



## **6.3 a Fauna Survey Report Nov 2008 BAAM**



## ELLA BAY INTEGRATED DEVELOPMENT

# NOVEMBER 2008 FAUNA SURVEY RESULTS

Report prepared  
for  
Satori Resorts Pty Ltd



**Biodiversity  
Assessment**

AND MANAGEMENT PTY LTD

**FAUNA AND HABITAT SPECIALISTS**

## Document Control Sheet

File Number: 0209-002 Version 0

Project Manager: Paulette Jones

Client: Satori Resorts Pty Ltd

Project Title: Ella Bay Integrated Resort Development, Innisfail

Project Author/s: Terry Reis and Brett Taylor

Project Summary: Report on the November 2008 Fauna Survey of the Ella Bay Integrated Resort (EBIR) Site and Access Road and integration of the EBIR Site November 2008 and October 2006 survey results.

### Draft Preparation History

Draft No.	Date of Issue	Checked by	Issued by
0209-002 Draft A	09/12/08	Paulette Jones	Terry Reis
0209-002 Draft B	14/01/09	Terry Reis	Paulette Jones
0209-002 Draft C	09/03/09	Terry Reis	Paulette Jones

### Revision/ Checking History Track

Version	Date of Issue	Checked by	Issued by
0209-002 Version 0	06/05/11	Paulette Jones	Paulette Jones

### Document Distribution

Destination								
	1	Date Dispatched	2	Date Dispatched	3	Date Dispatched	4	Date Dispatched
Client Copy 1 - digital	A	09/12/08	B	22/01/09	C	09/03/09	0	06/05/11
Client Copy 1 - hard copy								
PDF - server	A	09/12/08	B	22/01/09		09/03/09	0	06/05/11
PDF – backup – archived Disk/tape	A	09/12/08	B	22/01/09		09/03/09	0	06/05/11
Hard Copy -library								

## **NOTICE TO USERS OF THIS REPORT**

### Copyright and reproduction

This report and all indexes, schedules, annexures or appendices are subject to copyright pursuant to the *Copyright Act 1968* (Cth). Subject to statutory defences, no party may reproduce, publish, adapt or communicate to the public, in whole or in part, the content of this report without the express written consent of Biodiversity Assessment and Management Pty Ltd.

### Purpose of Report

Biodiversity Assessment and Management Pty Ltd has produced this report in its capacity as {consultants} for and on the request of Satori Resorts Pty Ltd (the "**Client**") for the sole purpose of reporting the results of the November 2008 fauna survey of the proposed Ella Bay Integrated Resort (EBIR) Site and access road, and integrating the October 2006 and November 2008 EBIR Site survey results (the "**Specified Purpose**"). This information and any recommendations in this report are particular to the Specified Purpose and are based on facts, matters and circumstances particular to the subject matter of the report and the Specified Purpose at the time of production. This report is not to be used, nor is it suitable, for any purpose other than the Specified Purpose. Biodiversity Assessment and Management Pty Ltd disclaims all liability for any loss and/or damage whatsoever arising either directly or indirectly as a result of any application, use or reliance upon the report for any purpose other than the Specified Purpose.

This report has been produced solely for the benefit of the Client. Biodiversity Assessment and Management Pty Ltd does not accept that a duty of care is owed to any party other than the Client. This report is not to be used by any third party other than as authorised in writing by Biodiversity Assessment and Management Pty Ltd and any such use shall continue to be limited to the Specified Purpose. Further, Biodiversity Assessment and Management Pty Ltd does not make any warranty, express or implied, or assume any legal liability or responsibility for any third party's use in whole or in part of the report or application or use of any other information or process disclosed in this report and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by any person or body corporate arising from or in connection with the supply or use of the whole part of the report through any cause whatsoever.

Biodiversity Assessment and Management Pty Ltd has used information provided to it by the Client and governmental registers, databases, departments and agencies in the preparation of this report. Biodiversity Assessment and Management Pty Ltd does not know, nor does it have any reason to suspect, that the information provided to it was false, inaccurate, incomplete or misleading at the time of its receipt. This report is supplied on the basis that while Biodiversity Assessment and Management Pty Ltd believes all the information in it is deemed reliable at the time of publication, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by any person or body corporate arising from or in connection with the supply or use of the whole or any part of the information in this report through any cause whatsoever.

Signed on behalf of  
Biodiversity Assessment and Management Pty Ltd

Date: 06/05/11



Managing Director

# NOVEMBER 2008 FAUNA SURVEY RESULTS

## Ella Bay Integrated Resort Site and Access Road, Innisfail

### Table of Contents

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>STUDY AREA DESCRIPTION .....</b>	<b>1</b>
2.1	LOCATION .....	1
2.2	SIGNIFICANT TOPOGRAPHICAL AND DRAINAGE FEATURES.....	1
2.3	VEGETATION .....	3
2.4	PREVIOUS LAND USE.....	3
2.5	PROPOSED ACTIVITIES .....	3
<b>3.0</b>	<b>ENVIRONMENTAL PLANNING FRAMEWORK .....</b>	<b>4</b>
3.1	STATE DEVELOPMENT AND PUBLIC WORKS ORGANISATION ACT 1971 .....	4
3.2	COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 .....	4
3.3	QUEENSLAND NATURE CONSERVATION ACT 1992.....	5
3.4	VEGETATION MANAGEMENT ACT 1999 .....	5
3.5	QUEENSLAND LANDS PROTECTION (PEST AND STOCK ROUTE MANAGEMENT) ACT 2002.....	5
3.6	QUEENSLAND COASTAL PROTECTION AND MANAGEMENT ACT 1995 .....	5
3.7	FISHERIES ACT 1994.....	6
<b>4.0</b>	<b>TERRESTRIAL VERTEBRATE STUDY METHODOLOGY.....</b>	<b>6</b>
4.1	DESK TOP.....	6
4.2	FIELD SURVEY .....	6
4.2.1	<i>Survey Effort and Site Selection.....</i>	<i>6</i>
4.2.2	<i>Terrestrial Vertebrate Survey Techniques.....</i>	<i>9</i>
4.2.3	<i>Aquatic Vertebrate Field Survey Techniques .....</i>	<i>9</i>
4.2.4	<i>Marine Turtle Survey Techniques .....</i>	<i>10</i>
<b>5.0</b>	<b>RESULTS.....</b>	<b>10</b>
5.1	DATABASE SEARCHES .....	10
5.1.1	<i>Essential Habitat mapping: .....</i>	<i>10</i>
5.1.2	<i>Previous report on the terrestrial fauna of the Ella Bay Project for Satori Resorts Pty Ltd:.....</i>	<i>10</i>
5.2	DATABASE SEARCHES .....	10
5.3	RECORDED TERRESTRIAL VERTEBRATE SPECIES.....	11
5.4	EVR TERRESTRIAL VERTEBRATES DETECTED DURING THE SURVEYS .....	14
5.4.1	<i>Common Mist Frog Litoria rheocola .....</i>	<i>14</i>
5.4.2	<i>New Guinea Tree Frog Litoria genimaculata.....</i>	<i>15</i>
5.4.3	<i>Inelegant Frog Cophixalus infacetus .....</i>	<i>15</i>
5.4.4	<i>Saltwater Crocodile Crocodylus porosus.....</i>	<i>16</i>
5.4.5	<i>Yellow-blotched Forest-Skink Eulamprus tigrinus.....</i>	<i>16</i>
5.4.6	<i>Southern Cassowary Casuarius casuarius johnsonii.....</i>	<i>17</i>
5.4.7	<i>Grey Goshawk Accipiter novaehollandiae.....</i>	<i>17</i>
5.4.8	<i>Beach Stone-curlew Esacus magnirostris .....</i>	<i>17</i>
5.4.9	<i>Rufous Owl (southern subspecies) Ninox rufa queenslandica.....</i>	<i>18</i>
5.4.10	<i>Australian Swiftlet Aerodramus terrareginae .....</i>	<i>18</i>
5.4.11	<i>(Macleays) Double-eyed Fig-Parrot Cyclopsitta diophthalma macleayana .....</i>	<i>19</i>
5.4.12	<i>Short-beaked Echidna Tachyglossus aculeatus.....</i>	<i>19</i>
5.4.13	<i>Spectacled Flying-fox Pteropus conspicillatus.....</i>	<i>19</i>
5.4.14	<i>Coastal Sheath-tail Bat Taphozous australis.....</i>	<i>20</i>

