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**Attachment 5  
Native Foresters Fauna Assessment**

# **FAUNA SURVEY AND HABITAT ASSESSMENT (Winter Survey)**

**Lots 8 & 11 CP860464**

**CURTIS ISLAND, QUEENSLAND**



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All work conducted as part of this survey was conducted under the EHP Scientific Purposes Permit number WISP 10189211 and DEEDI Animal Ethics Committee number SA 2015/02/501 and in accordance with the relevant regulations.

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## 1.0 INTRODUCTION

Native Foresters has been commissioned by QRE to conduct a fauna survey and habitat assessment for fauna species occurring within Lots 8 and 11 CP860464 on Curtis Island in Queensland. It is proposed to construct a resort development on the site with preliminary clearing works for stage 1 of the project completed. The survey was designed to provide an inventory of fauna species occurring across the property. The requirement to provide a comprehensive assessment of the fauna species occurring over the site requires two seasonal surveys to be conducted (winter and summer) in order to provide a complete evaluation of fauna utilising the area. This report provides the results for the winter component of the survey.

### 1.1 OBJECTIVES

The objectives of the report are as follows:

1. To determine the fauna species present on the survey site.
2. To provide an ecological assessment of habitat values on the site for fauna species.

### 1.2 SITE DESCRIPTION

The survey site encompasses two parcels of leasehold land (Lots 8 & 11 CP860464) comprising a total area of 713 hectares located on Curtis Island, immediately south of the Tropic of Capricorn, within the Burnett-Curtis Hills and Ranges subregion of the South-east Queensland bioregion. The property and adjacent marine and terrestrial areas fall within the Great Barrier Reef World Heritage Area. There are a number of Queensland conservation estate areas in the immediate vicinity of the site, with Curtis Island National Park bordering the property to the north and south. The property is bordered to the west by State Forest. Refer **Figure 1** for site location.

Topography over the site varies from coastal cliffs and headlands through to areas of undulating woodlands. Soils over the site are generally shallow, acid yellow – mottled duplex soils derived from the metasediments of the Wandilla and Shoalwater formations (EMP, 2009). There is one permanent watercourse on the property (Hobble Creek) as well as an estuarine wetland area located on the coastline just north of Black Head. There are a number of ephemeral drainage lines draining into Hobble Creek or to the estuarine area adjacent to the coast.

The property contains a relatively diverse range of vegetation types dependent upon topography and proximity to the coastline. There are areas of remnant vegetation and cleared areas of non-remnant vegetation associated with the proposed resort development. The Regional Ecosystems (RE) occurring over the site are described in **Table 1**.

The property is considered to be in moderate ecological condition. Historically the area has been used for cattle grazing and wild cattle and horses continue to utilise the area with resultant impacts to the vegetation understorey composition and soil compaction. There is evidence of historical fire events through the property which may have been used to control vegetation regrowth when the area was part of a wider cattle station. The cleared areas of the property are being actively managed to limit native regrowth and there are weed species occurring within and adjacent to these cleared areas. The remnant forested parts of the property are providing good opportunities for native fauna species.



Figure 1: Locality map for Curtis Island survey site

Table 1: Regional Ecosystems occurring on site

Regional Ecosystem Type (RE)	Description	VMA Class	Biodiversity Status
12.1.2	Saltpan vegetation including grassland, hermland and sedgeland on marine clay plains	Least concern	No concern at present
12.1.3	Mangrove shrubland to low closed forest on marine clay plains and estuaries	Least concern	No concern at present
12.3.6	<i>Melaleuca quinquenervia</i> ± <i>Eucalyptus tereticornis</i> , <i>Lophostemon suaveolens</i> open forest on coastal alluvial plains	Least concern	No concern at present
12.3.7	<i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> ± <i>Melaleuca</i> spp. fringing woodland	Least concern	No concern at present
12.3.11	<i>Eucalyptus tereticornis</i> ± <i>Eucalyptus siderophloia</i> , <i>Corymbia intermedia</i> open forest on alluvial plains usually near coast	Of concern	Of concern
12.11.2	<i>Eucalyptus saligna</i> or <i>E. grandis</i> , <i>E. microcorys</i> , <i>Lophostemon confertus</i> tall open forest on metamorphics ± interbedded volcanics	Least concern	No concern at present
12.11.6	<i>Corymbia citriodora</i> subsp. <i>variegata</i> , <i>Eucalyptus crebra</i> woodland on metamorphics ± interbedded volcanics	Least concern	No concern at present
12.11.7	<i>Eucalyptus crebra</i> woodland on metamorphics ± interbedded volcanics	Least concern	No concern at present
12.11.14	<i>Eucalyptus crebra</i> , <i>E. tereticornis</i> , <i>Corymbia intermedia</i> woodland on metamorphics ± interbedded volcanics	Of concern	Of concern
12.11.18	<i>Eucalyptus moluccana</i> woodland on metamorphics ± interbedded volcanics	Least concern	No concern at present
12.11.20	<i>Corymbia intermedia</i> , <i>Lophostemon suaveolens</i> woodland on metamorphics ± interbedded volcanics	Of concern	Of concern
12.11.21	<i>Allocasuarina luehmannii</i> , <i>Melaleuca nervosa</i> woodland on metamorphics ± interbedded volcanics	Of concern	Of concern
12.12.19	Vegetation complex of rocky headlands on Mesozoic to Proterozoic igneous rocks	Of concern	Of concern



## 2.0 METHODOLOGY

### 2.1 *Desktop and literature review*

A desktop review was undertaken to assist in determining the site's ecological attributes prior to conducting the field survey. The review consisted of searches of Local, State and Commonwealth Government planning instruments and databases, as well as relevant academic literature. Sources of information included:

- Essential Habitat Mapping Mapping (DNRM, 2015)
- Wildlife Online Database (Queensland Government, 2015)
- EPBC Protected Matters Search Tool (DEnv, 2014)

All other relevant information relating to the subject site and the survey was reviewed, where available, including the results of the Curtis Island Environmental Management Plan, Ecology, Environment and Heritage Study prepared by GHD in 2009. A thorough desktop review was undertaken to assist in identifying potential native fauna occurring in the area and to provide a background to the survey methodology undertaken onsite. This review also assisted in determining survey strategies and sampling locations within the survey area.

### 2.2 *Selection of sampling locations*

Four sampling locations were selected within the survey area (sites A – D). Sampling locations were located in proximity to the proposed development areas and with reference to the different regional ecosystem types as defined by Regional Ecosystem Mapping. A description of the sampling locations is provided in **Table 2** and their location within the survey area is shown in **Figure 2**. Site selection within these defined areas was determined by the survey team in order to achieve optimum capture, including determining the most suitable trap configuration; landscape location and other biophysical and biological preferences of fauna species. The listed mammal and reptile species identified in the desktop survey were actively targeted, with survey site selection based on consideration of their preferred habitat characteristics.

### 2.3 *Survey timing and weather observations*

It is determined that two seasonal surveys should be conducted (winter and summer) in order to provide a complete evaluation of fauna utilising the area. This allows for the identification of fauna species (particularly reptiles and amphibians) which are temperature dependant and may not be detected during the colder winter months. This seasonal replication ensures that any variation in mammal and reptile population assemblages are adequately captured in the inventory.


This winter survey was conducted from the 15<sup>th</sup> to 20<sup>th</sup> June 2015. A moderate rainfall event occurred one day prior to the survey which resulted in ponded water in pools and in drainage lines through the site and moist soil conditions. A further rainfall event occurred mid-way through the survey. The weather conditions were generally mild and were suitable for the detection of many of the reptile and amphibian species potentially occurring onsite. The presence of a new moon through the survey period assisted in the detection of arboreal mammals during active nocturnal searches and spotlighting activities. Refer to **Table 3** for a summary of weather conditions over the survey period.

Table 2: Description of sampling locations

Site	RE type	GPS location centred on	Site description
A	Non – remnant area in proximity to 12.11.6 12.11.18 12.11.21	-23.68106 151.21960	<b>Cleared area surrounded by open woodland.</b> Cleared area intersected by rocky creekline with intermittent pools. 2-3 year regrowth saplings dominated by Eucalypt and Acacia species. Understorey of native and exotic grasses. Degraded ecological condition. Area surrounded by open woodland with mature Eucalypt dominated overstorey. Understorey of native grasses with <i>Xanthorrhoea spp.</i> prominent.
B	12.3.7 12.3.11 12.11.2 12.11.6	-23.67980 151.22403	<b>Open woodland.</b> <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> ± <i>Melaleuca spp</i> ± <i>Eucalyptus siderophloia</i> , <i>Corymbia intermedia</i> open forest on alluvial plains. <i>Eucalyptus saligna</i> or <i>E. grandis</i> , <i>E. microcorys</i> , <i>Lophostemon confertus</i> tall open forest on metamorphics ± interbedded volcanic. <i>Corymbia citriodora</i> subsp. <i>variegata</i> , <i>Eucalyptus crebra</i> woodland on metamorphics ± interbedded volcanic. Generally good ecological condition with limited weeds present. Hollow bearing trees. Scattered ground debris present. Understorey of native grasses with <i>Xanthorrhoea spp.</i> prominent. Ephemeral drainage lines present.
C	12.1.2 12.1.3	-23.66679 151.26776	<b>Mangrove dominated estuarine ecosystem adjacent to cleared area with scattered trees retained.</b> Saltpan vegetation including grassland, herbland and sedgeland on marine clay plains. Mangrove shrubland to low closed forest on marine clay plains. Marine couch present. Cleared headland area with retained Ironbark and Livistonia palms adjacent to sheltered beach with estuarine waterway entering marine zone. Limited weeds present, some <i>Lantana camara</i> . Moderate ecological condition although narrow mangrove system is intact. Rocky outcrops present – limited ground cover and vegetal debris.
D	12.12.19	-23.66683 151.27218	<b>Closed woodland adjacent to exposed headland cliffs.</b> Vegetation complex of rocky headlands on Mesozoic to Proterozoic igneous rocks. Closed canopy of Acacia, Lophostemon and Corymbia species. Growth form influenced by proximity to saltspray from adjacent headland area resulting in low growth form. Low presence of weed species. Ridges and gullies present. Good ecological condition. Groundcover composition influenced by fire activity with <i>Xanthorrhoea spp.</i> prominent. Vegetal debris and cover present.



**Curtis Island**  
Fauna and Flora Survey

 Survey area

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Data source: Queensland Government, Native Foresters.


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Figure 2: Sampling locations across site

**Table 3: Weather conditions over the survey period**

	Date	Temp_Min (°C)	Temp_Max (°C)	Rainfall (mm)	Max. Wind Gust		Cloud Conditions	Moon Phase
					Direction	Speed km/h		
Winter 2015	15/6/2015	17.7	25.0	0.2	ESE	44	Fine	New Moon 16/6/15
	16/6/2015	17.3	25.5	0.4	ESE	35	Fine	
	17/6/2015	18.7	25.7	0	NNW	43	Fine	
	18/6/2015	15.6	24.5	14.8	ENE	26	Overcast	
	19/6/2015	16.3	23.8	0.2	WSW	24	Becoming fine	

Source: Gladstone Station No 039123 <http://www.bom.gov.au/climate/data/>

## 2.4 Survey methodology

The survey techniques utilised for the project were based on the results of the desktop survey, identification of habitat features suitable for listed species and seasonal considerations associated with survey timing. The differing habits of the targeted species necessitated that surveys be carried out in both day and night periods and were carried out by personnel with experience in fauna survey techniques. The survey methodology used for the project was generally consistent with the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (DSITIA, 2012).

