has been recorded at the following sites: the Bunya Mountains, Blackdown Tablelands National Park, Expedition National Park, Western Creek, and the Toowoomba Range. The collared delma normally inhabits eucalypt-dominated woodlands and open-forests in Queensland RE Land Zones 3, 9, and 10. The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30–100 mm thick) appears to be an essential characteristic of the adorned delma microhabitat and is always present where the species occurs (DAWE, 2022).	<b>Unlikely to occur</b> – Land Zone 3, 9 and 10 are not mapped within the Survey Area. Minimal suitable microhabitat may occur found within the remnant areas of Survey Area. This species has never been recorded on Bribie Island.

#### Likelihood of occurrence (migratory species)

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<b>Migratory Marine Birds</b>				
<i>Anous stolidus</i> (Common Noddy)	SL	Mi	The common noddy occurs mainly in ocean off the Queensland coast, but the species also occurs off the north-west and central Western Australia coast. During the breeding season, they usually occur on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand. When not at the nest, individuals will remain close to the nest, foraging in the surrounding waters. Birds may nest in bushes, saltbush, or other low vegetation. They may also nest on the ground in Pigface ( <i>Carpobrotus</i> spp.) or grass, on bare rock, on top of rocks protruding above vegetation, on shingle beaches, among coral rubble or in sand close to grassy areas. The species has also been recorded nesting in the forks of tall trees, at the top of Coconut Palms ( <i>Cocos nucifera</i> ), in holes in dead timber and on tree-stumps (DAWE, 2022).	<b>Unlikely to occur</b> There are several recorded occurrences located near the Survey Area. Current known distribution does encompass the Survey Area. Suitable habitat is unlikely to occur within the Survey Area.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Apus pacificus</i> (Fork-Tailed Swift)	SL	Mi	This species occurs in all states, with scattered records in Queensland. In the north-east region there are many records east of the Great Divide from near Cooktown and south to Townsville. They are almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. They mostly occur over inland plains but sometimes above foothills or in coastal areas; over cliffs and beaches and also over islands and sometimes well out to sea; over settled areas, including towns, urban areas, and cities; mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland, or saltmarsh; and at treeless grassland and sandplains covered with spinifex, open farmland, and inland and coastal sand-dunes and sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>This species may overfly the Survey Area.</p>
<i>Ardenna carneipes</i> (Flesh-Footed Shearwater)	SL	Mi	These species are classified as aerial pelagic marine seabirds, spending most of their time in flight over inshore, offshore and in pelagic waters ranging widely in the Southern Ocean. These species are known to frequent small islands off the southern coasts of Australian and Antarctic islands for breeding purposes. Their diets usually consist of fish and cephalopods and feed within the southern regions of Australia (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>One recorded occurrence located near the Survey Area in 1966.</p> <p>Suitable habitat is unlikely to occur within the Survey Area.</p>
<i>Ardenna grisea</i> (Sooty Shearwater)	SL	Mi		<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is unlikely to occur within the Survey Area.</p>
<i>Calonectris leucomelas</i> (Streaked Shearwater)	SL	Mi		<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is unlikely to occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Fregata ariel</i> (Lesser Frigatebird)	SL	Mi	It is common in tropical and subtropical seas, breeding on remote islands, including Christmas Island in the Indian Ocean in recent years. It is almost exclusively a sea bird spending many months out at sea seeking refuge on remote islands and coming to nest between May and December in trees on Christmas Island (ALA, 2022).	<b>Unlikely to occur</b>  One recorded occurrence located near the Survey Area.  Suitable habitat is unlikely to occur within the Survey Area.
<i>Fregata minor</i> (Great Frigatebird)	SL	Mi	This species has a wide distribution throughout the world's tropical seas. Hawaii is the northernmost extent of their range in the Pacific Ocean, in the Central and South Pacific, colonies are found on most islands' groups from Wake Island to the Galapagos to New Caledonia with a few pairs nesting on Australian possessions in the Coral Sea. Colonies are also found on numerous Indian Ocean islands including Aldabra, Christmas Island, the Maldives and Mauritius (ALA, 2022).	<b>Unlikely to occur</b>  No recorded occurrences located near the Survey Area.  Suitable habitat is unlikely to occur within the Survey Area.
<i>Phaethon lepturus</i> (White-Tailed Tropicbird)	SL	Mi	This species occupies marine habitats in tropical waters with sea-surface temperatures of more than 22°C. The tropicbird breeds on islands and atolls, where it nests in a variety of habitats including on bare sandy ground, in closed-canopy rainforest, on rocky cliffs and in quarries. The species feeds over warm waters of low salinity close to Christmas Island, but also disperse as far as the continental shelf off northern Western Australia (Marchant & Higgins, 1990). In Australian waters they are more pelagic and are rarely found inshore or beachcast (DAWE, 2022).	<b>Unlikely to occur</b>  No recorded occurrences located near the Survey Area.  Suitable habitat is unlikely to occur within the Survey Area.
<i>Sternula albifrons</i> (Little Tern)	SL	Mi	This species can be divided into two major subpopulations: a northern subpopulation that breeds across northern Australia, from about Broome to eastern Cape York Peninsula; and an eastern subpopulation that breeds on the eastern and south-eastern coast of the mainland and northern and eastern Tasmania. This species inhabits sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes, bays, harbours, and inlets, especially those with exposed sandbanks or sand-spits, and also on exposed ocean beaches. They appear to be less often on offshore continental islands or coral cays off Queensland (DAWE, 2022).	<b>May occur</b>  There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).  Marginal suitable habitat may occur within the Survey Area.
<b>Migratory Terrestrial Birds</b>				