5.5	MIGRATORY SPECIES .....	21
5.6	EVR VERTEBRATES NOT DETECTED DURING THE SURVEY BUT PREDICTED TO OCCUR .....	21
5.6.1	<i>Apollo Jewel Butterfly Hypochrysops apollo apollo</i> .....	21
5.6.2	<i>Australian Lacelid Nyctimystes dayi</i> .....	22
5.6.3	<i>Marine Turtles</i> .....	23
5.6.4	<i>Limbless Snake-tooth Skink Coeranoscincus frontalis</i> .....	25
5.6.5	<i>Black-necked Stork Ehippiorhynchus asiaticus</i> .....	25
5.6.6	<i>Australian Painted Snipe Rostratula australis</i> .....	26
5.6.7	<i>Little Tern Sterna albifrons</i> .....	26
5.6.8	<i>Northern Quoll Dasyurus hallucatus</i> .....	27
5.6.9	<i>Large-eared Horseshoe Bat (large form) Rhinolophus philippinensis macros</i> .....	27
5.6.10	<i>Semon's Leafnosed-Bat Hipposideros semoni</i> .....	27
5.7	AQUATIC VERTEBRATE SPECIES.....	28
5.8	FERAL TERRESTRIAL VERTEBRATE SPECIES .....	28
5.9	HABITAT VALUES FOR TERRESTRIAL VERTEBRATE SPECIES.....	28
5.9.1	<i>Lowland Rainforest on lower slopes/amphibolites and alluvial plains</i> .....	29
5.9.2	<i>Coastal Scrub/Vine Forest</i> .....	30
5.9.3	<i>Creeklines</i> .....	30
5.9.4	<i>Coastal Wetlands/Lagoons</i> .....	31
5.9.5	<i>Shoreline/Beach</i> .....	32
5.9.6	<i>Grassland/Pasture</i> .....	32
5.10	EFFECTS OF CYCLONE LARRY ON HABITAT VALUES.....	33
5.11	MOVEMENT OPPORTUNITIES FOR TERRESTRIAL VERTEBRATE SPECIES.....	34
6.0	<b>BIBLIOGRAPHY</b> .....	35

## **List of Figures**

Figure 2.1	Study Area Locality
Figure 4.1	Survey Site Locations
Figure 5.1	Locations of Recorded Significant Species (2006 and 2008 surveys)

## **List of Appendices**

Appendix 1	Terrestrial Vertebrate Species List
Appendix 2	Database Search Results
Appendix 3	Commonwealth EPBC Online Protected Matters Search Tool Results
Appendix 4	Comments on Terrestrial Vertebrate Species of Special Conservation Significance Obtained from Database Searches but Undetected in the Study Area
Appendix 5	BAAM Terrestrial Vertebrate Species List and Locations
Appendix 6	Regional Ecosystem and Essential Habitat mapping

## ***List of Abbreviations***

BAAM -	Biodiversity Assessment and Management Pty Ltd
CM Act	Queensland <i>Coastal Protection and Management Act 1995</i>
DEWHA -	Commonwealth Department of Environment, Water, Heritage and the Arts
DPIF -	Queensland Department of Primary Industries and Fisheries
EPA -	Queensland Environmental Protection Agency
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVR -	Endangered, Vulnerable or Rare
FHMP -	Fauna Management and Monitoring Plan
IPA	<i>Integrated Planning Act 1997</i>
LGA -	Local Government Area
LP Act -	Queensland <i>Lands Protection (Pest and Stock Route Management) Act 2002</i>
NC Act-	Queensland <i>Nature Conservation Act 1992</i>
NRW -	Queensland Department of Natural Resources and Water
QFS -	Department of Primary Industries Queensland Fisheries Service
RE -	Regional Ecosystem
SEQ -	South-east Queensland
VM Act-	Queensland <i>Vegetation Management Act 1999</i>

## 1.0 INTRODUCTION

This report has been prepared for Satori Resorts Pty Ltd for the purpose of providing the results of a terrestrial vertebrate survey undertaken for the Ella Bay Integrated Resort (EBIR) development during November 2008. The survey was designed to supplement existing data from the EBIR site collected in October 2006, and to provide specific fauna and fauna habitat information for the area of the proposed access route from Flying Fish Point to the EBIR Site. The report has been subject to some minor updates in May 2011 to include the results of more recent ecological studies.

The assessment includes the evaluation of both fauna communities present and their habitats. In particular, the assessment includes:

- A review of fauna species known from the local area;
- A comprehensive survey of the vertebrate fauna present on, or that may utilise, the study area;
- Documentation of suitable habitat and occurrence of significant fauna species under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the Queensland Nature Conservation Act 1992 (NC Act), and known threats to those species and their habitats;
- Documentation of suitable habitat for any species of significance that might potentially occur, and known threats to those species and their habitats; and
- An assessment and comment on any significant habitats within the study area, including their contribution to faunal movement corridors.

All following observations and recommendations are based on a thorough review of available literature and detailed site investigations undertaken on the EBIR Site between 10 - 14 November 2008 (inclusive) and between 2-6 October 2006 (inclusive), and on the access road between 10 -14 November 2008 (inclusive).

## 2.0 STUDY AREA DESCRIPTION

### 2.1 LOCATION

This study focussed on the areas subject to the proposed development of the Ella Bay Integrated Resort (EBIR) and associated access road. The EBIR Site is described as Lot 30 on Crown plan N157629, County Nares, Parish Gladly. This property is located approximately 4.5 km to the north-west of Innisfail within the Wet Tropics bioregion of Queensland (**Figure 2.1**). It encompasses approximately 450 hectares of mostly cleared grazing land.

The subject site shares a common boundary with Ella Bay National Park, and the Wet Tropics of North Queensland World Heritage Area (WTWHA) in the north, south and west (**Figure 2.1**). The eastern boundary is defined by the Pacific Ocean.

The area encompassing the proposed access road begins west of the township of Flying Fish Point on freehold land and continues northwards for 0.94 km, meeting the existing Ella Bay Road north of Flying Fish Point. From this point the existing unsealed road is proposed to be upgraded (sealed and widened). This existing road continues for 0.84 km before entering Ella Bay National Park, where it continues for a further two km before reaching the southern boundary of the development site. The total length of the proposed road is 4.01 km, requiring clearing of 3.74 ha of existing vegetation.

### 2.2 SIGNIFICANT TOPOGRAPHICAL AND DRAINAGE FEATURES

The EBIR Site is located within a coastal enclave, bound to the north, west and south by the Seymour Range which pinches into the coastline at Cooper Point to the north and Heath Point to the south. The stretch of coastline between these headlands is occupied by a pro-grading sandy shoreline, passing westward into a series of low and topographically degraded parallel beach ridges.





#### Legend

- Location of EBIR Study Site
- Access Road

**FIGURE 2.1**

## STUDY SITE LOCATIONS



**Biodiversity  
Assessment**

AND MANAGEMENT PTY LTD

2008 Fauna Survey Results  
Ella Bay Integrated Resort Project, Innisfail



The highest topographic feature on the property is a low, domed hill rising to 45m in the south. The current homestead is located on a ridge to the south-east at 25m. The majority of the property is cleared and occupies a broad coastal alluvial plain which slopes gently toward the east, falling from an elevation of 20 m on the western margin of the property, to approximately two metres on the coastal fringe over a distance of approximately two kilometres.

Two significant creeklines traverse the subject site:

- An east-flowing creek that traverses the entire EBIR Site, dividing the area into approximately equal halves; and
- A north-flowing creek which traverses the southern portion of the subject site to join the above creek at approximately the centre of the resort development site.