Fauna trapping for the survey included Elliott traps and camera traps. Bat call detection using echolocation recorders was undertaken in each of the four representative survey sites A-D. Opportunistic observations (active and passive search) and nocturnal spotlighting were undertaken across the entire survey area.

The location of sampling sites, traps and species of conservation significance was recorded using a handheld GPS (Garmin Etrex 10). Survey methods and sampling effort at each of the sampling locations are summarised in **Table 4**.

### 2.4.1 Active and passive search

Active and passive search was deployed at each of the four representative sites as well as more generally over the property when the opportunity arose as follows:

- Actively looking for animals through the site by searching for fauna under logs, rocks, leaf litter and decorticating bark. Conducted in both day and night periods.
- Passive search - identifying species both visually and aurally whenever the opportunity arises while onsite.
- Tracks and scats - Signs of an animal's presence, such as footprints, are interpreted. This procedure was generally opportunistic and used whenever specimens, scats or tracks were located.
- Nocturnal searches (spotlighting) for arboreal mammals and reptiles in selected habitats. Spotlighting was undertaken for an average of 3 hours each evening.
- Aural survey – Actively listening for male frog calls in appropriate habitats.

**Table 4: Survey methods and sampling effort**

Targeted Species / Groups	Methodology	Minimum Survey Time	Survey Effort
Birds	Active and Passive Search	Opportunistic over survey.	2 people
Terrestrial Mammals	Active and Passive Search	Daylight search – 4 hours for 4 days Spotlighting – 3 hours for 4 nights	2 people
	Elliot t Traps – T formation	10 baited traps at 5m spacing, checked each morning and evening – 3 nights	2 people
	Camera Traps	8 baited camera traps for 3 days /nights	192 hours
Arboreal Mammals	Active and Passive Search	Daylight search – 4 hours for 4 days Spotlighting – 3 hours for 4 nights	2 people
	Camera Traps	8 baited camera traps for 3days/nights	192 hours
Bats	Bat Call Detection	4 Anabat Express detectors left in place for 3 nights	192 hours
Reptiles	Active and Passive Search	Daylight search – actively looking under habitat – 4 hours for 4 days	2 people
Amphibians	Active and Passive Search	Daylight search – actively looking under habitat – 4 hours for 4 days	2 people
	Aural Search	Daylight and nocturnal survey – actively listening in appropriate habitats – 4 hours for 4 days	2 people
General diurnal observations	Opportunistic observations conducted during general fauna survey and checking of traps.	At least 4 hours for 4 days	2 people

### 2.4.2 Elliott traps

Elliott traps were used for small ground-dwelling (rodents and marsupials) at each of the four representative survey sites.

- The collapsible aluminium traps were baited with a combination of peanut butter and oats and deployed in a transect line with 10 traps spaced at 5m intervals in habitat suitable for the target species. The transect line was GPS marked and arranged in T formation to maximise coverage of habitat and topographic variability.
- The transect line was then checked each morning and evening. Captured individuals were released and each trap was rebaited, until day 4 of the survey when the traps were removed.

### 2.4.3 Bat call detection and acoustic analysis

Bat calls were recorded using four Anabat Express detectors. The detectors were deployed and GPS marked at strategic positions within each of the four representative survey sites. Detectors were placed at four sites on the edge of fly-ways through vegetation, approximately 1-1.5m above ground level, and left in place for three nights. Each detector was set up to record from sunset to sunrise every night; with start and finish times determined by the built in GPS functions in the detector. Recorded data was saved as a separate zero-crossing analysis (ZCA) file for each night.

Bat calls were processed and identified by Balance Environmental and Native Foresters. The ZCA files were converted to Anabat sequence files using *AnalookW* Version 4.1j (Corben 2014).

Sequence files were then analysed using *AnalookW*, with species identification achieved manually by comparing the *AnalookW* call sonograms with those of reference calls from southern Queensland and/or with published call descriptions (Reinhold et al. 2001; Pennay et al. 2004). Calls with fewer than four clearly-defined, non-fragmented pulses were excluded from the identification process. Species' identities were refined by considering probability of occurrence based on general distribution information (e.g. Churchill 2008; van Dyck et al. 2013) and/or records obtained from the Atlas of Living Australia ([www.ala.org.au](http://www.ala.org.au)) or Wildlife Online ([www.ehp.qld.gov.au/wildlife/wildlife-online](http://www.ehp.qld.gov.au/wildlife/wildlife-online)).

A count of bat calls attributable to each species (or species complex, where species cannot be differentiated) was provided as an indication of relative activity levels within each site. The format and content of the results in this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003). Species nomenclature follows van Dyck *et al.* (2013).

### 2.4.4 Remote camera traps

Remote camera traps were deployed with two cameras per sampling location.

- Camera traps were set for 3 days and nights with each camera visited daily to conduct rebaiting if required.

- The camera trap sites were baited with either a chicken frame or a combination of peanut butter and oats which act as a fauna attractant for the purpose of camera fauna detection.
- In areas of dense vegetation, the vegetation between the camera and bait was cleared by hand to increase the field of view and minimise the chance of wind-blown vegetation triggering the sensor.

## **2.5 Habitat condition assessment methodology**

A fauna habitat condition assessment was undertaken during the site surveys. This assessment was based on the habitats present, the listed species known to occur or potentially occurring within the locality and the occurrence of specific habitat features appropriate for these species. Habitat features that were considered significant for assessing breeding and feeding habitat value of target species, following the Habitat Hectares approach described in Parkes et al (2003), included:

- *Presence of large trees*: Large trees can be a dominant feature of remnant native vegetation and are a difficult habitat feature to replace once lost. They provide hollows for nesting and food sources. Their influence for wide-ranging species can extend over a considerable distance from their location.
- *Canopy cover*: The uppermost stratum of woody vegetation that forms the canopy functions as habitat for birds and arboreal mammals, provides food and resources, and determines the degree of light penetration and heat reaching the lower strata and ground detrital layer.
- *Weed cover*: Weeds can dominate and suppress native plant growth which affects the diversity of food sources; they can change the fuel or litter characteristics of a site, thereby altering the fire regime, and also prevent recruitment and succession of native vegetation.
- *Understorey components*: The shrub and herb strata generally contain the greatest plant species richness and can be a useful indicator of disturbance and changes in condition.
- *Organic litter, fallen timber and rocks*: Litter cover (both fine and coarse), can be indicative of the degree of disturbance of a site, and can be an important determinant of species recruitment. It will influence soil microclimates, structure and composition, and provide refugia for invertebrates, reptiles, amphibians and ground dwelling mammals.
- *Recruitment*: Recruitment of plant species, particularly woody perennials, within all strata reflects the site's long-term viability. In many of our Eucalypt dominated ecosystems, the absence of fire and traditional burning practices has interfered with succession and the result is a transition to closed forest and loss of grasslands, with detrimental effects for koalas and other mammals.
- *Landscape context*: The size of a patch size, its connectivity and distance to a core area of vegetation (ie: greater than 50 hectares) can affect both its regenerative capacity and long-term viability. Species–area relationships suggest that large areas tend to support more species and populations than smaller ones thus retaining greater genetic variability and providing refuge for species susceptible to disturbances.

Each survey site was assessed during the survey and a review of habitat features was undertaken.

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## 3.0 RESULTS

### 3.1 *Desktop results*

#### 3.1.1 Essential habitat designation

Essential Habitat is a vegetation ecotype that is considered by DEHP to form potential habitat to a species that is listed as; Endangered, Vulnerable, Rare or Near Threatened by Schedules 2-5 of the *Nature Conservation Regulation (2006)*. Essential Habitat mapping is provided in conjunction with Regulated Vegetation Management Mapping (RVMM) (DNRM, 2015). The survey area contains three areas of mapped Essential Habitat as shown in **Figure 3**. It also contains an area of designated wetland on the vegetation management wetlands map. The Essential Habitat designation within 5km of the property is associated with the species shown in **Table 5** which are listed under the *NC Act (1992)*.

#### 3.1.2 Wildlife online mapping

DEHP has compiled a database of wildlife sightings and listings for all flora and fauna species within a designated area. A database search was conducted for all rare and endangered native species that have been identified within 5 km of the survey area. One bird species was listed on Wildlife Online as shown in **Table 5**.

#### 3.1.3 EPBC Protected Matters

A search using the EPBC Act Protected Matters Search Tool shows that there is potential for 29 threatened fauna species to occur within 15km of the site. These include 13 birds, 7 mammals and 9 reptiles. Two of these species are exclusively marine in nature and have therefore been omitted from the list of species that can potentially occur on the site which is shown in **Table 5**.

### 3.2 *Winter Survey results*

#### 3.2.1 Active, aural and passive search results

A number of native and exotic fauna species were identified within each survey location over the course of the winter survey either during active or passive searching, spotlighting or through observation of tracks and scats. 32 bird species, 9 reptiles, 4 native mammals, 6 amphibians, 1 invertebrate and 5 feral fauna species were identified as shown in **Tables 6 – 11**.

#### 3.2.2 Elliott trap results

No fauna species were located using Elliot traps during the survey.