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Cuculus optatus</i> (Oriental Cuckoo)	SL	Mi/Ma	The Oriental Cuckoo usually frequents various forest types including coniferous, deciduous, and mixed forests, monsoon forests and rainforest edges. It also occurs in farmland with scattered trees. In the winter range, it can be occasionally found in swamps, mangroves, plantations, river flats, roadsides, and islands (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Current known distribution does encompass the Survey Area.</p> <p>Suitable habitat is likely to occur within the Survey Area.</p>
<i>Hirundapus caudacutus</i> (White-Throated Needletail)	V	V/Mi	<p>The White-throated Needletail is widespread in eastern and south-eastern Australia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. Further south on the mainland, it is widespread in Victoria, though more so on and south of the Great Divide, and there are few records in western Victoria outside the Grampians and the Southwest (DAWE, 2021).</p> <p>This species is almost exclusively aerial, from heights of less than 1m up to more than 1000m above the ground. They are recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but less commonly recorded flying above woodland (DAWE, 2021). They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps (DAWE, 2021).</p>	<p><b>Likely to occur</b></p> <p>Species is exclusively aerial. It has been previously recorded in the Survey Area in 2014 (ALA, 2021). This species may overfly the Survey Area.</p>
<i>Monarcha melanopsis</i> (Black-Faced Monarch)	SL	Mi	The black-faced monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest (DAWE, 2021). It is also sometimes found in nearby open eucalypt forests (mainly wet sclerophyll forests), especially in gullies with a dense, shrubby understorey as well as in dry sclerophyll forests and woodlands, often with a patchy understorey. The species especially occurs in marginal habitats during winter or during passage (migration) (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 2017.</p> <p>Suitable habitat is likely to occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Monarcha trivirgatus</i> (Spectacled Monarch)	SL	Mi	Spectacled monarch typically inhabits understorey of (moist eucalypt forests, rainforests, gullies, riparian areas). The species also inhabits mangroves and other densely vegetated habitats. Predominantly coastal but range extends inland (DAWE, 2022).	<b>May occur</b> No recorded occurrences located near the Survey Area. Suitable habitat is likely to occur within the Survey Area.
<i>Myiagra cyanoleuca</i> (Satin Flycatcher)	SL	Mi	The satin flycatcher is widespread in eastern Australia. The species inhabits heavily vegetated gullies in wet eucalypt dominant sclerophyll forests and taller woodlands, often near wetlands or watercourses. On migration, they occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. The species sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts (DAWE, 2022).	<b>Likely to occur</b> There are several recorded occurrences located near the Survey Area. Suitable habitat is likely to occur within the Survey Area.
<i>Rhipidura rufifrons</i> (Rufous Fantail)	SL	Mi	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as <i>Eucalyptus microcorys</i> , <i>E.cypellocarpa</i> , <i>E. radiata</i> , <i>E. regnans</i> , <i>E. delegatensis</i> , <i>E. pilularis</i> or <i>E.resinifera</i> ; usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including <i>E. maculata</i> , <i>E. melliodora</i> , ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage (DAWE, 2022).	<b>Likely to occur</b> There are frequent recorded occurrences located near the Survey Area with two recorded occurrences within the Survey Area in 2018. Suitable habitat is likely to occur within the Survey Area.
<b>Migratory Wetlands Birds</b>				
<i>Actitis hypoleucos</i> (Common Sandpiper)	SL	Mi	Wide range of coastal wetlands and some intact wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The common sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream, around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties (DAWE, 2022).	<b>Unlikely to occur</b> There are frequent recorded occurrences located near the Survey Area; however, suitable habitat is unlikely to occur within the Survey Area as species is rarely on mudflats.