The more elevated reaches of these two creeks are fast flowing, characterised by pool and riffle sequences with a predominant bed of boulder and cobble. In these locations the stream banks are often steep with overhangs. These streams are expected to be largely permanent, although water may periodically cease flowing during prolonged dry periods.

In the lower reaches the pools become considerably longer and larger, and riffle zones are absent. The bed load alters to deep sand and/or sediment while the banks become less defined, incised into the surrounding flood plain. At the very lowest portions of the creek, deep permanent water occurs as the creek meanders through the landscape. These areas have areas of emergent aquatic vegetation such as rushes and reeds.

The proposed access road initially travels north, traversing the western side of the southern tip of the Seymour Range west of Flying Fish Point and then continues east across the range to meet up with the existing access road. From here the road follows flat low-lying terrain for approximately 1.5 km before winding through more elevated, steep, coastal hills around Heath Point and Little Cove. In this section (within the national park) three east-flowing creeks crossed by the road have characteristics similar to those described above for the more elevated reaches of the resort development site.

No dams or artificial waterbodies of any significance were detected on the EBIR Site or access road. However, several sub-coastal, low-lying wetlands are located on the EBIR Site. In particular, wetland vegetation associated with these features occurs in an area in the south-eastern portion of the site and in larger areas to the north of currently cleared land. It is anticipated that these areas are likely to hold water well into the dry season and may include areas of permanent water. A substantial low-lying wetland also exists directly south of the access road in an area adjacent to the northern edge of the fish farm which lies to the north of Flying Fish Point. Surveys for Cassowary water supply in October 2009 established this as an ephemeral wetland (Ella Bay 2009).

## 2.3 VEGETATION

A detailed description of floristic features on the resort development site and access road is provided in 3D Environmental (2009).

## 2.4 PREVIOUS LAND USE

At the turn of the century the property was cleared for banana growing. Newspapers of the day report Ella Bay as one of the major banana growing areas with 500 acres leased and employing 100 men (Brisbane Courier, 1903).

Army mapping 1942 shows the riparian zones of both the north south and east west creek as cleared.

Today, evident historical land use on the EBIR Site is cattle grazing. Much of the site is cleared, with construction of fences, watering troughs and access tracks.

The majority of the proposed access road already exists. However, the southernmost portion of 0.94 km is located within lowland rainforest with limited track access.

## 2.5 PROPOSED ACTIVITIES

The EBIR development is proposed to include a resort precinct and golf course as well as residential, retail and commercial facilities. The site encompasses 450 ha, the majority of which has been previously cleared for grazing. Development activities have been restricted to cleared areas except for a small section in the south-east corner of the site, which will require

some vegetation clearing. Revegetation and rehabilitation of 96 ha of land is proposed, largely to restore vegetation corridors along the creeklines traversing the site.

Proposed activities for the access road include the clearing of 3.74 ha of largely remnant vegetation. The majority of this clearing would occur in the proposed 'Flying Fish Point bypass' in the southern section of the road. A 'cut-and-cover' tunnel is proposed where the bypass heads east across the range to meet up with the existing access road north of Flying Fish Point. The tunnel is to be covered and revegetated (area = 0.69 ha) to allow habitat connectivity over the road at this location.

The upgrade of the section of existing access road will involve widening the road and clearing of roadside vegetation, including 0.66 ha of Ella Bay National Park.

The road design includes three significant underpasses and an overpass to allow safe passage of cassowaries and other fauna between habitat patches. One underpass is proposed for the section of road between Flying Fish Point and the fish farm and two other underpasses are proposed to the north at the two creek crossings with high level bridges. The overpass will be formed by the tunnel cover of the Flying Fish Bypass section of the road. Much of the road is proposed to be fenced in order to 'funnel' fauna to crossing points.

Four purpose built small fauna underpasses will be located along the road over ephemeral creek crossings and drainage lines. The small fauna crossings will aid safe passage for macropods, understorey and ground dwelling amphibious and aquatic fauna.

### **3.0 ENVIRONMENTAL PLANNING FRAMEWORK**

The environmental planning framework for the study area incorporates legislation at the Commonwealth and State levels. In addition, planning for this area has regard for the intent of regional and local statutory planning instruments.

### **3.1 STATE DEVELOPMENT AND PUBLIC WORKS ORGANISATION ACT 1971**

The project is a declared 'significant project' under the *State Development and Public Works Organisation Act 1971*, requiring the preparation of an Environmental Impact Statement under s26(1)(a) of the Act. An Environmental Impact Statement and Supplementary Environmental Impact Statement have been prepared for the project. This additional fauna assessment is in response to a request for further information from the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) under the provisions of the Agreement between the Australian Government and the State of Queensland under Section 45 of the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* Relating to Environmental Assessment.

### **3.2 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999**

The EPBC Act protects the environment, particularly matters of National Environmental Significance (Protected Matters). It streamlines national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and cultural places.

The EPBC Act, administered by DEWHA, is designed to provide for the conservation of biodiversity through the protection of threatened species and ecological communities, migratory, marine and other protected species listed under the Act.

The project has been referred to DEWHA and has been deemed a 'Controlled Action'. As such, environmental planning for the project must be approved by DEWHA where actions have the potential to impact matters of National Environmental Significance (MNES).

The specific matters being addressed by DEWHA for the project are:

- Sections 18 and 18A – Listed threatened species that may be affected by the project, specifically the Southern Cassowary *Casuarius casuarius*, and the frogs Common Mist Frog *Litoria rheocola*

- and Australian Lacelid *Nyctimystes dayi*, and migratory species; and
- Sections 12 and 15A - Impacts of the project on the Wet Tropics of North Queensland World Heritage Area (WTWHA).

### 3.3 QUEENSLAND NATURE CONSERVATION ACT 1992

Planning for the study area must address the guidelines and provisions of Queensland's *Nature Conservation Act 1992*. The NC Act is the principal legislation for the conservation and management of the State's native flora and fauna and is administered by the Queensland Environmental Protection Agency (EPA). The key goal of the NC Act is the preservation of Endangered, Vulnerable and Rare (EVR) species of flora and fauna as listed under the *Nature Conservation (Wildlife) Regulation 2006*.

The NCA (Section 68) states that:

*'Protected wildlife is to be managed to—*  
*(a) conserve the wildlife and its values and, in particular to—*  
*(i) ensure the survival and natural development of the wildlife in the wild; and*  
*(ii) conserve the biological diversity of the wildlife to the greatest possible extent; and*  
*(iii) identify, and reduce or remove, the effects of threatening processes relating to the wildlife; and*  
*(iv) identify the wildlife's critical habitat and conserve it to the greatest possible extent; and ...'.*

Protected wildlife is linked to the *Vegetation Management Act 1999* (VM Act) through the mapping of Remnant Vegetation and associated Essential Habitat contained therein.

The provisions of the NC Act have been satisfied for the approval stage of the project.

### 3.4 VEGETATION MANAGEMENT ACT 1999

The purpose of the *Vegetation Management Act 1999* is to regulate the clearing of native vegetation (i.e. Remnant Vegetation mapped as Regional Ecosystems (REs) that are: Endangered, Of Concern and Not of Concern) to maintain ecological processes, ensure there is no loss of biodiversity or increase in land degradation from vegetation clearing and

manage the effects of clearing. In addition, some areas of remnant vegetation are further classified as Essential Habitat under the VM Act with specific reference to conservation significant species listed under the NC Act.

The VM Act is administered by the Queensland Department of Natural Resources and Water (NRW) certified mapping of Remnant Vegetation and Essential Habitat. Clearing of native vegetation mapped as REs and/or Essential Habitat is subject to assessment by NRW against the Regional Vegetation Management Code for Coastal Bioregions (NRW 2006).

The provisions of the VM Act have been satisfied for the approval stage of the project.

### 3.5 QUEENSLAND LANDS PROTECTION (PEST AND STOCK ROUTE MANAGEMENT) ACT 2002

The main purpose of the *Lands Protection (Pest and Stock Route Management) Act 2002* (LP Act) legislation is to provide pest management for agricultural lands. The LP Act lists several species of flora and fauna that are considered Class 1, 2 or 3 pests under the Act.