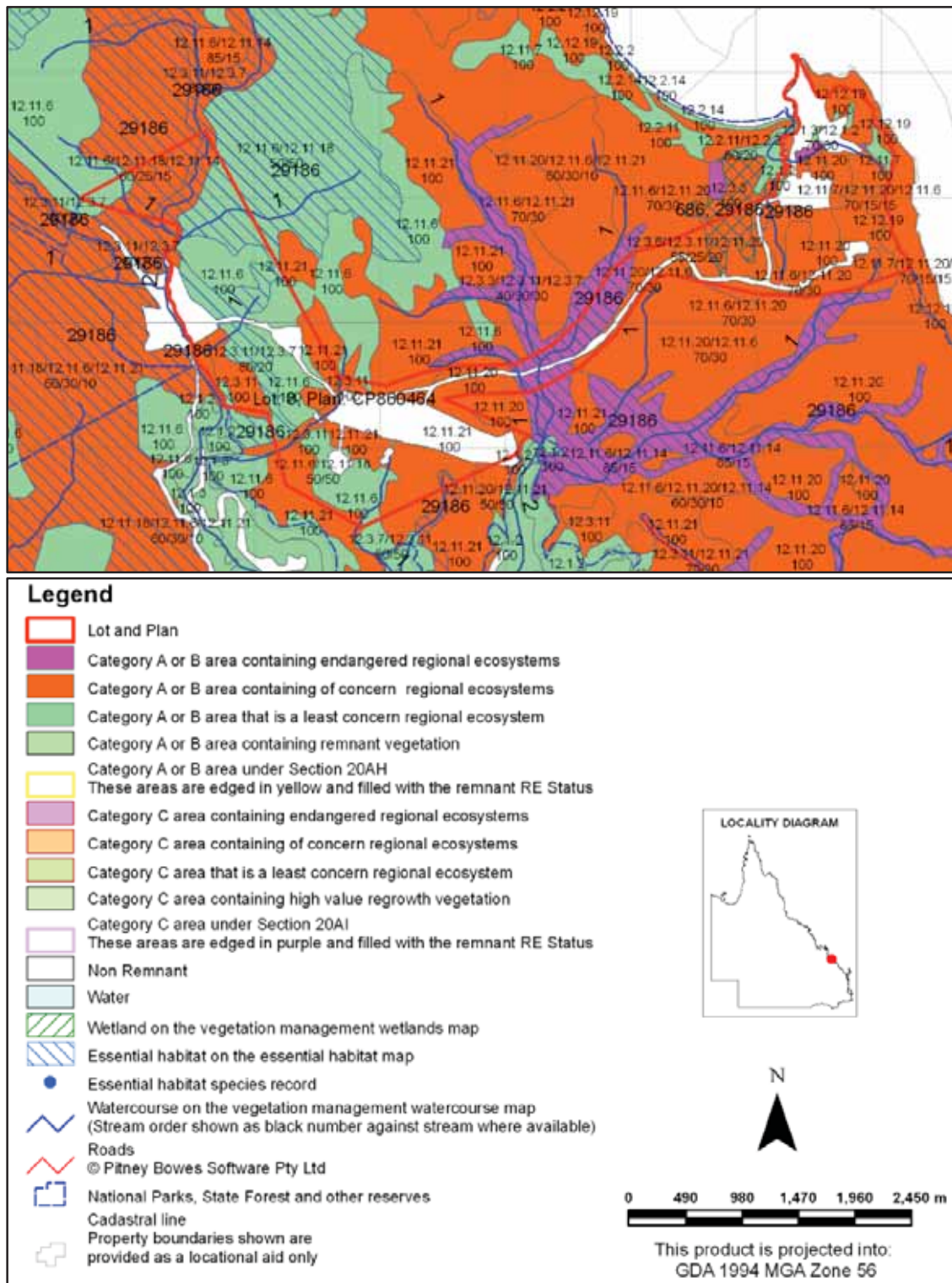


Figure 3: Essential Habitat Mapping for the site (Source: DNRM, 2015)

**Table 5: Listed fauna species identified by desktop research (Essential Habitat Mapping, Wildlife Online and EPBC Protected Matters Search Tool within 15km of site).**

Scientific Name	Common Name	EPBC status
<i>Botaurus poiciloptilus</i>	Australian Bittern	Endangered
<i>Cyclopsitta diophthalma coxeni</i>	Coxens Fig-Parrot	Endangered
<i>Epthianura crocea macgregori</i>	Yellow Chat	Critically endangered
<i>Erythrotriorchis radiatus</i>	Red Goshawk	Vulnerable
<i>Fregetta grallaria grallaria</i>	White bellied Storm Petrel	Vulnerable
<i>Geophaps scripta scripta</i>	Squatter Pigeon	Vulnerable
<i>Macronectes giganteus</i>	Southern Giant Petrel	Endangered
<i>Neochmia ruficauda ruficauda</i>	Star Finch	Endangered
<i>Poephila cincta cincta</i>	Black-throated Finch	Endangered
<i>Pterodroma neglecta neglecta</i>	Kermadec Petrel	Vulnerable
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered
<i>Thalassarche melanophris impavida</i>	Campbell Albatross	Vulnerable
<i>Turnix melanogaster</i>	Black-breasted Button-quail	Vulnerable
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable
<i>Dasyurus hallucatus</i>	Northern Quoll	Endangered
<i>Phascolarctos cinereus</i>	Koala	Vulnerable
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable
<i>Xeromys myoides</i>	Water mouse	Vulnerable
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered
<i>Chelonia mydas</i>	Green Turtle	Vulnerable
<i>Delma torquata</i>	Collared Delma	Vulnerable
<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered
<i>Egernia rugosa</i>	Yakka Skink	Vulnerable
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Vulnerable
<i>Furina dunmalli</i>	Dunmall's Snake	Vulnerable
<i>Lepidochelys olivacea</i>	Olive Ridley Turtle	Endangered
<i>Natator depressus</i>	Flatback Turtle	Vulnerable

**Table 6: Bird species identified using active search and passive search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Alectura lathamii</i>	Brush Turkey	D
<i>Aquila audax</i>	Wedge-tailed Eagle	A
<i>Ardea pacifica</i>	Pacific Heron	A
<i>Burhinus grallarius</i>	Bush Stone Curlew	D
<i>Chenonetta jubata</i>	Wood Duck	D
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	Between B & C
<i>Corcorax melanorhamphos</i>	White-winged Chough	B
<i>Corvus orru</i>	Torresian Crow	A, B, C, D
<i>Cracticus nigrogularis</i>	Pied Butcherbird	B, C
<i>Dacelo novaeguineae</i>	Kookaburra	A, B, C
<i>Dicrurus bracteatus</i>	Spangled Drongo	A, B, C, D
<i>Egretta sacra</i>	Eastern Reef Egret	C
<i>Egretta novaehollandiae</i>	White faced Heron	A, C
<i>Entomyzon cyanotis</i>	Blue-faced honeyeater	C
<i>Falco berigora</i>	Brown Falcon	A, B
<i>Falco peregrinus</i>	Peregrine Falcon	C, D
<i>Geopelia humeralis</i>	Bar shouldered Dove	A, B, C, D
<i>Geopelia striata</i>	Peaceful Dove	A, B, C, D
<i>Gymnorhina tibicen</i>	Australian Magpie	C, D
<i>Haematopus longirostris</i>	Pied Oystercatcher	C
<i>Haliastur sphenurus</i>	Whistling Kite	A, D
<i>Haliastur indus</i>	Brahminy Kite	C, D
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	A, C, D
<i>Hirundo neoxena</i>	Welcome Swallow	A, B, C, D
<i>Merops ornatus</i>	Rainbow Bee-eater	Between B & C
<i>Ninox novaeseelandiae</i>	Southern Boobook	D
<i>Pandion haliaetus</i>	Osprey	C, D
<i>Philemon citreogularis</i>	Little Friarbird	A, B, C
<i>Podargus strigoides</i>	Tawny Frogmouth	C
<i>Rhipidura leucophrys</i>	Willy Wagtail	C
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	A, B, C, D
<i>Vanellus miles</i>	Masked Lapwing	A, C, D

**Table 7: Reptile species identified using active search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Carlia schmeltzii</i>	Schmeltz's Rainbow Skink	D
<i>Carlia vivax</i>	Lively Rainbow Skink	C
<i>Concinnia martini</i>	Martin's Skink	A, B
<i>Cryptoblepharus pulcher</i>	Elegant Snake-eyed Skink	A, B, C, D
<i>Ctenotus robustus</i>	Eastern Striped Skink	C
<i>Dendrelaphis punctulata</i>	Green Tree Snake	D
<i>Gehyra dubia</i>	Dubious Dtella	A
<i>Heteronotia binoei</i>	Bynoe's Gecko	A, B, C, D
<i>Lygisaurus foliorum</i>	Tree-base Litter Skink	B

**Table 8: Mammal species identified using active search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Macropus giganteus</i>	Eastern Grey Kangaroo	D
<i>Petauroides volans</i>	Greater Glider	B
<i>Petaurus breviceps</i>	Sugar Glider	A
<i>Petaurus norfolcensis</i>	Squirrel Glider	Between B & C

**Table 9: Amphibian species identified using active and aural search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Litoria fallax</i>	Eastern Sedge Frog	A, B
<i>Litoria inermis</i>	Bumpy Rocket Frog	A
<i>Litoria nasuta</i>	Striped Rocket Frog	A, B
<i>Platyplectrum ornatum</i>	Ornate Burrowing Frog	D
<i>Pseudophryne major</i>	Great Brown Brood Frog	A, B, C
* <i>Rhinella marina</i>	Cane Toad	A, B, C, D

\*Non-native species

**Table 10: Invertebrate species identified using passive search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Cherax depressus</i>	Orange-fingered yabby	A

**Table 11: Feral species identified using active search**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<i>Bos taurus</i>	Cow	C
<i>Canis sp</i>	Dingo / Wild Dog	C - Track
<i>Equus caballus</i>	Horse	A, B, D
<i>Rattus rattus</i>	Black Rat	D
<i>Sus scrofa</i>	Pig	C - Track

### 3.2.3 Microbat acoustic analysis results

The confirmed and probable bat species identified using Anabat Express detectors and acoustic call analysis are shown in **Table 12**. Nine microbat species were positively identified from the winter survey. At least five other species may be present over the site, however their calls have similar characteristics and could not be reliably attributed to single species.

**Table 12: Microbat acoustic analysis results**

SCIENTIFIC NAME	COMMON NAME	LOCATION
<b>Vespertilionidae (evening bats)</b>		
<i>Chalinolobus gouldii</i>	Gould's wattled bat	A, B, C, D
<i>Chalinolobus nigrogriseus</i>	Hoary wattled bat	C
<i>Chalinolobus picatus</i> *	Little pied bat	B
<i>Nyctophilus species</i> *	Long-eared bat	B
<i>Scotorepens balstoni</i> *	Western broad-nosed bat	A
<i>Scotorepens greyii</i>	Little broad-nosed bat	B, C
<i>Vespadelus troughtoni</i>	Eastern cave bat	C
<b>Miniopteridae (bent-wing bats)</b>		
<i>Miniopterus australis</i>	Little bent winged bat	A, B, C, D
<i>Miniopterus oriana oceanensis</i>	Easter bent winged bat	B
<b>Molossidae (free tailed bats)</b>		
<i>Mormopterus lumsdenae</i>	Northern free tailed bat	A, B
<i>Micronomus norfolkensis</i> *	East coast free tailed bat	A, B, C
<i>Mormopterus ridei</i>	Eastern little free-tailed bat	A, B, C
<b>Emballonuridae (sheath-tailed bats)</b>		
<i>Saccolaimus flaviventris</i>	Yellow-bellied sheath-tailed bat	B, C
<i>Taphozous georgianus</i> *	Common sheath-tailed bat	C, D

\*Species are probably present but not reliably identified

### 3.2.4 Remote digital camera trap results

The fauna species identified using remote digital camera traps in the winter survey are shown in **Table 13**.

**Table 13: Fauna species identified using remote digital camera traps**

SCIENTIFIC NAME	COMMON NAME	BAIT TYPE C = CHICKEN P = PEANUT & OAT	SITE
* <i>Rattus rattus</i>	Black rat	C	A
* <i>Vulpes vulpes</i>	Fox	C	D
<i>Corvus orru</i>	Torresian crow	C, P	A, B, D
<i>Dacello novaeguineae</i>	Kookaburra	C	B
<i>Haliastur sphenurus</i>	Whistling kite	C	A, B

\*Non-native species

### 3.2.5 Significant species records

No EVNT listed species were found during the course of the winter survey.

## 3.3 *Habitat condition assessment results*

Based on the habitats present, the listed species known to occur or potentially occurring and specific habitat features appropriate for these species, the survey area has been assessed as having good habitat values within the remnant vegetation areas of the property, moderate habitat values in the cleared areas in the eastern coastal areas of the property and poor habitat values within the cleared areas in the western parts of the property.