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Arenaria interpres</i> (Ruddy Turnstone)	SL	Mi	This species is widespread within Australia during its non-breeding period of the year from Tasmania to Darwin. It strongly prefers rocky shores or beaches where there are large deposits of rotting seaweed. mainly found on coastal regions with exposed rock coast lines or coral reefs. It also lives near platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches. It can, however, be found on sand, coral or shell beaches, shoals, cays and dry ridges of sand or coral. It has occasionally been sighted in estuaries, harbours, bays, and coastal lagoons, among low saltmarsh or on exposed beds of seagrass, around sewage ponds and on mudflats. In north Australia it is known to occur in a wide variety of habitats and may prefer wide mudflats (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).</p> <p>Marginal suitable habitat may occur within the Survey Area, however, species prefers rocky shores.</p>
<i>Calidris acuminata</i> (Sharp-Tailed Sandpiper)	SL	Mi	This species occurs on muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh, or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, salt pans, and hypersaline salt lakes inland. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores and swamps and creeks lined with mangroves (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).</p> <p>Suitable habitat may occur within the Survey Area.</p>
<i>Calidris alba</i> (Sanderling)	SL	Mi	They are occasional in the Gulf of Carpentaria and Torres Strait. Scattered records occur in mid-east and south-east Queensland from Townsville and Alva Beach, south to Fraser Island, and around Moreton Bay and Point Danger, including on offshore islands. In Australia, the species is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often the species occurs on more sheltered sandy shorelines of estuaries, inlets, and harbours. Rarely, they are recorded in near-coastal wetlands, such as lagoons, hypersaline lakes, salt ponds and samphire flats. There are rare inland records from sandy shores of ephemeral brackish lakes and brackish river-pools (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>There are several recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is unlikely to occur within the Survey Area as species prefers open exposed sand and beaches.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Calidris falcinellus</i> (Broad-Billed Sandpiper)	SL	Mi	This species is most common on the north and north-west coasts and occur regularly at scattered localities in southern Australia. In Queensland, there are scattered coastal records, including at the south and south-east Gulf of Carpentaria. Occurs in sheltered parts of the coast, favouring estuarine mudflats but also occasionally occur on saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, reefs or rocky platforms, and in areas with large soft intertidal mudflats, which may have shell or sandbanks nearby. They favour mud among, or fringed by, mangroves, particularly on the seaward side and sometimes occur in estuaries edged by saltmarsh. Rarely recorded inland. Foraging occurs on exposed flats of soft mud or wet sand at edges of coastal and near-coastal wetlands. They roost on the banks of sheltered sandy, shelly or shingly beaches. They nest on the ground, frequently in the top of a tussock (DAWE, 2022).	<b>Likely to occur</b>  There are several recorded occurrences located near the Survey Area.  Suitable foraging habitat may occur within the Survey Area.
<i>Calidris melanotos</i> (Pectoral Sandpiper)	SL	Mi	This species occurs on wetlands that have open fringing mudflats and low, emergent, or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. The species is usually found in coastal or near coastal habitat but is occasionally found further inland (DAWE, 2022).	<b>May occur</b>  There are several recorded occurrences located near the Survey Area. Marginal suitable habitat may occur within the Survey Area.
<i>Calidris pugnax</i> (Ruff)	SL	Mi	The ruff is a migratory species that occurs in grassy tundra, along shores of lakes and ponds, in swampy meadows and marshes, also on mudflats and flooded fields, salt ponds. Breeds in the northern hemisphere and regularly visits Australia. Nests in depression in meadow, marsh, or clump of grass (DAWE, 2022).	<b>Unlikely to occur</b>  No recorded occurrences located near the Survey Area.  Current known distribution does encompass the Survey Area.  Suitable habitat is likely to occur within the Survey Area.