In addition, there may be environmental weeds that are not listed under the LP Act that may be present within the study area.

Future planning in the study area should incorporate appropriate weed and pest management.

The provisions of the LP Act have been satisfied for the approval stage of the project.

### 3.6 QUEENSLAND COASTAL PROTECTION AND MANAGEMENT ACT 1995

The main objective of this the State Coastal Management Plan as required under the *Queensland Coastal Protection and Management Act 1995* (CM Act) is to provide for coastal management policy direction and defines how these directions should be implemented by government, industry and the community. The State Coastal Plan has the effect of a State planning policy under the IPA and is therefore a matter of State interest.

The State Coastal Plan is one of the matters that are coordinated and integrated into new planning schemes during their preparation,

with regard to and for impact assessment applications, and considered in Ministerial community infrastructure designations. A finalised Regional Coastal Management Plan (EPA 2003) has been prepared for the Wet Tropical Coast Region.

The provisions of the CM Act have been satisfied for the approval stage of the project.

### 3.7 FISHERIES ACT 1994

The *Fisheries Act 1994* states that 'The main purpose of this Act is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats ...' in an ecologically sustainable manner.

Future planning for the study area must have regard for the presence of marine plants in terrestrial environments. There is a requirement for a permit from the Department of Primary Industries Queensland Fisheries Service (QFS) prior to any disturbance to or removal of marine plants.

The *Fisheries Act 1994* (Section 8) defines marine plants as:

- (1) *Marine plant includes the following—*
  - (a) *a plant (a tidal plant) that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen;*
  - (b) *material of a tidal plant, or other plant material on tidal land;*
  - (c) *a plant, or material of a plant, prescribed under a regulation or management plan to be a marine plant.*
- (2) *Marine plant does not include a plant that is a declared pest under the Land Protection (Pest and Stock Route Management) Act 2002.*

QFS policy requires that works or activities associated with applications for marine plant permits or development approvals have zero or minimal adverse impact on marine plants or fish habitats. All such works or activities are assessed against criteria that aim to meet the objective of protection and enhancement of fish habitats, including marine plants. Unavoidable permitted impacts will require compensation.

The provisions of the *Fisheries Act 1994* have been satisfied for the approval stage of the project.

## 4.0 TERRESTRIAL VERTEBRATE STUDY METHODOLOGY

### 4.1 DESK TOP

Prior to the field surveys, public databases were searched in order to provide background information regarding fauna species known from the region and local area. This included searches of the Commonwealth's EPBC Online Protected Matters Search Tool, the EPA's WildNet database, Birds Australia's New Atlas database and the Queensland Museum's fauna databases for the study area and surrounds.

In addition, available literature for the study area and surrounds was searched for information relevant to the status of terrestrial vertebrates.

Information gained from this phase of the study was used to:

- Ensure that survey methods were designed to detect species of significance known from the region; and
- Determine which species were most likely to occur if suitable habitat was located within the study area. Those species known from recent, nearby records are considered more likely to occur if suitable habitat is present.

### 4.2 FIELD SURVEY

#### 4.2.1 Survey Effort and Site Selection

The terrestrial vertebrate field survey program involved a trap/release program and passive recording conducted over five days and four nights in October 2006 and November 2008 on the EBIR Site, and in November 2008 along the proposed road alignment, following the techniques recommended by the EPA's *Guidelines for Flora and Fauna Surveys* (1999) and in accordance with the EPA's Queensland Parks and Wildlife Service's Scientific Purposes Permit No. WISP02791605 and Queensland Department of Primary Industries' (DPI) Animal Ethics Committee Certification No. CA 2005/10/81.



Trapping conducted in Ella Bay National Park associated with the proposed access road was conducted in accordance with the EPA's Queensland Parks and Wildlife Service's Scientific Purposes Permit No. WITK05501308 during November 2008.

Four terrestrial trapping sites were established within the EBIR Site to correspond with those sites surveyed for the trapping program in October 2006. A further four trapping sites were established along the proposed access road route. The location of each trapping site is provided in **Table 4.1** and shown on **Figure 4.1**.

Habitat site descriptions are as follows:

- a) Sites R1, R2 and R4: Relatively closed canopy rainforest, generally with dense understorey on lower slopes of coastal range, numerous vines, and abundant coarse woody debris of varying sizes. Patchy canopy and dense understorey layer influenced by disturbance caused by Cyclone Larry in 2006;
- b) R2: Similar to previous sites, however partially situated along a creekline in riparian habitat;
- c) T1: Coastal scrub on dunes adjacent to seasonal wetland, little understorey with some large woody debris and leaf litter;
- d) T2: Closed riparian rainforest on alluvial floodplain, dense but patchy understorey, some large woody debris leaf litter.

- e) T3 and T4: Alluvial floodplain rainforest, with patchy canopy and generally with dense understorey, numerous vines, and abundant coarse woody debris of varying sizes. Patchy canopy and dense understorey layer influenced by disturbance caused by Cyclone Larry in 2006.

Climatic conditions throughout the survey period were generally warm and humid, providing favourable conditions for the detection of terrestrial vertebrate species.

### Targeted Searches

During the survey period, special effort was made to detect the presence of species of special conservation significance obtained from the database searches, with particular focus on several frog species (*Litoria genimaculata*, *L. nannotis*, *L. rheocola*, *Nyctimystes dayi* and *Cophixalus infacetus*). The location of each Target site is provided in **Table 4.1** and shown on **Figure 4.1**.

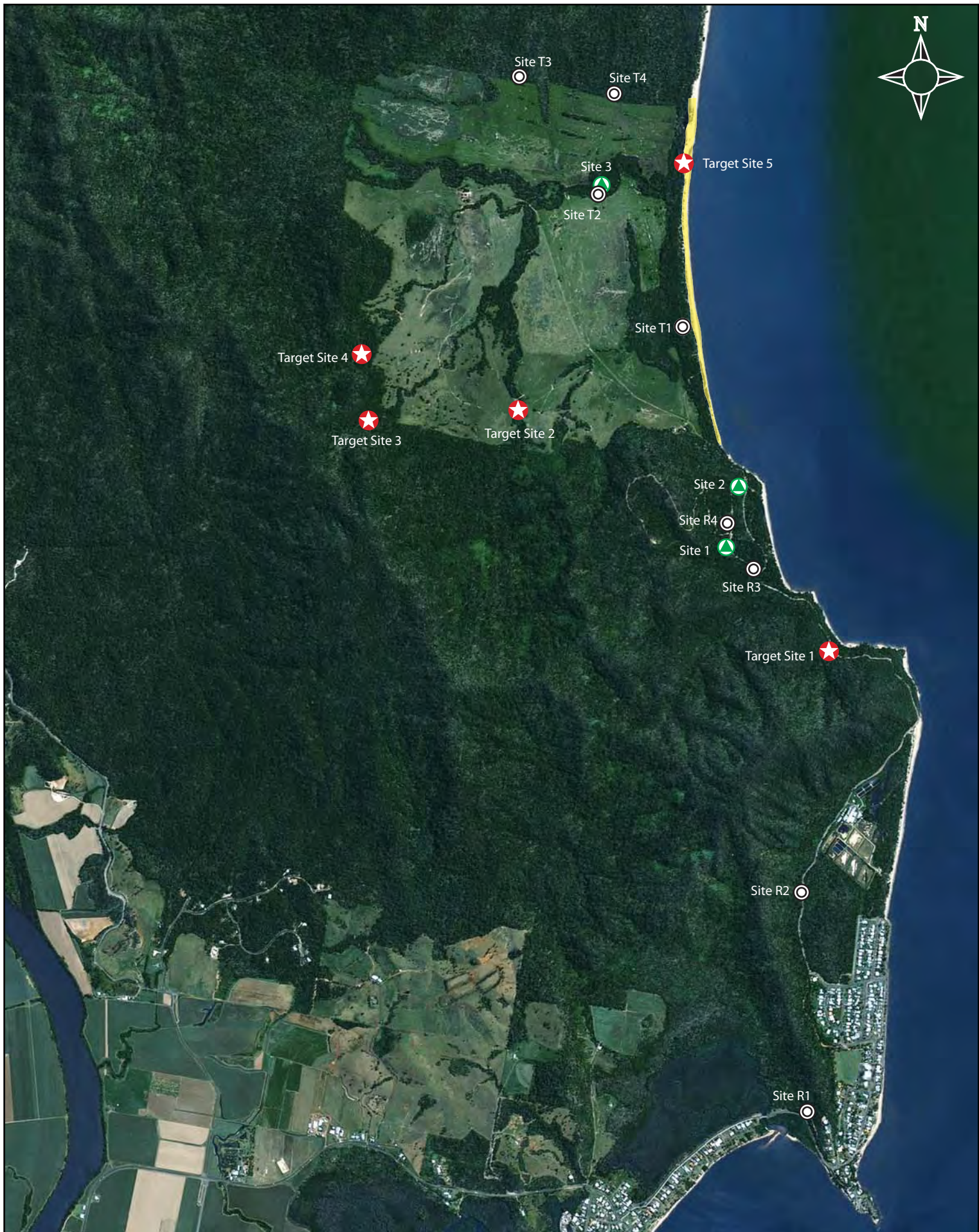
Targeted searches for the presence of marine turtles was also carried out during the course of the site investigations. The area searched is shown on **Figure 4.1**.