The remnant vegetation areas onsite are structurally complex and floristically diverse. The property has good connectivity to large tracts of native vegetation in the surrounding areas of National Park and State Forest. Habitat opportunities for native fauna exist in the form of fallen logs, stones, bark, leaf litter, as well as vegetation cover throughout the survey area. Medium to large native trees (>500mm DBH) predominate the bushland area in the western part of the property. There are a significant number of large “habitat trees” exhibiting a range of hollow sizes. Whilst large hollow bearing trees are needed for breeding, high quality habitat is also defined by its regenerative capacity (recruitment and succession). The survey area displays a range of vegetation age classes.

In the bushland areas of the site the canopy, which is semi closed, has created areas of woody debris and leaf litter underneath with sufficient light penetration to provide suitable microhabitat conditions for many native reptile species. The habitat assessment of the survey sites is presented below in **Table 14**.

**Table 14: Habitat Condition Assessment**

Site	Habitat Features for Survey Sites
A	<p><b>Cleared area surrounded by open woodland.</b></p> <ul style="list-style-type: none"> <li>• Large trees absent, some acacia species to 5m in riparian zone.</li> <li>• Canopy absent.</li> <li>• Semi-dense understorey of regenerating <i>Eucalypt spp</i> and <i>Acacia spp</i>, grasses and herbs.</li> <li>• Weeds present. Decreasing as canopy returns in adjacent forested areas.</li> <li>• No hollow bearing trees.</li> <li>• Ground debris present in the form of large log piles associated with clearing works.</li> <li>• Recruitment associated with vegetation regrowth.</li> <li>• Connectivity with adjacent bushland areas.</li> </ul>
B	<p><b>Open woodland</b></p> <ul style="list-style-type: none"> <li>• Semi-closed canopy approximately 18m in height.</li> <li>• Open mid-strata.</li> <li>• Understorey of native grasses and herbs, <i>Xanthorrhoea spp</i> prominent.</li> <li>• Limited weeds present.</li> <li>• Hollow bearing trees including some large hollows.</li> <li>• Scattered ground debris present.</li> <li>• Good recruitment.</li> <li>• Ephemeral drainage lines and ponding present.</li> <li>• Evidence of fire.</li> <li>• Good connectivity with adjacent bushland areas.</li> </ul>
C	<p><b>Mangrove dominated estuarine ecosystem adjacent to cleared area with scattered trees retained.</b></p> <ul style="list-style-type: none"> <li>• Low closed canopy in mangrove areas.</li> <li>• Dense mid strata.</li> <li>• High tidal range (&lt;5m) forming dynamic estuarine zone.</li> <li>• Good ecological condition but narrow extent, only 10 metres wide.</li> <li>• Limited weeds present.</li> <li>• Large hollow bearing trees absent.</li> <li>• Good recruitment.</li> <li>• Good connectivity with adjacent bushland areas.</li> </ul>
D	<p><b>Closed woodland adjacent to exposed headland cliffs.</b></p> <ul style="list-style-type: none"> <li>• Low closed canopy with mature trees to 6 m in height.</li> <li>• Open mid strata.</li> <li>• Understorey of grasses and herbs providing cover for ground dwelling species.</li> <li>• <i>Xanthorrhoea spp</i> prominent.</li> <li>• Limited weeds present - lantana.</li> <li>• Evidence of fire.</li> <li>• Hollow bearing trees absent.</li> <li>• Woody debris present.</li> <li>• Good recruitment.</li> <li>• Good connectivity with adjacent bushland areas.</li> </ul>

### **3.4 Survey limitations**

Fauna species that have large home ranges and/or exhibit transient space utilisation are likely to exhibit seasonal variation within areas of suitable habitat. The repetition of the survey in winter and summer seasons attempts to minimise the effect of this limitation on the survey results.

Emphasis was placed on the use of appropriate survey methods to target listed threatened ecological communities, populations and species that are considered likely to occur within the site to enable an accurate assessment of the occurrence and distribution of the target species. With respect to trapping and opportunistic observations, the possibility exists that certain species may not have been detected during field investigations due to:

- seasonal inactivity during field survey;
- species present within micro-habitats not surveyed;
- cryptic species able to avoid detection;
- transient wide-ranging species not present during survey period.

The lack of observational data on some species should therefore not be taken as necessarily indicating that a species is absent from the site.



## **4.0 SUMMARY**

### **4.1 *Mammals***

#### **4.1.1 Arboreal mammals**

Three arboreal mammals were located during the course of the winter survey. The Greater Glider, Squirrel Glider and Sugar Glider were all detected using active search and spotlighting in the open eucalypt forest area in the west of the property. The presence of suitable habitat hollow trees in the Western part of the property is continuing to provide suitable conditions for these species with the presence of scats and scratches on trees indicating use of this site by arboreal mammals.

#### **4.1.2 Terrestrial mammals**

The program of Elliot trapping over the site did not determine the presence of any small terrestrial mammals (Dasyurids) in any of the four survey areas. It is also noted that GHD undertook an Elliot trapping program on an adjacent property in 2004 with no Dasyurids, Bandicoots or Rodents detected. One feral species of Black Rat was detected onsite by camera trapping. No evidence of Bandicoot digs were observed onsite. It is considered likely that these species are locally extinct or in very low numbers, as there are a high number of feral predators in the area that predate on these small, ground dwelling species (see exotic mammal section). These species are also naturally subject to population irruptions and crashes (EMP, 2009).

The only large native mammal detected onsite was the Eastern Grey Kangaroo which is considered to be maintaining a viable population over the area. There are good habitat opportunities for large mammals, including eucalypt forest, woodlands, shrublands, grasslands and swamplands. The connectivity to adjacent bushland also provides good habitat for medium to large mammals.

#### **4.1.3 Introduced mammals**

Feral pigs, feral horses (brumbies), wild dogs, feral cats, foxes and stray stock are considered to be the main feral species impacting on conservation values on Curtis Island (Melzer et al., 2007) and these were all detected during the survey. The fox, feral cat, feral dog and in some situations the feral pig are all predatory and have an adverse effect on native fauna and may account for the apparent absence of small and medium size native fauna species over the site. The black rat is also present, with this species competing with native rodents.

#### **4.1.4 Bats**

Nine microbat species were positively identified from the winter survey data. At least five other species may also be present in the survey area. The variety and structural diversity of vegetation communities in the survey area provide a wide range of foraging niches and habitat opportunities for microbats. The bat species richness and relative activity levels detected in the survey are comparable to other sites in Queensland with a similar suite of habitat types.

## **4.2 Reptiles**

The survey identified nine reptiles including eight lizards and one snake. The low diversity of snakes identified is likely to be a result of the winter survey timing. The habitat condition for reptiles across the reserve are considered to be moderate to good with adequate coarse woody debris and litter present across the site.

## **4.3 Amphibians**

The survey identified 5 native frog species and the pest species Cane toad occurring onsite. This represents a reasonable diversity of frog species. The presence of rain and the resultant ephemeral ponding over the site was conducive for the detection of frogs.

The Cane toad was found in large numbers onsite. Cane toad tadpoles prey on the tadpoles of native amphibian species. In addition, cane toads are considered likely to cause declines in faunal biodiversity through competition for food with other carnivores, predation upon small vertebrates (such as skinks) and by causing intoxication among larger predators such as goannas (*Varanus spp.*) and raptors (DEC, 2008b).

## **4.4 Birds**

The diversity of topography and vegetation types occurring over the property provides multiple habitat opportunities for a range of bird species. The winter survey located 7 birds of prey, 5 shorebirds, 1 waterbird and 17 landbirds over the site.

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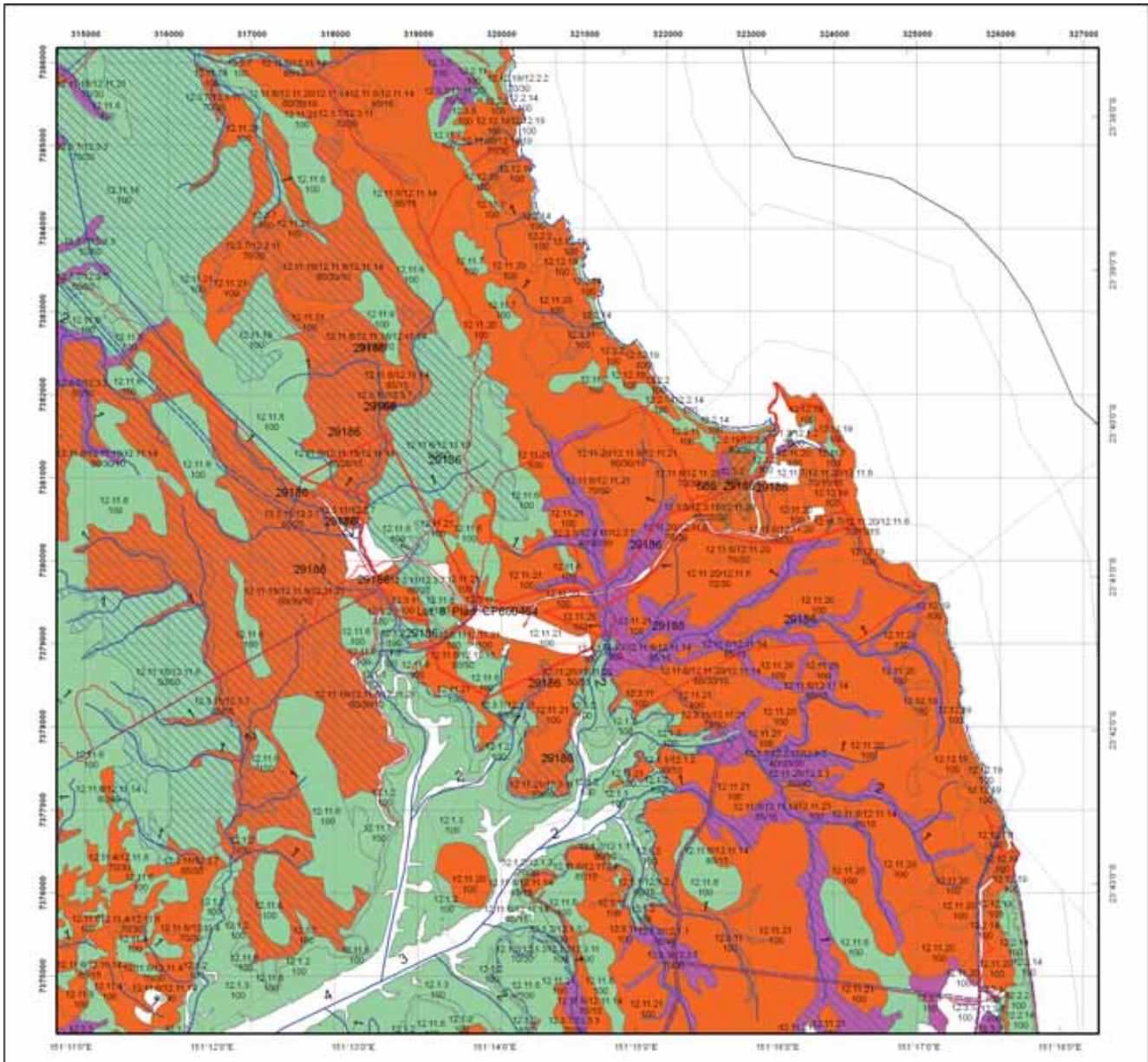
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9 September 2015