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Calidris ruficollis</i> (Red-Necked Stint)	SL	Mi	This species is distributed along most of the Australian coastline with large densities on the Victorian and Tasmanian coasts. The Red-necked Stint has been recorded in all coastal regions and found inland in all states when conditions are suitable. They are mostly found in coastal areas, including in sheltered inlets, bays, lagoons, and estuaries with intertidal mudflats, often near spits, islets, and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs, or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks, and pools in salt flats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).</p> <p>Marginal suitable habitat may occur within the Survey Area.</p>
<i>Charadrius bicinctus</i> (Double-Banded Plover)	SL	Mi	This species found in both coastal and inland areas. During the non-breeding season, it is common in eastern and southern Australia, mainly between the Tropic of Capricorn and western Eyre Peninsula, with occasional records in northern Queensland and Western Australia (Marchant & Higgins 1993). They are often found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers. The species is sometimes associated with coastal lagoons, inland saltlakes and saltworks (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Marginal suitable habitat may occur within the Survey Area.</p>
<i>Charadrius veredus</i> (Oriental Plover)	SL	Mi	This species is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. They spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. They then usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, dry paddocks, playing fields, lawns and cattle camps or open areas that have been recently burnt (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Marginal suitable habitat may occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Gallinago hardwickii</i> (Latham's Snipe)	SL	Mi	Occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) (DAWE, 2022). Habitat preferences include soft wet ground or shallow water with tussocks and other green or dead growth, wet parts of paddocks or near dams, scrub, or open woodland (Knight, Pizzey, & Pizzey, 2012).	<p><b>Unlikely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>However, the Survey Area is more influenced by the marine environment rather than the freshwater environments in which this species prefers.</p>
<i>Limnodromus semipalmatus</i> (Asian Dowitcher)	SL	Mi	The Asian Dowitcher is known to visit to Australia, and occurs in sheltered coastal environments, such as embayments, coastal lagoons, estuaries and tidal creeks. They are known to frequent shallow water and exposed mudflats or sandflats. In Australia, the Port Hedland Saltworks provides crucial habitat for the species. The species is commonly found in the round ponds and channels of saltworks and sewage farms. It is also found at near-coastal swamps and lakes (DAWE, 2022).	<p><b>May occur</b></p> <p>There are several recorded occurrences located near the Survey Area.</p> <p>Marginal suitable habitat may occur within the Survey Area.</p>
<i>Gallinago megala</i> (Swinhoe's Snipe)	SL	Mi	In Queensland specimens have been taken at Normanton and have been sighted at Mount Isa. During the non-breeding season Swinhoe's Snipe occurs at the edges of wetlands, such as wet paddy fields, swamps, and freshwater streams. The species is also known to occur in grasslands, drier cultivated areas (including crops of rapeseed and wheat) and market gardens. Habitat specific to Australia includes the dense clumps of grass and rushes round the edges of fresh and brackish wetlands. This includes swamps, billabongs, river pools, small streams, and sewage ponds. They are also found in drying claypans, and inundated plains pitted with crab holes (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>The Survey Area is more influenced by the marine environment rather than the freshwater environments in which this species prefers.</p>