**Table 4.1. Terrestrial Vertebrate Trapping Site Locations**

Trap Site	GPS Location <sup>1</sup>		Habitat Type
	Lat	Long	
R1	S17.50007	E146.02143	Lower slope rainforest
R2	S17.48948	E146.07233	Lower slope rainforest
R3	S17.47383	E146.06872	Rainforest creekline
R4	S17.47177	E146.06718	Rainforest edge
T1	S17.46231	E146.06433	Coastal scrub/wetland
T2	S17.45611	E146.05978	Alluvial rainforest creekline
T3	S17.45069	E146.05525	Alluvial rainforest
T4	S17.45133	E146.06000	Alluvial rainforest
Target 1	S17.47757	E146.07277	Foothill rainforest creekline
Target 2	S17.46696	E146.05649	Alluvial rainforest creekline
Target 3	S17.46799	E146.04898	Foothill rainforest creekline
Target 4	S17.46485	E146.04849	Foothill rainforest creekline
Target 5	S17.45440	E146.06379	Coastal perched lagoon

Note: Centre point of site. Map Datum GDA and locations recorded on Garmin GPS.





**FIGURE 4.1**  
**LOCATION OF TRAP SITES**  
**2008 FAUNA SURVEY**

2008 Fauna Survey Results  
 Ella Bay Integrated Resort Project, Innisfail



#### **4.2.2 Terrestrial Vertebrate Survey Techniques**

The following specific techniques were employed during the terrestrial vertebrate surveys:

##### **Box Traps**

At each systematic trapping site, over four nights during the November survey period, 20 Elliot traps and one cage trap were placed on ground 5-8 m apart using a variety of baits (rolled oats, peanut butter, oil and vanilla +/- salami). Trap placement was influenced by vegetation diversity, the size and shape of the vegetation patches and by naturally occurring features such as logs, rock outcrops, tree bases and clumping vegetation. These traps were cleared early morning and reset in late afternoon in accordance with animal ethics requirements.

##### **Pitfall Traps**

Where possible (depending on substrate and vegetation), pitfall lines were established at each systematic trapping site, over four nights during the survey period. Four pitfall traps (10 or 20 litre containers depending on substrate) were buried flush to the ground surface and connected by a 20 m drift fence. These traps were cleared early morning and reset in late afternoon in accordance with animal ethics requirements.

Pitfall lines were not established at trapping sites R1 and R3 due to the difficulty of digging holes in the substrate at these sites and as substantial loss of vegetation would have been necessary.

##### **Diurnal Searches**

Active diurnal searches were undertaken at each systematic trapping site during the survey period. This involved intensive investigation of ground layer (under logs, rocks and leaf litter), low vegetation (under bark and in tree stumps) and rock crevices for all amphibians, reptiles, bats and animal signs (e.g. scats, owl pellets, orts (bird feeding remnants), remains and tracks). Searches were conducted in conjunction with the morning bird censuses and trap clearing activities, as well as during the warmer parts of the day when reptile activity was likely to be at

its peak, totalling approximately one hr/site/day.

##### **Diurnal Bird Censuses**

Birds were surveyed at each systematic trapping site during the survey period using a timed transect technique. Each site was surveyed for approximately 30 minutes in the morning and afternoon by pausing at each fifth ground trap for six minutes.

Additional bird records were collected during random meander searches of other habitats or areas that were considered suitable for cryptic or rare species, as well as during other survey elements and opportunistically.

##### **Nocturnal Surveys**

A combination of high-powered spotlights and head torches were used to sample nocturnal mammals (flying, arboreal and terrestrial), birds (owls and nightjars), reptiles and frogs across the study area during the November survey period.

During the spotlighting sessions, species-specific detection was assisted by the use of call playback surveys undertaken for nocturnal birds and nocturnal mammals using the recordings of Stewart (1998a, b).

An ANABAT II ultrasonic bat call detection unit and associated ZCAIM interface module were also used to capture the calls of insectivorous bat species. The use of the ZCAIM unit allows the ANABAT II detector to be left unattended throughout the night, thereby ensuring that peak activity periods for bats are recorded each night.

##### **Harp Trapping**

Harp traps were used to sample micro-bat communities and assist in confirming ANABAT call sequences. Harp traps were only deployed where suitable flight paths were identified.

##### **Incidental (Opportunistic) Records**

During the survey period, fauna observations were continuous and species records were obtained outside of the systematic methodology of the survey.

#### **4.2.3 Aquatic Vertebrate Field Survey Techniques**

Aquatic vertebrate sampling sites were selected on the basis of providing a diversity of aquatic



habitats from across the study area including lower slope rainforest creek, alluvial rainforest creek and coastal wetland. Sampling sites were established on or close to terrestrial trapping and target searching sites where adequate pools were located.

Aquatic habitat site descriptions are as follows:

- a) R3, R4 and Target site 2: lower foothills, clear water, rocky riffles with coarse sandy substrate in pools, some macrophytes along edges;
- b) T1: Coastal wetland, muddy bottom and sides, no macrophytes, evidence of putrefaction;
- c) T2: alluvial floodplain creek, clear water, coarse sandy substrate, no macrophytes; and
- d) Target Site 4: mid-slope rainforest creek, clear water, rocky substrate, no macrophytes.

Two standard fish traps were set at each site for a two night period. Fish traps were baited with a mixture of dry dog food and vegemite.

#### **4.2.4 Marine Turtle Survey Techniques**

During the two survey periods, the beach adjacent to the proposed development was visited at least daily and at night. In addition to the physical presence of turtles on the beach and within the water, searches were made for evidence of their activity such as tracks and nesting.

It was noted that most of the beach area adjacent to the proposed development was inundated at high tide, with only a very thin strip of beach exposed between the high tide mark and the coastal scrub.

## **5.0 RESULTS**

### **5.1 DATABASE SEARCHES**

#### **5.1.1 Essential Habitat mapping:**

The "essential habitat" associated with RE mapping under the VM Act is shown in **Appendix 6**. Essential habitat, as mapped by the EPA, is vegetation in which a species has been known to occur, or is predicted to occur, that is Endangered, Vulnerable, Rare or threatened under the NC Act. The essential habitat mapped for the study area is for the

Southern Cassowary (southern population)  
*Casuarius casuarius johnsonii*.