**Attachment 6**  
**Regional Ecosystem Mapping**



### Vegetation Management Supporting Map

**Legend**

- Lot and Plan
- 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 A or B area containing remnant vegetation
- Category A or B area under Section 20AH  
These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI  
These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse map  
(Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only



This product is projected into:  
 GDA 1994 MGA Zone 56

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

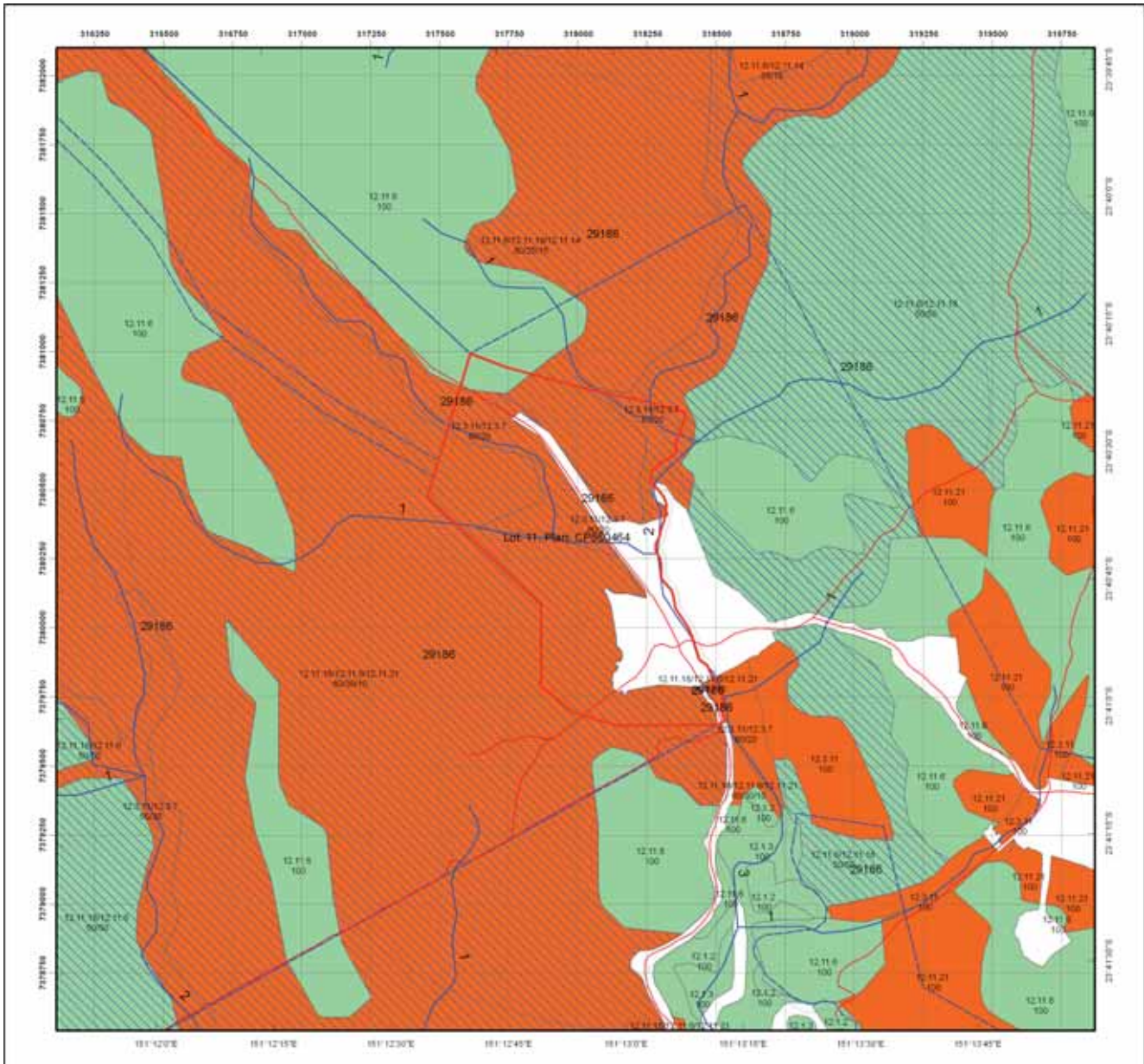
Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

**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.dnrm.qld.gov.au](http://www.dnrm.qld.gov.au) or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse 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/>





### Vegetation Management Supporting Map

**Legend**

- Lot and Plan
- 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 A or B area containing remnant vegetation
- Category A or B area under Section 20AH  
These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI  
These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse map  
(Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only



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.

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13 October 2015



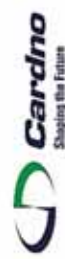
**Attachment 7**  
**Location of Resort Infrastructure**



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Scale <Insert Scale> Size A3  
 Date 08/09/2015  
**CARDNO HRP**  
**CURTIS ISLAND EPBC**  
 ATTACHMENT 6: RESORT INFRASTRUCTURE LOCATIONS 01

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13 October 2015



**Attachment 8**

**Assessment of Known or Likely Presence of EPBC Act Scheduled Communities and Species**

IMNES	Common Name	Scientific Name	PMSI	Data sources		Current EPBC Status	Listing Date	Habitat	Likelihood of presence in Monte Christo	Likelihood of presence in development footprint	Preliminary Analysis of Impact	Impact type
				CERLA 2002	AFR 2015							
Fauna Bird	Eastern Curlew	<i>Numenius madagascariensis</i>	x		MA/Mb / CE	13/07/2000 / 26/05/2015	Coastal distribution associated with salted coasts, especially estuaries, bays, harbours, plains and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass.	Likely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	
Fauna Bird	Eastern Reef Egret	<i>Egretta sacra</i>		x	Ma	13/07/2000	Occurs along the shoreline and within estuarine mudflats and inshore reef (Morcombe and Stewart, 2014).	Confirmed	Confirmed	This species was confirmed within the development footprint. No preferred habitat for this species will be cleared as a result of the project.	Potential Impact	
Fauna Bird	White-Bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	x	x	Ma	13/07/2000	Wetlands, permanent rivers and lakes (Czechura and Field, 2007).	Confirmed	Confirmed	Clearing of foraging and roosting areas may have potential impacts on this species.	Potential Impact	
Fauna Bird	Brambling Kite	<i>Haliastur indus</i>		x	Ma	1/09/2000	Wetlands, shorelines, shallows and flats (Morcombe and Stewart, 2014).	Confirmed	Confirmed	Clearing of foraging and roosting areas may have potential impacts on this species.	Potential Impact	
Fauna Bird	Whistling Kite	<i>Haliastur sphenurus</i>		x	Ma	1/09/2000	Wetlands, shallows and flats (Morcombe and Stewart, 2014).	Confirmed	Confirmed	Clearing of foraging and roosting areas may have potential impacts on this species.	Potential Impact	
Fauna Bird	Rainbow Bee-Eater	<i>Megascops ophiatus</i>	x	x	MA/Mb	13/07/2000	Coastal wetlands, mangroves, salt marshes, and in various cleared or semi-cleared habitats (DoE, 2015).	Confirmed	Confirmed	Clearing of foraging and roosting areas may have potential impacts on this species.	Potential Impact	
Fauna Bird	Osprey	<i>Pandion haliaetus</i>	x	x	MA/Mb	13/07/2000	Coastal waters and estuaries, bays on cliff tops, trees or high rock stacks (Morcombe and Stewart, 2014).	Confirmed	Confirmed	Clearing of foraging and roosting areas may have potential impacts on this species.	Potential Impact	
Fauna Bird	Common Sandpiper	<i>Actitis hypoleucos</i>	x		MA/Mb	13/07/2000	Coastal and interior wetlands (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Fork-Billed Swift	<i>Apus pacificus</i>		x	MA/Mb	13/07/2000	Mostly aerial, occur over dry, open inland areas, plains, cliffs, beaches, islands, settled areas, and dry or open habitats, including riparian woodland and tea-free swamps, low scrub, heathland or saltmarsh, treeless grassland and sand plains (DoE, 2015).	Likely	Likely	As this species is mostly aerial it is considered unlikely that the proposed activities would impact this species.	Potential Impact	
Fauna Bird	Great Egret	<i>Ardea alba</i>	x	x	Ma	13/07/2000	Wetlands, flooded crops, pasture, dunes, mudflats, mangroves, salt marshes, and open water (Morcombe and Stewart, 2014).	Likely	Likely	Potential impact, as a result of clearing/mangrove habitat.	Potential Impact	
Fauna Bird	Gulls Egret	<i>Ardea ibis</i>		x	MA/Mb	13/07/2000	Mostly saline wetlands and mudflats (Morcombe and Stewart, 2014).	Likely	Likely	Clearing of wetland habitat may impact foraging habitat for this species.	Potential Impact	
Fauna Bird	Sharp-billed Sandpiper	<i>Calidris acuminata</i>	x		MA/Mb	13/07/2000	Fresh and saltwater wetlands, lagoons, dams, swamps and floodwaters (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Curlew Sandpiper	<i>Calidris ferruginea</i>	x	x	MA/Mb / CE	13/07/2000 / 26/05/2015	Intertidal mudflats in estuaries, bays, inlets and lagoons, and around coastal non-tidal swamps, lakes and lagoons (DoE, 2015).	Likely	Unlikely	Preferred habitat for this species will not be cleared as a result of the project.	Unlikely to be impacted	
Fauna Bird	Great Knot	<i>Calidris tenuirostris</i>	x	x	MA/Mb	13/07/2000	Sheltered coastal habitats, with large intertidal mudflats or sandflats (DoE, 2015).	Likely	Unlikely	Preferred habitat for this species will not be cleared as a result of the project.	Unlikely to be impacted	
Fauna Bird	Double-Banded Plover	<i>Charadrius bicinctus</i>		x	MA/Mb	13/07/2000	Tidal mudflats, beaches, exposed reefs, saltmarsh, freshwater wetlands (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of saltmarsh or wetland areas may have potential impacts to foraging habitat for this species. Clearing adjacent habitat areas may have indirect impacts.	Unlikely to be impacted	
Fauna Bird	Lesser Sand Plover	<i>Charadrius mongolus</i>	x	x	MA/Mb	13/07/2000	Sandflats, mudflats, beaches, estuaries (Morcombe and Stewart, 2014).	Likely	Unlikely	Preferred habitat for this species will not be cleared as a result of the project.	Unlikely to be impacted	
Fauna Bird	Red-Capped Plover	<i>Charadrius ruficapillus</i>		x	Ma	1/09/2000	Sheltered estuaries, salt marsh lagoons, brackish water and clays (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of saltmarsh area may have potential impacts on this species. Clearing adjacent habitat areas may have indirect impacts.	Unlikely to be impacted	
Fauna Bird	Swamp Harrier	<i>Circus approximans</i>		x	Ma	1/09/2000	Open habitats, grasslands and wetlands (Czechura and Field, 2007).	Likely	Likely	Potential impacts to foraging habitat.	Potential Impact	
Fauna Bird	Yellow Chat	<i>Epthianura crocea macgregori</i>		x	CE	2/07/2002	Inhabits marine wetlands that are subject to extensive seasonal inundation and varying degrees of both fresh and saltwater (tidal) influence (DoE, 2015).	Likely	Unlikely	While the species has been recorded on Curtis Island, suitable habitat is associated with broad coastal plains and Schoenoplectus littoralis reed beds (Houston et al., 2004) that are absent from the development footprint, but present in northern areas of Monte Christo.	Unlikely to be impacted	
Fauna Bird	Latham's Snipe	<i>Gallinago lathamii</i>	x		MA/Mb	13/07/2000	Wetlands with low, dense vegetation comprised of reeds, sedges, heath and saltmarsh (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Swinhoe's Snipe	<i>Gallinago megala</i>	x		MA/Mb	13/07/2000	Fresh and brackish wetlands with dense vegetation (DoE, 2015).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Squatter Pigeon	<i>Geopelia striata scripta</i>	x		V	16/07/2000	Grassy woodlands and open forests dominated by Eucalyptus, Corymbia, Acacia or Callitris spp. (DoE, 2015).	Likely	Unlikely	This species is known from the Gladstone region and may occur on Curtis Island. Impacts to this species may occur as a result of habitat clearing.	Unlikely to be impacted	
Fauna Bird	Black-Winged Stilt	<i>Himantopus himantopus</i>		x	Ma	1/09/2000	Inhabits shallow wetlands, clay pans, flooded paddocks and salt lakes; nests in ground of silt or beach (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	White-Throated Noddy	<i>Hirundapus caudicatus</i>	x		MA/Mb	13/07/2000	Almost exclusively aerial. Most often recorded overflying wooded areas, including open forest and rainforests (DoE, 2015).	Likely	Likely	Due to the aerial nature of this species it is unlikely that the proposed activities will impact this species.	Potential Impact	
Fauna Bird	Barn Swallow	<i>Hirundo rustica</i>	x		MA/Mb	13/07/2000	Summer migrant that occupies open spaces usually near water (Morcombe and Stewart, 2014).	Likely	Likely	This species may overfly the site however no impacts are anticipated to open habitats for this species.	Potential Impact	
Fauna Bird	Bar-Tailed Godwit	<i>Ilimosia lapponica</i>	x	x	MA/Mb	13/07/2000	Coastal mudflats, sandbars, shores of estuaries, saltmarsh (Morcombe and Stewart, 2014).	Likely	Unlikely	The preferred habitat for this species will not be impacted by the proposed activities. Removal of saltmarsh habitat or development adjacent saltmarsh communities may indirectly impact this species.	Unlikely to be impacted	
Fauna Bird	Spotted Monarch	<i>Manorcha trivirgatus</i>	x		MA/Mb	13/07/2000	Eucalypt forests of ten near wetland/saltwater courses (DoE, 2015).	Likely	Likely	Suitable habitat for this species will be cleared as a result of the project.	Potential Impact	
Fauna Bird	Satin Flycatcher	<i>Myiagra cyaneolusca</i>	x		MA/Mb	13/07/2000	Rain forest and woodland with dense understory, mangroves (DoE, 2015).	Likely	Likely	Suitable habitat for this species will be cleared as a result of the project.	Potential Impact	
Fauna Bird	Little Whinnet	<i>Numenius minutus</i>		x	MA/Mb	13/07/2000	Dry grassland and edge land, seasonally inundated floodplains, open woodlands with grassy understory, dry saltmarshes, coastal swamps, mudflats or sand flats of estuaries or beaches on sheltered coasts (DoE, 2015).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Whinnet	<i>Numenius phaeopus</i>	x	x	MA/Mb	13/07/2000	Mud flats, estuaries and lagoons with mangroves (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna Bird	Pacific Golden Plover	<i>Ploveris tibet</i>	x	x	MA/Mb	13/07/2000	Estuaries, mud flats, beaches, reeds, saltmarsh (Morcombe and Stewart, 2014).	Likely	Unlikely	Clearing of saltmarsh area may have potential impacts on this species.	Unlikely to be impacted	