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Limosa lapponica</i> (Bar-Tailed Godwit)	SL	Mi	The bar-tailed Godwit has been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria, including the offshore islands. It is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons, and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh. This species has been sighted in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass, such as farmland, paddocks, and airstrips, although it is commonly recorded in paddocks (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with four recorded occurrences within the Survey Area in 2020.</p> <p>Suitable habitat may occur within the Survey Area.</p>
<i>Limosa limosa</i> (Black-Tailed Godwit)	SL	Mi	The black-tailed Godwit is found in all states and territories of Australia; however, it prefers coastal regions, and the largest populations are found on the north coast between Darwin and Weipa. It is generally found in small numbers elsewhere and there are scattered inland records. primarily coastal habitat environment. The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand, or shell-grit; occasionally recorded on rocky coasts or coral islets. The use of habitat often depends on the stage of the tide. It is also found in shallow and sparsely vegetated, near coastal, wetlands, such as saltmarsh, salt flats, river pools, swamps, lagoons, and floodplains. There are a few inland records, around shallow, freshwater, and saline lakes, swamps, dams, and bore-overflows. They also use lagoons in sewage farms and saltworks (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Marginal suitable habitat may occur within the Survey Area.</p>
<i>Numenius minutus</i> (Little Curlew)	SL	Mi	This species spends the non-breeding season in northern Australia from Port Hedland in Western Australia to the Queensland coast. There are records of the species from inland Australia, and widespread but scattered records on the east coast. The species has also been recorded on Lord Howe Island, Cocos-Keeling Island and Christmas Island. The species is recorded in Australia between September and April and there are few winter records. Most often found feeding in short, dry grassland and sedgeland, including dry floodplains and black soil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. Open woodlands with a grassy or burnt understorey, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads and airstrips are also used (DAWE, 2022).	<p><b>May occur</b></p> <p>There are several recorded occurrences located near the Survey Area.</p> <p>Suitable habitat may occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Numenius phaeopus</i> (Whimbrel)	SL	Mi	The whimbrel is a regular migrant to Australia and New Zealand, with a primarily coastal distribution. There are also scattered inland records of Whimbrels in all regions. It is found in all states but is more common in the north. It is found along almost the entire coast of Queensland. often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries, and river deltas, often those with mangroves, but also open, unvegetated mudflats. It is occasionally found on sandy or rocky beaches, on coral or rocky islets, or on intertidal reefs and platforms. It has been infrequently recorded using saline or brackish lakes near coastal areas. It also used salt flats with saltmarsh, or saline grasslands with standing water left after high springtides, and in similar habitats in sewage farms and salt fields (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with four recorded occurrences within the Survey Area in 2019 (ALA, 2021).</p> <p>Suitable habitat is likely to occur within the Survey Area.</p>
<i>Pandion haliaetus</i> (Osprey)	SL	Mi	The species occurs in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish, or saline water for foraging (Marchant & Higgins, 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs, and large lakes and. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging sites (DAWE, 2022).	<p><b>May occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is likely to occur within the Survey Area.</p>
<i>Pluvialis fulva</i> (Pacific Golden Plover)	SL	Mi	This species is widespread in coastal regions, though there are also several inland records (in all states). Recorded occurrences are especially widespread along the Queensland and NSW coastlines. In non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Pacific Golden Plovers usually occur on beaches, mudflats, and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as <i>Sarcocornia</i> , or beds of seagrass) in sheltered areas including harbours, estuaries, and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks. They are less often recorded in terrestrial habitats, usually wetlands such as fresh, brackish, or saline lakes, billabongs, pools, swamps and wet claypans, especially those with muddy margins and often with submerged vegetation or short emergent grass (DAWE, 2022).	<p><b>Likely to occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with two recorded occurrences within the Survey Area in 2014.</p> <p>Suitable habitat is likely to occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Pluvialis squatarola</i> (Grey Plover)	SL	Mi	The Grey Plover has been recorded in all states, where it is found along the coasts, and it especially abundant coastlines of South Australia and Western Australia (Albany and the northern Kimberley coast). In Queensland, large numbers have been recorded in the south-eastern Gulf of Carpentaria but records elsewhere are at sparsely scattered sites along the east coast. In non-breeding grounds in Australia, Grey Plovers occur almost entirely in coastal areas, where they usually inhabit sheltered embayment's, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons. They also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes. The species is also very occasionally recorded further inland, where they occur around wetlands or salt-lakes (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Suitable habitat may occur within the Survey Area.</p>
<i>Tringa brevipes</i> (Grey-Tailed Tattler)	SL	Mi	The grey-tailed Tattler is found along the entire coast, with small numbers located in the Gulf of Carpentaria. It is widespread along the east coast and the Torres Strait. There is a continuous population along the entire east coast of Cape York Peninsula. Inland records include Burdekin Weir, Charters Towers and Mount Isa; however, these are rare, with the species preferring coastal locations. Often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. It can also be found at intertidal rocky, coral, or stony reefs as well as platforms and islets that are exposed at low tide. It has been found around shores of rock, shingle, gravel, or shells and also on intertidal mudflats in embayment's, estuaries and coastal lagoons, especially fringed with mangroves (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).</p> <p>Suitable habitat may occur within the Survey Area.</p>

Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Tringa glareola</i> (Wood Sandpiper)	SL	Mi	In Queensland there are sparsely scattered records, mainly recorded southern Australia. This species uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially <i>Melaleuca</i> and River Red Gums <i>Eucalyptus camaldulensis</i> and often with fallen timber. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding, and irrigated crops. They are also found at some small wetlands only when they are drying. They are rarely found using brackish wetlands, or dry stunted saltmarsh. Typically they do not use coastal flats, but are occasionally recorded in stony wetlands. This species uses artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is unlikely to occur within the Survey Area as rarely using brackish wetlands.</p>
<i>Tringa incana</i> (Wandering Tattler)	SL	Mi	This species is uncommon in Australia. There are a few records from around Darwin and as a passage migrant in Torres Strait, and along the east coast, often on offshore or nearshore islands and reefs, south as far as Moruya (NSW). It is also recorded on Lord Howe and Norfolk Islands. They are generally found on rocky coasts with reefs and platforms, points, spits, piers, offshore islands and shingle beaches or beds. It is occasionally seen on coral reefs or beaches and tends to avoid mudflats. Foraging habitat is among rocks or shingle, or in shallow pools at edges of reefs or beaches, mainly along the tideline (DAWE, 2022).	<p><b>Unlikely to occur</b></p> <p>No recorded occurrences located near the Survey Area.</p> <p>Suitable habitat is unlikely to occur within the Survey Area as species avoids mudflats.</p>



Species	Status		Habitat	Likelihood of Occurrence
	NC Act	EPBC Act		
<i>Tringa nebularia</i> (Common Greenshank)	SL	Mi	This species does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. It has been recorded in most coastal regions, possibly with a gap between north Cape York Peninsula and Cooktown. This species is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves, or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes, and inundated floodplains, claypans and salt flats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area with one recorded occurrence within the Survey Area in 1983 (prior to current development).</p> <p>Suitable habitat may occur within the Survey Area.</p>
<i>Tringa stagnatilis</i> (Marsh Sandpiper)	SL	Mi	The marsh sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Suitable habitat may occur within the Survey Area.</p>
<i>Xenus cinereus</i> (Terek Sandpiper)	SL	Mi	This species has a primarily coastal distribution, with occasional records inland. It is more widespread and common in northern and eastern Australia than southern Australia. It is widespread in coastal Queensland, from south-east of the Gulf of Carpentaria, north to Torres Strait and along the eastern coast to south-east Australia. Mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayment's, harbours, or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire forland (DAWE, 2022).	<p><b>May occur</b></p> <p>There are frequent recorded occurrences located near the Survey Area.</p> <p>Suitable habitat may occur within the Survey Area.</p>