#### Southern Cassowary (southern population)

Under the VMA, essential habitat for the Southern Cassowary is described as:

*"Dense lowland and highland tropical rainforest, closed gallery forest, eucalypt forest with vine forest elements, swamp forest and adjacent melaleuca swamps, littoral scrub, eucalypt woodland and mangroves; often using a habitat mosaic; will cross open eucalypt, canefields and dry ridges between rainforest patches."*

Essential habitat for Southern Cassowary has been mapped under the VM Act in remnant vegetation surrounding the study site and the proposed access road. Essential habitat is also mapped within the study site in remnant coastal vegetation along the eastern coastal section of the study area and along a drainage line running parallel to the northern boundary. The essential habitat includes: RE 7.2.1, mesophyll vine forest on beach ridges and sand plains of beach origin; RE 7.3.10, simple-complex notophyll vine forest on moderate to poorly drained alluvial plains of moderate fertility; RE 7.11.25, simple-complex mesophyll to notophyll vine forest on amphibolites of the very wet lowlands.

The Southern Cassowary is well-known from the area and the characteristics of the population utilising the subject site and surrounds is the subject of a separate, targeted investigation by Les Moore. Notes on Southern Cassowary activity recorded during this and previous surveys have been referred to Les Moore for inclusion in his assessment.

#### **5.1.2 Previous report on the terrestrial fauna of the Ella Bay Project for Satori Resorts Pty Ltd:**

In 2006 BAAM was contracted to conduct an intensive vertebrate fauna survey on the EBIR Site. Survey work was conducted from 2-6 October 2006. Results from this report have been incorporated in the following sections.

### **5.2 DATABASE SEARCHES**

Species records obtained from the Queensland Museum database, EPA WildNet database, and Birds Australia New Atlas database are listed in **Appendix 2** in their original format. These

records are collated in **Appendix 1** which also includes all BAAM survey records, including the 2006 survey. Species records obtained from the EPBC Online Protected Matters Search Tool are listed in **Appendix 3**.

These database searches are based on a larger area than the study area to capture as many records as possible for the local area. Given the timeframe of this project, search results for the EPA WildNet database contain records submitted to the EPA (as part of our permit requirements) that were collected during the current surveys. Where relevant, and when possible, such duplication will be identified.

It should be noted that the results from the EPBC Online Protected Matters Search are predictive only and do not necessarily indicate the presence of a species. Hence they are not included in **Appendix 2** which provides a list of species known for the study area and immediate surrounds.

Species of special conservation significance obtained from the database searches (including the EPBC Online Protected Matters Search Tool) but not detected during the surveys are detailed in **Appendix 4**. Database records are not necessarily obtained from the actual study area and, following the field-based site assessment and consideration of the habitats present within the study area and the known ranges of the animals, only some of those species listed are considered likely to occur. These are discussed in further detail in **Section 5.5**.

Database records listed in the appendices are provided using the nomenclature of the source. There is a lack of uniformity in nomenclature across the organisations that maintain the databases. In an effort to simplify nomenclature this report follows the CSIRO *List of Australian Vertebrates* (Clayton *et al.* 2006) as it provides a single point of reference for all terrestrial vertebrate groups. Any notable variations in common and/or scientific names of conservation significant species will be identified in the text, and where taxonomic revision affects the conservation status of a species the possible consequences will be addressed within the species profiles provided hereunder. The nomenclature for fish is taken from Allen *et al.* (2002).

### 5.3 RECORDED TERRESTRIAL VERTEBRATE SPECIES

All terrestrial vertebrate species recorded during the BAAM October 2006 and November 2008 surveys, are listed in **Appendix 5** with location details.

In total, 120 terrestrial vertebrate species were recorded from the study area during the 2008 survey (**Table 5.3**), compared to 86 species from the 2006 survey, which did not incorporate the access road alignment. Over both surveys a total of 142 vertebrate species have been recorded from the study area including 13 frogs, 15 reptiles, 87 birds and 27 mammals. In addition, 33 butterfly/moth species were incidentally recorded over both surveys.

The majority of the study area's terrestrial vertebrate species are currently listed in the NC Act as 'Least Concern' wildlife (i.e. native animals that are not currently listed as 'Presumed Extinct, Endangered, Vulnerable or Rare', although are still prescribed as protected wildlife).

However, 13 species are recognised as Endangered, Vulnerable or Rare (EVR) under Commonwealth and/or State Government legislations (**Table 5.4**). These species are discussed in **Section 5.4**. In addition, eight recorded species are considered to be Migratory species as listed under the EPBC Act and one species is recognised as of 'Special Least Concern (Culturally Significant)' under the NC Act. Migratory species are discussed in **Section 5.5**.

The locations of significant species recorded in the October 2006 and November 2008 surveys from the study area and surrounds are shown on **Figure 5.1**.

**Table 5.3. Terrestrial Vertebrate Species Totals from 2008 Survey**

Site	Fish	Amphibians	Reptiles	Birds	Mammals	Total
T1	1	1	2	10	2	18
T2	2	5	1	16	6	30
T3		1	3	11	1	16
T4		1	3	18	2	24
R1		3	1	4	3	11
R2		2	4	17	2	25
R3	4	4	4	15	3	30
R4	3	1	4	17	5	30
Target Sites combined	5	7	4	17	2	35
Incidental only (including Flying Fish Point data)		1	4	28	2	35
<b>TOTAL</b>	<b>7</b>	<b>12</b>	<b>14</b>	<b>80</b>	<b>14</b>	<b>127</b>

Trapping sites were subject to varying survey effort.

**Table 5.4. EVR Terrestrial Vertebrates Species Detected Within the Study Area by BAAM (2006 and 2008 surveys).**

Zoological Name	Common Name	NCA Status	EPBC Status
<b>FROGS</b>			
<i>Litoria genimaculata</i>	New Guinea Tree Frog	Rare	
<i>Litoria rheocola</i>	Common Mist Frog <sup>1</sup>	Endangered	Endangered
<i>Cophixalus infacetis</i>	Inlegant Frog	Rare	
<b>REPTILES</b>			
<i>Crocodylus porosus</i>	Saltwater Crocodile <sup>2</sup>	Vulnerable	Migratory
<i>Eulamprus tigrinus</i>	Yellow-blotched Forest-Skink	Rare	
<b>BIRDS</b>			
<i>Casuaris casuaris</i>	Southern Cassowary	Endangered	Endangered
<i>Bubulcus ibis</i> <sup>3</sup>	Cattle Egret	Special Least Concern	Migratory
<i>Egretta sacra</i>	Eastern Reef Egret	Special Least Concern	Migratory
<i>Pandion haliaetus</i> <sup>4</sup>	Osprey	Special Least Concern	Migratory
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Special Least Concern	Migratory
<i>Accipiter novaehollandiae</i>	Grey Goshawk	Rare	
<i>Esacus magnirostris</i> <sup>5</sup>	Beach Stone-curlew	Vulnerable	
<i>Cyclopsitta diophthalma macleayana</i>	Macleay's Double-eyed Fig-Parrot	Vulnerable	
<i>Ninox rufa queenslandica</i>	Rufous Owl (southern)	Vulnerable	
<i>Aerodramus terraereginae</i> <sup>6</sup>	Australian Swiftlet	Rare	
<i>Merops ornatus</i>	Rainbow Bee-eater	Special Least Concern	Migratory
<i>Rhipidura rufifrons</i>	Rufous Fantail	Special Least Concern	Migratory
<i>Monarcha trivirgatus</i> <sup>7</sup>	Spectacled Monarch	Special Least Concern	Migratory
<i>Monarcha melanopsis</i>	Black-faced Monarch	Special Least Concern	Migratory
<b>MAMMALS</b>			
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	Special Cultural Significance	
<i>Pteropus conspicillatus</i>	Spectacled Flying-fox	Least Concern	Vulnerable
<i>Taphozous australis</i>	Coastal Sheathtail Bat	Vulnerable	

Alternative nomenclature:

<sup>1</sup> Creek Frog.

<sup>2</sup> Estuarine Crocodile.

<sup>3</sup> *Ardea ibis*.