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Fauna: Bird	Grey Plover	<i>Pluvialis squatarola</i>	x		Ma Ma	13/07/2000	Coastal habitat, estuaries, lagoons, open mudflats, sand bars, beaches, rocky platforms (Morcombe and Stewart, 2014).	Unlikely	No impacts proposed to preferred habitat for this species. No site records for this species.	Unlikely to be impacted	
Fauna: Bird	Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>	x		Ma	4/09/2000	Shallow ephemeral saline wetlands	Unlikely	No site records for this species. Potential impacts to foraging habitat for this species.	Unlikely to be impacted	
Fauna: Bird	Rufous Fantail	<i>Rhipidura rufifrons</i>	x	x	Ma Ma	13/07/2000	Rainforest, dense wet sclerophyll, paperbark and mangrove swamp, riverside vegetation (Morcombe and Stewart, 2014).	Likely	Species records within the vicinity of the site.	Potential Impact	
Fauna: Bird	Little Tern	<i>Sterna albibron</i>	x	x	Ma Ma	13/07/2000	Shallow coastal waters, estuaries, sand bars, lagoons, channels around the entrance to rivers (Morcombe and Stewart, 2014).	Unlikely	The proposed activities will not involve the clearing of preferred habitat for this species.	Unlikely to be impacted	
Fauna: Bird	Brown Booby	<i>Sula leucogaster</i>		x	Ma Ma	4/09/2000	This species has been recorded in coastal waters, harbours and estuaries and on shore islands. Nests are highly visible and rugged rock ledges (cliffs, ledges, and boulders) are used for nesting. Seabirds, coral rubble and algae fill on eggs (DoE, 2015). Not known to nest on Curtis Island.	Unlikely	The proposed activities will not involve the clearing of preferred habitat for this species.	Unlikely to be impacted	
Fauna: Bird	Raglan Shelduck	<i>Tadorna radjah</i>		x	Ma	4/09/2000	Mangrove-lined river channels, tidal mudflats, beaches, inland permanent lagoons (Morcombe and Stewart, 2014).	Likely	The proposed activities will not involve the clearing of preferred habitat for this species.	Unlikely to be impacted	
Fauna: Bird	Common Greenshank	<i>Tringa nebularia</i>		x	Ma Ma	13/07/2000	Permanent and temporary freshwater and saline wetlands (Morcombe and Stewart, 2014).	Likely	Clearing of ephemeral or permanent wetland foraging habitat may result in impacts to for this species.	Unlikely to be impacted	
Fauna: Bird	Marsh Sandpiper	<i>Tringa stagninalis</i>		x	Ma Ma	13/07/2000	Estuaries, open wetlands including saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats (DoE, 2015).	Unlikely	Clearing of wetland areas may have potential impacts on this species.	Unlikely to be impacted	
Fauna: Bird	Terek Sandpiper	<i>Xenus cinereus</i>		x	Ma Ma	13/07/2000	Estuaries, muddy lagoons, reef, lagoons and saltpans (Figg, 2002)	Likely	Clearing of Salpan habitat may have impacts to foraging resources for this species.	Unlikely to be impacted	
Fauna: Mammal	Water Mouse	<i>Myomys myodes</i>	x		V	16/07/2000	Mangrove communities and adjacent seagrass beds, grasslands and freshwater wetlands (DoE, 2015).	Unlikely	Potential impacts through removal of mangrove communities which may provide forage and roost habitat for this species.	Potential impact to habitat	
Fauna: Reptile	Logghead Turtle	<i>Caretta caretta</i>	x	x	Ma Ma	16/07/2000	Nest on open sandy beaches (DoE, 2015). Habitat for this species occurs on the beach to the west.	Likely	Curtis Island may provide occasional nesting habitat for this species. The proposed activities may have indirect impacts on this species through lighting of the resort.	Potential indirect impact	
Fauna: Reptile	Green Turtle	<i>Chelonia mydas</i>	x		V Ma Ma	16/07/2000	Nest on sandy beaches. Curtis Island is identified as a key nesting site for this species.	Likely	Curtis Island may provide occasional nesting habitat for this species. The proposed activities may have indirect impacts on this species through lighting of the resort.	Potential indirect impact	
Fauna: Reptile	Salt-Water Crocodile	<i>Crocodylus porosus</i>			Ma Ma	13/07/2000	Salt-water Crocodile inhabits reef, coastal and inland waterways from Gladstone on the east coast, throughout the Cape York Peninsula. Occurs in tidal rivers, coastal floodplains and channels, adjoining wetlands and swamps, nesting habitat comprises coastal freshwater swamps that are free from tidal movement (DoE, 2015).	Likely	Crocodiles have been reported in Pacific Creek on the north-eastern corner of Curtis Island. This species may forage within the vicinity of the development footprint. The proposed activities will not remove any foraging habitat for this species.	Unlikely to be impacted	
Fauna: Reptile	Hawksbill Turtle	<i>Eretmochelys imbricata</i>	x		V Ma Ma	16/07/2000	Forage in tropical tidal and sub-tidal coral and rocky reef habitat; nest on sandy beaches (DoE, 2015).	Likely	This species is not known to nest in Southern Queensland or Curtis Island. This species may forage offshore. It is considered unlikely that the proposed activities will impact this species.	Unlikely to be impacted	
Fauna: Reptile	Olive Ridley Turtle	<i>Lepidochelys olivacea</i>	x		Ma	16/07/2000	Forage over shallow benthic habitats; nest on sandy beaches (DoE, 2015).	Likely	This species is not known to nest in southern Queensland or on Curtis Island. This species may forage offshore. It is considered unlikely the proposed activities would impact this species.	Unlikely to be impacted	
Fauna: Reptile	Flatback Turtle	<i>Natator depressus</i>	x	x	V Ma Ma	16/07/2000	Freed in turbid, shallow inshore waters; nest on sandy beaches. Curtis Island is identified as a major nesting site for this species.	Likely	Fortune communities provide nesting habitat for marine turtles which traverse the fore-dune and deposit their clutch within the swale. Nesting habitat occurs at South End - 1 km to the south of Back Head (Limpus et al., 2013). Indirect impacts may result from lighting at the resort.	Potential indirect impact	
Fauna	Wedge-tail Tuckeroo	<i>Cyanopicus strydoma</i>		x	V	16/07/2000	Occurs within dry rainforest vegetation, including vine basket on hillside, stream beds and along riverbanks (DoE, 2015).	Unlikely	This species has not been recorded historically on Curtis Island.	Unlikely to be impacted	
Fauna	Cyean megacarpa	<i>Cyean megacarpa</i>			E	16/07/2000	Woodland, open woodland and open forests, with a grassy understory (DoE, 2015).	Unlikely	This species has not been recorded historically on Curtis Island.	Unlikely to be impacted	
Fauna	Cyean ophthalica	<i>Cyean ophthalica</i>			E	16/07/2000	Hills and slopes in sparse, grassy open forest at all upper ranges, from 80-400 m above sea level. Favours shallow, stony, infertile, sandstone and serpentine derived soils (DoE, 2015).	Unlikely	This species has not been recorded historically on Curtis Island.	Unlikely to be impacted	
Fauna	Lesser Swamp Orchid	<i>Phaius australis</i>			E	16/07/2000	Coastal wet heath/scadgeland wetlands and swampy grassland or swampy forest, typically occurs within swamp-forest margins in swamp sclerophyll forest (DoE, 2015).	Unlikely	This species has not been recorded historically on Curtis Island.	Unlikely to be impacted	
Fauna: Fish	Short-nosed Pigmy Pipehorse	<i>Acentonura ventriculata</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Pacific Short-billed Pipefish	<i>Gomphichthys byoni</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Filan Banded Pipefish	<i>Corythoichthys amplexus</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Retiulate Pipefish	<i>Corythoichthys flavescens</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Red-top Pipefish	<i>Corythoichthys haematopterus</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Australian Messmate Pipefish	<i>Corythoichthys mesinialis</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Orange-spotted Pipefish	<i>Corythoichthys ozalidus</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Pacific Pipefish	<i>Corythoichthys pectoratus</i>			Ma	4/09/2000	This species is exclusively marine	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	