## **Appendix E**

# **Flora and Fauna Species List**

## Flora Species List

Family	Scientific Name
Acanthaceae	<i>Avicennia marina</i>
Aizoaceae	<i>Sesuvium portulacastrum</i>
Aizoaceae	<i>Tetragonia tetragonoides</i>
Amaranthaceae	<i>Alternanthera denticulata</i>
Apiaceae	<i>Centella asiatica</i>
Apocynaceae	<i>Araujia sericifera</i> *
Apocynaceae	<i>Catharanthus roseus</i> *
Arecaceae	<i>Livistona australis</i>
Asparagaceae	<i>Asparagus aethiopicus</i> *
Asteraceae	<i>Hypochaeris radiata</i> *
Asteraceae	<i>Wollastonia biflora</i> var. <i>biflora</i>
Asteraceae	<i>Ageratum houstonianum</i> *
Asteraceae	<i>Eclipta prostrata</i> *
Asteraceae	<i>Senecio madagascariensis</i> *
Asteraceae	<i>Sphagneticola trilobata</i> *
Blechnaceae	<i>Blechnum cartilagineum</i>
Cactaceae	<i>Opuntia stricta</i> *
Campanulaceae	<i>Lobelia concolor</i>
Casuarinaceae	<i>Allocasuarina littoralis</i>
Casuarinaceae	<i>Casuarina glauca</i>
Chenopodiaceae	<i>Enchylaena tomentosa</i>
Colchicaceae	<i>Gloriosa superba</i> *
Commelinaceae	<i>Commelina diffusa</i>
Convolvulaceae	<i>Ipomoea cairica</i> *
Convolvulaceae	<i>Ipomoea pes-caprae</i>
Cupressaceae	<i>Callitris columellaris</i>
Cyperaceae	<i>Fimbristylis</i> sp.
Cyperaceae	<i>Cyperus</i> sp. 1
Cyperaceae	<i>Gahnia sieberiana</i>
Cyperaceae	<i>Lepironia articulata</i>
Dennstaedtiaceae	<i>Pteridium esculentum</i>
Dilleniaceae	<i>Hibbertia scandens</i>
Dioscoreaceae	<i>Dioscorea transversa</i>
Euphorbiaceae	<i>Euphorbia cyathophora</i> *
Euphorbiaceae	<i>Excoecaria agallocha</i>
Euphorbiaceae	<i>Macaranga tanarius</i>
Fabaceae	<i>Crotalaria lanceolata</i>
Lamiaceae	<i>Coleus australis</i>
Lamiaceae	<i>Clerodendrum tomentosum</i>
Lamiaceae	<i>Vitex trifolia</i> var. <i>trifolia</i>
Laxmanniaceae	<i>Eustrephus latifolius</i>
Laxmanniaceae	<i>Lomandra longifolia</i>
Leguminosae (Caesalpinioideae)	<i>Acacia disparrima</i>