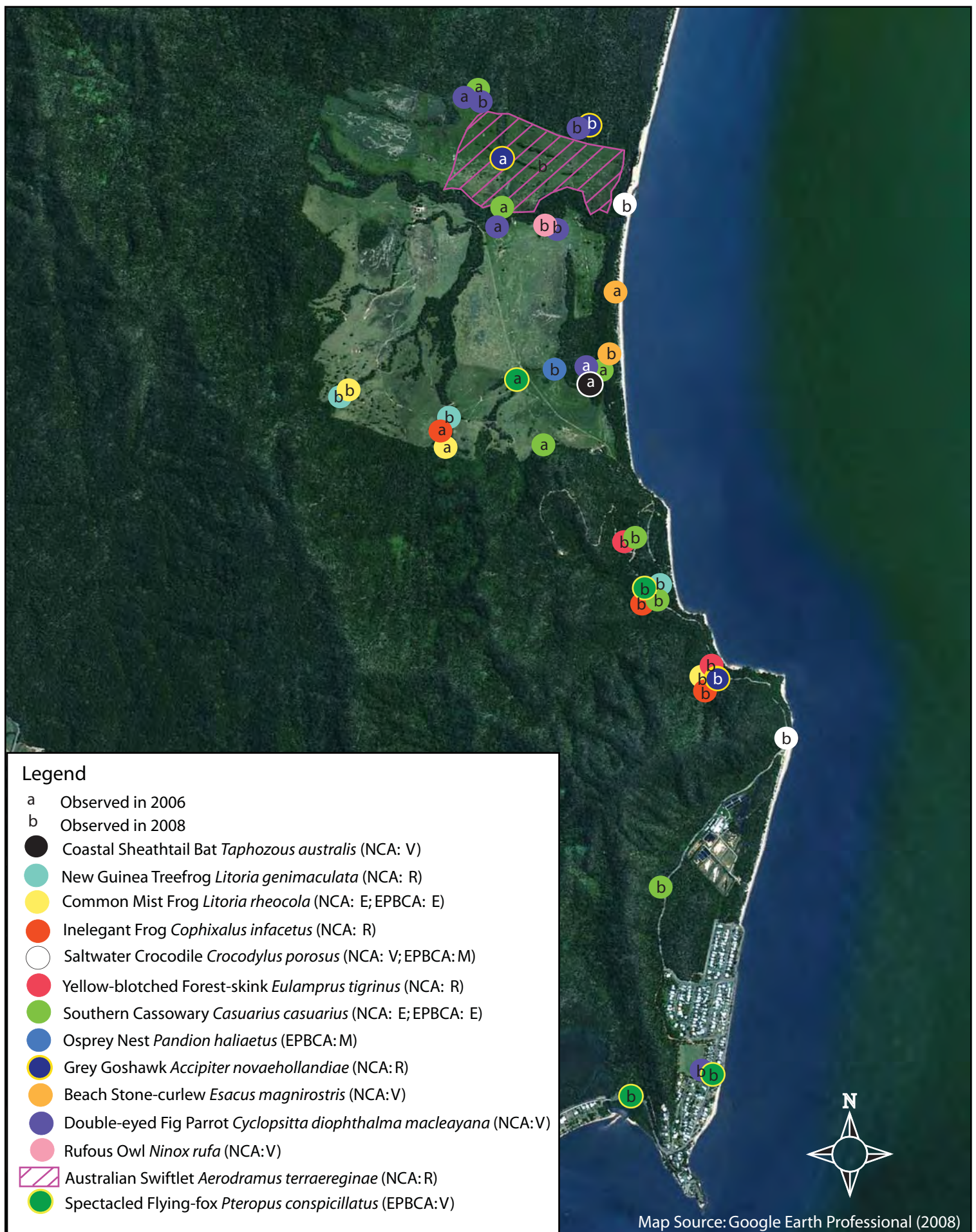
<sup>4</sup> *Pandion cristatus* Eastern Osprey.

<sup>5</sup> *Esacus neglectus*.

<sup>6</sup> *Collocalia spodiopygius* White-rumped Swiftlet.

<sup>7</sup> *Symphysarchus trivirgatus*.





**FIGURE 5.1**  
**LOCATION OF CONSERVATION SIGNIFICANT FAUNA (2006 AND 2008 SURVEYS)**

2008 Fauna Survey Results  
 Ella Bay Integrated Resort Project, Innisfail

## 5.4 EVR TERRESTRIAL VERTEBRATES DETECTED DURING THE SURVEYS

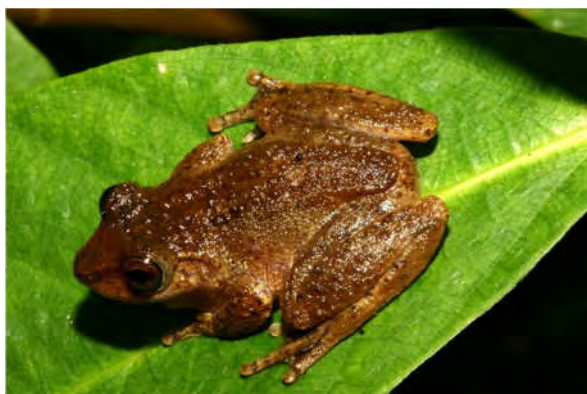
Up to 13 species considered to be Endangered, Vulnerable or Rare under legislation were recorded on the study area during the surveys (**Table 5.4**). One of these species, Coastal Sheathtail-bat *Tapozous australis*, has not been categorically recorded due to possible confusion with Common Sheathtail-bat *T. georgianus* (a Least Concern species) in Anabat call analysis. The species is, nonetheless, discussed with the other 13 EVR species in the following sections.

### 5.4.1 Common Mist Frog *Litoria rheocola*

Status: NC Act Endangered; EPBC Act Endangered.

Alternative nomenclature: Creek Frog

A minimum of seven individual Common Mist Frogs were recorded along rocky stream habitat at Target site 3, with a possible maximum of 11 individuals. The species was also located during the 2006 survey upstream from Target site 2. During the survey the species was located in the south-western portion of the subject site in association with riffle zone habitat. It is likely that a substantial population is present on the site along creeklines draining the range along the western and southern boundaries. The species is also expected to occur in creeklines in Ella Bay National Park, including those crossing the existing access road.



**Photo 2: Common Mist Frog, Ella Bay  
November 2008**

Ecology and Habitat: The Common Mist Frog is a stream-dwelling species found only in fast-flowing, rocky streams in rainforest and wet sclerophyll habitats (Liem 1974).

Distribution and Breeding: The species is restricted to coastal ranges in northern Queensland where it has been observed between Amos Bay near Cooktown south to Broadwater Creek near Ingham.

The species has been located in streams from around sea level to approximately 1200 m (Barker *et al.* 1995). The species has largely disappeared from locations at higher altitudes but remains common below 600 metres (Hoskin and Hero 2008). Lowland populations appear to be stable, but the long-term survival of the species is now heavily dependent on its persistence in such locations. Consequently, populations associated with the Seymour Range may be of regional significance.

Calling males and tadpoles have been found within the species' range in most months other than winter. Breeding seems to peak between November and March (Liem 1974; Dennis and Trenerry 1984). Males call from exposed locations on rocks or overhanging debris.

Egg masses are laid in gelatinous clumps beneath rocks (Hodgkinson and Hero 1993) and once hatched the tadpoles can be found in fast flowing sections of streams clinging to rocks with their enlarged subtorial mouth parts. They feed on algae growing on rock surfaces.

Threats: Many highland stream dwelling frog species have declined in the wet tropics region, leading to the extinction of some species. Much debate has focused around the cause of this decline. Perhaps the most widely accepted theory is that a virulent aquatic pathogen affects adult frogs, possibly a virus of Chytrid Fungus (Berger *et al.* 1998).

Management Actions: An independent assessment and sampling of the presence of the frog pathogen *Batrachochytrium dendrobatidis* (Chytrid Fungus) in the Ella Bay development area has been undertaken by Alford (2010), and established that the fungus is present, and that the high temperatures in the area are suppressing the virulence of the disease.