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Fauna: Fish	Schultz's Pipefish	<i>Gonythorichthys schultzi</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Bluestripe Pipefish	<i>Dorythamphus caesius</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Gridfin Pipefish	<i>Festualoea circatus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Tiger Pipefish	<i>Filicampus litris</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Red-Hair Pipefish	<i>Halacampus dunkeri</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Mud Pipefish	<i>Halacampus grayi</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Gillerting Pipefish	<i>Halacampus nidulus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Shiny Stout Pipefish	<i>Halacampus spinirostris</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Blue-Speckled Pipefish	<i>Hippichthys cyanospilus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Makura Pipefish	<i>Hippichthys heptagonus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Beady Pipefish	<i>Hippichthys penicillus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Pygmy Seahorse	<i>Hippocampus bargibanti</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Spot-tail Seahorse	<i>Hippocampus kuda</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Faint-Face Seahorse	<i>Hippocampus planifrons</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Zebra Seahorse	<i>Hippocampus zebra</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Jawfin Pipefish	<i>Lisocampus una</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Anderson's Pipefish	<i>Microgobius andersonii</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Thorntail Pipefish	<i>Microgobius brevirostris</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Painted Pipefish	<i>Nannocampus pictus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Pallid Pipefish	<i>Solegnathus haroldi</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Robust Ghost Pipefish	<i>Stenostomus cyanopletus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Rough-Stout Ghost Pipefish	<i>Stenostomus jaegerius</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Otmale Ghost Pipefish	<i>Stenostomus paradoxus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Double-End Pipefish	<i>Syngnathoides taciatus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Fish	Bornstick Pipefish	<i>Trochthamphus bioacritalus</i>	x		Ma	4/09/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Mammal	Bryde's Whale	<i>Balaenoptera edeni</i>	x		M, Cetacean	3/12/2002	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Mammal	Blue Whale	<i>Balaenoptera musculus</i>	x		E, M, Cetacean	16/07/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Mammal	Dugong	<i>Dugong dugon</i>	x		Ma, Ma	3/07/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Mammal	Humpback Whale	<i>Megaptera novaeangliae</i>	x		V, M, Cetacean	16/07/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Sharks	Great White Shark	<i>Carcharodon carcharias</i>	x		V, M, Ma	16/07/2000	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Sharks	Whale Shark	<i>Rhincodon typos</i>	x		V, M, Ma	16/10/2001	This species is exclusively marine	Unlikely	Unlikely	The proposed activities will not impact on the marine environment	Unlikely to be impacted	
Fauna: Bird	Ruddy Turnstone	<i>Arenaria interpres</i>	x	x	M, Ma	13/07/2000	Migratory. Occurs on ocean coasts with exposed rocks, stones, reef, mudflat or shelly beaches (Morcombe and Stewart, 2014).	Unlikely	Unlikely	Habitat for this species does not occur within the development footprint (this will not be impacted by the proposed activities)	Unlikely to be impacted	
Fauna: Bird	Red Knot	<i>Calidris canutus</i>	x		M, Ma	13/07/2000	Sheltered coasts, sandbars, mud flats, harbours and lagoons (Morcombe and Stewart, 2014).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	
Fauna: Bird	Red-necked Stint	<i>Calidris vitiensis</i>	x	x	M, Ma	13/07/2000	Sheltered intertidal mudflats and sand banks (Morcombe and Stewart, 2014).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	
Fauna: Bird	Greater Sand Plover	<i>Charadrius leschenaultii</i>	x	x	M, Ma	13/07/2000	Intertidal mudflats in estuaries, bays, inlets, sand cays, coral reef (Morcombe and Stewart, 2014).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	
Fauna: Bird	Coxon's Fig Parrot	<i>Cyclopsitta diophillina coxeni</i>	x		E	16/07/2000	Rainforest habitats - subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest (Ibáñez, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	
Fauna: Bird	Red Goshawk	<i>Erythrotrichis radiatus</i>	x		V	16/07/2000	Mix of vegetation types including tall open forest, woodland, lightly treed savannah and the edge of rainforest. In partly cleared parts of eastern Queensland, it is associated with gorge and escarpment country. (DBHP, 2016)	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this will not be impacted by the proposed activities.	Unlikely to be impacted	

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Fauna: Bird	White-Bellied Storm-Petrel	<i>Fregata aliciae galapagoensis</i>	x		NE 2015	V	16/07/2000	Fragile over near-shore waters; breeds in offshore banks and rocks, nesting in crevices between rocks, and in burrows excavated in banks (DOE, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this species indicates that it is known to breed on Curtis Island, no records have been made from the development area.	Unlikely to be impacted
Fauna: Bird	Pink-Tailed Snipe	<i>Gallinago stenura</i>	x			MI, Ma	13/07/2000	Freshwater swamps, lakes or ponds (DOE, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this species will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Bird	Grey-Tailed Tattler	<i>Heterosculus brevipes</i>	x	x		MI, Ma	13/07/2000	Inter-tidal pools, shallows, mudflats, sandy beaches, rock ledges and reefs (Morecombe and Stewart, 2014).	Unlikely	Unlikely	The preferred habitat for this species will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Bird	Southern Giant Petrel	<i>Macrocercus giganteus</i>	x			E, MI, Ma	4/08/2001	This species is a marine bird that occurs in Antarctic to sub-tropical waters (DOE, 2015).	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Bird	Black-Faced Monarch	<i>Manacus melanops</i>	x	x		MI, Ma	13/07/2000	Coastal waters (DOE, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this species will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Bird	Star Finch	<i>Neochmia ulicauda ruficauda</i>	x			E	16/07/2000	Grasslands and grassy woodlands close to fresh water bodies. This species appears to be extinct in SECQ (DOE, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this species will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Bird	Sooty Albatross	<i>Phoebastria fusca</i>	x			V, MI, Ma	16/07/2000	This species is marine and pelagic, foraging over coastal keep beds (DOE, 2015).	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Bird	Kermadec Petrel (Western)	<i>Pterodroma neglecta neglecta</i>	x			V	16/07/2000	Pelagic seabird, not known to breed on Curtis Island.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Bird	Fresh-footed Shearwater	<i>Puffinus carneipes</i>	x			MI, Ma	13/07/2000	Pairs breed on islands in burrows on signing ground in coastal forest, scrubland, strandline or grassland (DOE, 2015).	Unlikely	Unlikely	No known records of this species. No suitable breeding habitat, not known to breed on Curtis Island. This species is unlikely to occur within the vicinity of the development footprint.	Unlikely to be impacted
Fauna: Bird	Comptul Albatross	<i>Thalassidroma melanolepis impavida</i>	x			V, MI, Ma	16/07/2000	Marine sea bird and non-breeding visitor to Auckland waters, feeds from or just below the sea surface (DOE, 2015).	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Bird	Black-breasted Button-Quail	<i>Turnix melanogaster</i>	x			V	16/07/2000	Restricted to rainforests and forests, low closed forests, semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and anaucalian (no-phyll) vine forest (DOE, 2015).	Unlikely	Unlikely	No records of this species are known from within the development footprint. Habitat for this species will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Reptile	Horned Sposnake	<i>Acalyptophis peronii</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Dubois' Sposnake	<i>Alpsysurus duboisi</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Spine-Tailed Sposnake	<i>Alpsysurus oytowai</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Olive Sposnake	<i>Alpsysurus bisis</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Stokes' Sposnake	<i>Astrota stokesi</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Speckled Sposnake	<i>Dalera kingi</i>	x	x		Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Olive-Headed Sposnake	<i>Dalera major</i>	x	x		Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Turtle-Headed Sposnake	<i>Erythrocephalus annulatus</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Elegant Sposnake	<i>Hydrophis elegans</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	Spine-Bellied Sposnake	<i>Lapemis hardwickii</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Fauna: Reptile	A Sea Wall	<i>Utaeudis colubrina</i>	x			Ma	4/08/2000	Habitat coral and rocky reefs. They congregate either on the shore or in the rocky reef. They lay their eggs on rocky intertidal caves (DOE, 2015).	Unlikely	Unlikely	Intertidal rocky habitat will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Reptile	A Sea Wall	<i>Lutaudia laticaudata</i>	x			Ma	4/08/2000	Habitat coral and rocky reefs where it feeds at sea by their eggs onshore in caves and crevices (DOE, 2015).	Unlikely	Unlikely	Intertidal rocky habitat will not be impacted by the proposed activities.	Unlikely to be impacted
Fauna: Reptile	Yellow-Bellied Sea Snake	<i>Pseustes platurus</i>	x			Ma	4/08/2000	This species is exclusively marine.	Unlikely	Unlikely	The proposed activities will not impact on the marine environment.	Unlikely to be impacted
Flora	Quussia	<i>Samolera blivillii</i>	x			V	16/07/2000	Lowland rainforest; rainforest margins, woodland and open forest; commonly in areas adjacent to temporary and permanent watercourses (DOE, 2015).	Unlikely	Unlikely	This species has not been recorded historically on Curtis Island.	Unlikely to be impacted

References  
 Limpert C.L., Remmen C.J. and Chaloupka M. (2013). Monitoring of Coastal Sea Turtles: Gap Analysis 5. Flatback turtles, *Nasutus depressus*, in the Port Curtis and Port Alma Region. Report produced for the Ecosystem Research and Monitoring Program Advisory Panel as part of Gladstone Ports Corporation's Ecosystem Research and Monitoring Program  
 Houston, W., Porter, G. O'Neill, P. & Elder, R. (2004). "The ecology of the critically endangered Yellow Chat *Ephraura croceca mesogramma* on Curtis Island". The Sunbird, vol. 34, no. 1, pp. 10-23.