Family	Scientific Name
Leguminosae (Caesalpinioideae)	<i>Acacia leiocalyx</i>
Leguminosae (Caesalpinioideae)	<i>Senna pendula</i> *
Leguminosae (Papilionoideae)	<i>Desmodium rhytidophyllum</i>
Malvaceae	<i>Hibiscus tiliaceus</i>
Menispermaceae	<i>Stephania japonica</i>
Moraceae	<i>Ficus obliqua</i>
Myrsinaceae	<i>Aegiceras corniculatum</i>
Myrsinaceae	<i>Myrsine variabilis</i>
Myrtaceae	<i>Leptospermum juniperinum</i>
Myrtaceae	<i>Acmena hemilampra</i> subsp. <i>hemilampra</i>
Myrtaceae	<i>Corymbia intermedia</i>
Myrtaceae	<i>Eucalyptus tereticornis</i>
Myrtaceae	<i>Lophostemon confertus</i>
Myrtaceae	<i>Melaleuca quinquenervia</i>
Ochnaceae	<i>Ochna serrulata</i> *
Oxalidaceae	<i>Oxalis rubens</i>
Pandanaceae	<i>Pandanus tectorius</i>
Passifloraceae	<i>Passiflora edulis</i> *
Passifloraceae	<i>Passiflora suberosa</i> *
Phyllanthaceae	<i>Glochidion sumatranum</i>
Phyllanthaceae	<i>Phyllanthus virgatus</i>
Poaceae	<i>Sporobolus</i> sp.
Poaceae	<i>Chloris gayana</i> *
Poaceae	<i>Cymbopogon refractus</i>
Poaceae	<i>Digitaria parviflora</i>
Poaceae	<i>Imperata cylindrica</i>
Poaceae	<i>Megathyrsus maximus</i> *
Poaceae	<i>Ottochloa gracillima</i>
Poaceae	<i>Sporobolus virginicus</i>
Poaceae	<i>Urochloa decumbens</i> *
Restionaceae	<i>Coleocarya</i> sp.
Rhamnaceae	<i>Alphitonia excelsa</i>
Rhamnaceae	<i>Alphitonia petriei</i>
Rhizophoraceae	<i>Rhizophora stylosa</i>
Rubiaceae	<i>Psychotria loniceroides</i>
Rutaceae	<i>Melicope elleryana</i>
Rutaceae	<i>Murraya paniculata</i> 'Exotica'*
Sapindaceae	<i>Cupaniopsis anacardioides</i>
Smilacaceae	<i>Smilax australis</i>
Solanaceae	<i>Solanum mauritianum</i> *
Solanaceae	<i>Solanum nigrum</i> *
Solanaceae	<i>Solanum seaforthianum</i> *
Sterculiaceae	<i>Brachychiton acerifolius</i>
Ulmaceae	<i>Trema tomentosa</i>
Verbenaceae	<i>Lantana camara</i> *



Family	Scientific Name
Vitaceae	<i>Cayratia clematidea</i>
Vitaceae	<i>Clematicissus opaca</i>

### Fauna Species List

Scientific Name	Common Name
<b>Birds</b>	
<i>Cacatua sanguinea</i>	little corella
<i>Todiramphus macleayii</i>	forest kingfisher
<i>Hirundo neoxena</i>	welcome swallow
<i>Threskiornis moluccus</i>	Australian white ibis
<i>Entomyzon cyanotis</i>	blue faced honeyeater
<i>Dicrurus bracteatus</i>	spangled drongo
<i>Trichoglossus moluccanus</i>	rainbow lorikeet
<i>Vanellus miles</i>	masked lapwing
<i>Himantopus himantopus</i>	black winged stilt
<i>Ardea alba</i>	great egret
<i>Artamus leucorhynchus</i>	white breasted wood swallow
<i>Columba livia</i> *	rock dove
<i>Rhipidura leucophrys</i>	willy wagtail
<i>Pardalotus striatus</i>	striated pardalote
<i>Philemon citreogularis</i>	little friarbird
<i>Manorina melanocephala</i>	noisy miner
<i>Philemon corniculatus</i>	noisy friarbird
<i>Dacelo novaeguineae</i>	laughing kookaburra
<i>Corvus orru</i>	Torresian crow
<i>Egretta novaehollandiae</i>	white faced heron
<i>Spilopelia chinensis</i> *	spotted dove
<i>Microcarbo melanoleucos</i>	little pied cormorant
<i>Colluricincla harmonica</i>	grey shrike thrush
<i>Trichoglossus chlorolepidotus</i>	scaly breasted lorikeet
<i>Eopsaltria australis</i>	eastern yellow robin
<i>Lichmera indistincta</i>	brown honeyeater
<i>Coracina novaehollandiae</i>	black faced cuckoo shrike
<i>Platycercus adscitus</i>	pale-headed rosella
<i>Gerygone levigaster</i>	mangrove gerygone
<i>Haliaeetus leucogaster</i>	white-bellied sea eagle
<i>Anhinga novaehollandiae</i>	Australasian darter
<i>Grallina cyanoleuca</i>	magpie lark
<i>Egretta garzetta</i>	little egret
<i>Eolophus roseicapilla</i>	galah
<b>Marine</b>	
<i>Hemistrygon fluviorum</i>	estuary stingray