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**Attachment 9**  
**Significant Impact Assessment**



Common Name	Scientific Name	EPBC Status	Lead to a long-term decrease in the size of an (important) population	Reduce the area of occupancy of the species	Fragment an existing (important) population into two or more populations	Adversely affect habitat critical to the survival of a species	Disrupt the breeding cycle of an (important) population	Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Result in invasive species that are harmful to the species becoming established in the species' habitat	Introduce disease that may cause the species to decline	Interfere with the recovery of the species
Longhead turtle	<i>Caretta caretta</i>	E M Ma	Unlikely. The marine environment and dune system was not directly impacted by clearing for the resort development. Whilst Curtis Island may provide occasional nesting habitat for the species, sandy nesting habitats are not impacted by the resort development. Populations of the species are not known to nest within the vicinity of the resort. The development of the resort would not lead to the long-term decrease in the size of the population of this species.	Unlikely. According to the SPRAT profile, this species has seven regional populations in Queensland, three major nesting areas in Queensland identified as 'restored coast of south-east Queensland'. The current state of occupancy of the species is not likely to be directly impacted by the development of the dune system. It is considered unlikely that the proposed activities would reduce the area of occupancy of this species.	Unlikely. The proposed activities will not impact the marine environment or dune systems. Habitat connectivity for this species (on land and in the ocean) will be maintained.	Unlikely. The proposed activities will not directly impact the marine environment or dune systems which are critical for this species' survival. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Light pollution on nesting beaches may alter nocturnal behaviours in sea turtles. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Whilst the development of the resort is unlikely to have direct impacts on habitat for this species (i.e. no fore dune habitat was removed and no direct impacts to the marine environment are anticipated), a number of indirect impacts may occur. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Foxes, pigs and dogs are identified as a threat to the species as they destroy nests. Adequate management of waste at the resort site will aid in discouraging such pests from the area. Landscaping will be dominated by local native species and could potentially modify nesting habitat will not be introduced.	Unlikely. No known relevant disease processes	Unlikely. Beaches adjacent to the resort site are not known to support turtle nesting. As such the proposed development will not conflict with any of the objectives of the Recovery Plan for Marine Turtles in Australia Environment Australia, 2003).
Green turtle	<i>Chelonia mydas</i>	V M Ma	Unlikely. The marine environment and dune system was not directly impacted by clearing for the resort development. Whilst Curtis Island may provide occasional nesting habitat for the species, sandy nesting habitats are not impacted by the resort development. Populations of the species are not known to nest within the vicinity of the resort. The development of the resort would not lead to the long-term decrease in the size of the population of this species.	Unlikely. According to the SPRAT profile, there are seven regional populations of Green Turtles in Queensland, Australia are thought to represent genetically distinct populations. Populations of Green Turtles in Western Australia to the southern end of Great Barrier Reef. The proposed activities will not directly impact the marine environment or dune system. It is considered unlikely that the proposed activities would reduce the area of occupancy of this species.	Unlikely. The proposed activities will not impact the marine environment or dune systems. Habitat connectivity for this species (on land and in the ocean) will be maintained.	Unlikely. The proposed activities will not directly impact the marine environment or dune systems which are critical for this species' survival. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Light pollution on nesting beaches may alter nocturnal behaviours in sea turtles. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Whilst the development of the resort is unlikely to have direct impacts on habitat for this species (i.e. no fore dune habitat was removed and no direct impacts to the marine environment are anticipated), a number of indirect impacts may occur. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Landscaping will be dominated by local native species and consequently modify nesting habitat will not be introduced.	Unlikely. No known relevant disease processes	Unlikely. Beaches adjacent to the resort site are not known to support turtle nesting. As such the proposed development will not conflict with any of the objectives of the Recovery Plan for Marine Turtles in Australia Environment Australia, 2003).
Flabick turtle	<i>Heterodon depressus</i>	V M Ma	Unlikely. The marine environment and dune system was not directly impacted by clearing for the resort development. Whilst Curtis Island is known to provide nesting habitat for the species, this occurs ~1 km to the south at South End. Populations of the species are not known to nest within the vicinity of the resort. The development of the resort would not lead to the long-term decrease in the size of the population of this species.	According to the SPRAT profile, nesting is confined to Australia and four genetic stocks are recognised being Eastern Queensland, Torres Strait and Gulf of Carpentaria, Northern Territory and Western Australia. The proposed activities will not directly impact the marine environment or dune system. It is considered unlikely that the proposed activities would reduce the area of occupancy of this species.	Unlikely. The proposed activities will not impact the marine environment or dune systems. Habitat connectivity for this species (on land and in the ocean) will be maintained.	Unlikely. The proposed activities will not directly impact the marine environment or dune systems which are critical for this species' survival. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Light pollution on nesting beaches may alter nocturnal behaviours in sea turtles. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Whilst the development of the resort is unlikely to have direct impacts on habitat for this species (i.e. no fore dune habitat was removed and no direct impacts to the marine environment are anticipated), a number of indirect impacts may occur. Indirect impacts may include light pollution on nesting beaches. It is a development condition of the State Government that 'turtle friendly' lighting is used at the resort.	Unlikely. Foxes, pigs and dogs are identified as a threat to the species as they destroy nests. Adequate management of waste at the resort site will aid in discouraging such pests from the area. Landscaping will be dominated by local native species and consequently modify nesting habitat will not be introduced.	Unlikely. No known relevant disease processes	Unlikely. Beaches adjacent to the resort site are not known to support turtle nesting. As such the proposed development will not conflict with any of the objectives of the Recovery Plan for Marine Turtles in Australia Environment Australia, 2003).
Water Mouse	<i>Xeromyz myodes</i>	V	Unlikely. As per the draft significant impact guidelines for the vulnerable water mouse, a population is regarded as an important population if it is: <ul style="list-style-type: none"> <li>* a population that is subject to high levels of disturbance, such as mounds, clearing, middens</li> <li>* occurs in habitat critical to the survival of the species</li> <li>* occurs in a protected area for example Great Sandy National Park</li> <li>* occurs at or near the limits of the range of one of the regional populations</li> <li>* occurs at or near the limits of the species' range</li> <li>* has been the subject of long-term monitoring, or</li> <li>* has been the subject of high-priority research.</li> </ul> Whilst water mouse has been recorded on Curtis Island it is unlikely that an important population occurs within the 500m2 resort barge development area.	Unlikely. According to the SPRAT profile, the population size of water mouse in Queensland has been estimated at between 100 to 1000 individuals. The resort development will not impact on any known populations. It is considered unlikely that the resort development would reduce the area of occupancy of the species.	Unlikely. Whilst water mouse has been recorded on Curtis Island it is unlikely that an important population occurs within the 500m2 resort barge development area. Clearing for the barge area will occur at the eastern end of the island. It is considered unlikely that the proposed activities would fragment an existing important population into two or more populations.	Unlikely. The draft significant impact guidelines for the vulnerable water mouse is critical habitat for the survival of the water mouse as mangrove or coastal freshwater wetlands with intact hydrology, prairie resources, nest mounds and/or natural features such as a 500m2 of suitable mangrove habitat. The resort development would disrupt the 500m2 of suitable mangrove habitat. This represents <0.0004% of potential habitat (i.e. remnant vegetation on marine sediments) present on Curtis Island. It is considered unlikely that the development will adversely affect habitat critical to the survival of this species.	Unlikely. The water mouse is capable of breeding throughout the year. Whilst the draft significant impact guidelines for the vulnerable water mouse has been recorded on Curtis Island, it is unlikely that this modification would result in the decline of the water mouse.	Unlikely. Feral predators (such as cats) and habitat degradation as a result of introduced weeds are listed as threats to the water mouse. Adequate management of waste at the resort site will aid in discouraging such pests from the area. Landscaping will be dominated by local native species and consequently modify nesting habitat will not be introduced.	Unlikely. No known relevant disease processes	Unlikely. It is unlikely that the resort development will interfere with any of the objectives identified in the Recovery Plan for Marine Turtles in Australia (i.e. water mouse (false water rat) <i>Xeromyz myodes</i> ). (DERM, 2010)	

**References**

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Department of the Environment and Resource Management (DERM) 2010. National recovery plan for the water mouse (false water rat) *Xeromyz myodes*. Report to Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Department of the Environment and Resource Management, Brisbane.

Common Name	Scientific Name	EPBC Status	Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Result in an invasive species that is harmful to the important habitat for the migratory species	Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population or a migratory species
Rainbow bee-eater	<i>Mergops ornatus</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The Rainbow Bee-eater is widespread and able to move long distances. The population size in Australia has not been formally estimated however, based on the high reporting rates; according to the SPRAT profile for the species it is assumed to be large. Breeding habitat is limited within the proposed resort area (i.e. there are no banks of rivers, roadside cuttings or cliff faces). Due to their high mobility and that they feed on insects captured mainly in flight, the Rainbow Bee-eater may pass over or through the proposed resort area.
Great egret	<i>Ardea alba</i>	Mi	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The great egret is a common and wide spread species found in both integral and disturbed environments throughout Australia. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Cattle egret	<i>Ardea lous</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The cattle egret is a common and wide spread species found in both integral and disturbed environments throughout Australia. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Spectacled monarch	<i>Monarcha delavayi</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The birdlife international website (2015) indicates that the population is suspected to be stable in the absence of evidence for any declines or substantial threats. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Satin flycatcher	<i>Mylagra cyanoleuca</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The SPRAT profile for the Sain Flycatcher indicates that it is widespread in eastern Australia. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Rufous fantail	<i>Rhipidura rufirostris</i>	Mi Ma	According to the SPRAT profile for the species the Rufous Fantail is reported as common and secure. The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The SPRAT profile for this species states the Australian population of Rufous Fantail is common and secure. While the species was recorded within the Study Area, the extent of habitat represents a very minor proportion of available habitat across its range. Therefore it is unlikely that the clearing that will occur under this proposal will seriously disrupt the lifecycle of an ecologically significant proportion of the species.
Fork-Tailed Swift	<i>Apus pacificus</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The Fork-Tailed Swift is a common and wide spread species in coastal environments around much of mainland Australia (Firth, 1976). Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Swamp Harrier	<i>Circus approximans</i>	Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	There are no known nesting sites for this species within the resort area, often associated with reed beds (Firth, 1976) and clearing will result in a relatively minor impact of hunting habitat compared to the portion of lands retained for conservation.
Eastern Reef Egret	<i>Egretta sacra</i>	Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The eastern reef egret is a common and wide spread species in coastal environments around much of mainland Australia. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
White-Bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	There are no known nesting sites for this species within the resort area and development is largely excluded from shoreline habitat (i.e. preferred feeding areas).
Brahminy Kite	<i>Haliastur indus</i>	Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	There are no known nesting sites for this species within the resort area and development is largely excluded from shoreline habitat (i.e. preferred feeding areas).
Whistling Kite	<i>Haliastur sphenurus</i>	Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	There are no known nesting sites for this species within the resort area and development is largely excluded from shoreline habitat (i.e. preferred feeding areas).
White-Throated Needle tail	<i>Hirundapus caudacutus</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The SPRAT profile for the White-Throated Needle tail refers to it as being an "abundant" species. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Barn Swallow	<i>Hirundo rustica</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	The barn swallow is a common and wide spread species found in both integral and disturbed environments throughout Australia. Given the relatively small size of the resort, a "significant proportion of the population" will not be disrupted as a consequence of the development proposal.
Osprey	<i>Pandion haliaetus</i>	Mi Ma	The tracts of native vegetation surrounding the proposed development provide habitat with characteristics similar to that proposed for removal. As such, any migratory species that use the Study Area are unlikely to experience adverse impacts associated with habitat loss or modification as large areas of suitable habitat will persist in the local landscape.	The proposal is not likely to result in establishment of additional invasive species. In particular, the landscape strategy prepared by Uplan identifies that the resort will be dominated by plant species that are local to Curtis Island.	There are no known nesting sites for this species within the resort area and development is largely excluded from shoreline habitat (i.e. preferred feeding areas).

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