An Environmental Management Sub-plan (EMP) for Stream Dwelling Rainforest Frog Species has been prepared for the EBIR Site and access road for pre-construction and operational phases of the project. Within the Sub-plan, a specific Fauna Management and Monitoring Plan (FHMP)



has been prepared for the Common Mist Frog and other Stream Dwelling Rainforest Frog Species including details of road crossings over creeklines, water quality management and monitoring. Actions to be adopted under the FHMP to protect aquatic and terrestrial environments include:

- Erosion and sedimentation controls to protect areas downstream of works;
- Water quality monitoring programs;
- Control of herbicides and fertilisers in the vicinity of creeklines;
- Sensitive design and construction practices for bridges/culverts over creek crossings including minimal vegetation clearing practices, and appropriate post-construction maintenance;
- Ensuring that retained and rehabilitated vegetation is similar in composition, structure and diversity to pre-disturbance levels;
- Declaring 'no go zones' to prohibit recreational activities and associated disturbance on creeklines;
- Programs to monitor significant frog populations on a regular basis; and
- Ensuring that personnel involved with accessing creeks adhere to Frog Hygiene Protocols.

#### **5.4.2 New Guinea Tree Frog *Litoria genimaculata***

Status: NC Act Rare.

Alternative nomenclature: also known as Green-eyed Treefrog *Litoria serrata*

During the November 2008 survey single individuals were observed along creek habitats at trap site R3 and Target site 2. At least two individuals were also located at Target site 3. The species was also noted as an incidental sighting in the 2006 survey. As females do not call and the species are known to spend most of their time away from streams there is likely to be a substantial population throughout the forested areas of the site and along the forested creeklines in the western and southern portions of the site.

**Ecology and Habitat:** The New Guinea Tree Frog is associated with permanent and ephemeral rainforest streams and can be found in both disturbed and pristine habitats (Hoskin 2007). Although the species is associated with stream habitats, it is known to

travel large distances into adjoining forest (Rowley and Alford 2007).



**Photo 1: New Guinea Tree frog, Ella Bay, November 2008**

**Distribution and Breeding:** The species is found in both lowland and highland rainforests of north-east Queensland from Townsville to Cooktown, and is also widely distributed in New Guinea (Hoskin 2007). Recent taxonomic revision indicates that the Australian population is a different species to those found in New Guinea, in which case the species is restricted to the Wet Tropics (Hoskin and Hero 2008).

Breeding in highland populations lasts at least six months beginning in spring, however it is suggested lowland populations may be capable of breeding year round. Tadpoles metamorphose throughout spring-summer. Juveniles appear to disperse into the surrounding forest, only returning to the stream when ready to breed (Richards and Alford 2005).

**Threats:** The New Guinea Tree Frog underwent population declines in the early 1990s, in conjunction with several other wet tropics frogs, the most likely cause being a chytridiomycete fungus. However population levels appear to have recovered well to pre-1990's levels (McDonald and Alford 1999).

#### **5.4.3 Inelegant Frog *Cophixalus infacetus***

Status: NC Act Rare.

Inelegant Frogs were heard calling at Trap site R3 (two individuals) and Target site 1 (seven individuals). This species was also located close to Target site 3 during the 2006 survey. As the species is not restricted to creeklines it

is likely to be found throughout forested areas on the site.

**Ecology and Habitat:** The Inelegant Frog is a small rainforest frog restricted to the wet tropics between Cairns and Ingham (Barker *et al.* 1995). The species is not restricted to creeklines or waterways. Rather, it can occur in any rainforest area.

**Distribution and Breeding:** Despite its listing, the species is relatively common along the eastern coast of northern Queensland. It is likely to be well represented within Ella Bay National Park and the Seymour Range.

The species lays its eggs in a long connected string in moist locations away from water. Development of the tadpoles occurs entirely within the egg. The frogs hatch fully developed (Barker *et al.* 1995). For this reason the species may occur throughout a rainforest area, rather than restricted to flowing or standing water like most frogs.

**Threats:** Little information exists, however clearing of its preferred habitat is presumably a threat to the species.

#### **5.4.4 Saltwater Crocodile *Crocodylus porosus***

**Status:** NC Act Vulnerable; EPBC Act Migratory.

One individual Saltwater (Estuarine) Crocodile was observed 20 m offshore approximately 600 m south-east of Target site 1 at the public picnic area. Evidence of crocodile occupation (a 'slide') was also observed along the bank of a lagoon at Target site 5. Local contacts suggest a minimum of three individuals inhabit the study area including one breeding female.

**Ecology and Habitat:** The Saltwater Crocodile occurs in coastal rivers and swamps, extending inland along major drainage systems, but is also seen regularly in the open ocean (Wilson and Swan 2008). In Australia the species is most prolific in regions containing large areas of productive wetlands and estuaries (Fukuda *et al.* 2007).

The species generally feeds on a variety of vertebrates including fish, crustaceans, turtles and birds. Large individuals have the ability to take large prey such as Swamp Buffalo *Bubalus bubalus* and Pigs *Sus scrofa*

(Ehmann 1992; EPA 2007). Crocodiles are essentially sedentary, patrolling a well-defined home range. Large movements are generally restricted to dispersing males (Tucker *et al.* 1997).

**Distribution and Breeding:** The species is found from India through Indo-Malaysia to the western Pacific and northern Australia, extending south to central Queensland (Wilson and Swan 2008). Populations have recovered since the species was protected in 1974, particularly in the Northern Territory which has large expanses of favourable habitat (Fukuda *et al.* 2007). The highest densities in Queensland are found in Lakefield National Park and north-west Cape York Peninsula (Read *et al.* 2004).

Reproductive activity commences at the onset of the wet season during which large nests of vegetable matter are constructed and guarded by the female for the 100 day incubation period (Ehmann 1992). Nests are constructed above flood levels in exposed grasslands, estuarine rainforest and islands in swamplands (EPA 2007). Recent hatchlings may remain under the females guard for up to five weeks before dispersing.

**Threats:** The Saltwater Crocodile was threatened by hunting pressure prior to its protection in the 1970s. Many populations have now recovered but the species is still threatened by drowning in fishing nets (Ehmann 1992).

#### **5.4.5 Yellow-blotched Forest-Skink *Eulamprus tigrinus***

**Status:** NC Act Rare.

One individual was trapped at Trap site R4 and another individual was located basking on a tree at Target site 1. The species is likely to inhabit suitably forested areas throughout the western and southern portions of the study site.

**Ecology and Habitat:** The Yellow-blotched Forest-Skink is a medium-sized rainforest skink with a restricted distribution between Bloomfield and Kirrama. Little published information is available for the species. It is often seen basking on rotting logs, but occurs in rock crevices in altitudinal heaths (Wilson 2005). It is both diurnal and crepuscular.



**Photo 3: Yellow-blotched Forest-Skink, Ella Bay November 2008**

Distribution and Breeding: It is known to occur in rainforests and upland heaths ranging in elevation from sea level to around 1600 m (Wilson and Swan 2008).

Threats: Little information exists, however clearing of its preferred habitat is presumably a threat to the species.

#### **5.4.6 Southern Cassowary *Casuarius casuarius johnsonii***

Status: NC Act Endangered; EPBC Act Endangered.

The characteristics of the Southern Cassowary population utilising the subject site and surrounds is the subject of a separate, targeted investigation by Les Moore. Notes on cassowary activity recorded during this and previous surveys have been passed on to Les Moore for inclusion in his assessment.

#### **5.4.7 Grey Goshawk *Accipiter novaehollandiae***

Status: NC Act Rare.

Two individuals were observed during the November 2008 survey, one located on the road in the vicinity of Target site 1, and one in forest at Trap site 4. A large amount of forested habitat in the south of the study area is suitable for the species. Forested creeklines within the cleared land in the north of the study area are also likely utilised for foraging, at least intermittently.

Ecology and Habitat: The Grey Goshawk occurs in temperate, sub-tropical and tropical rainforest, tall open forests, woodlands, wooded gorges, dense timber along watercourses, and farmland, usually in the 760+ mm rainfall zone. Individuals can, however, sometimes be found in other habitats, most likely young birds dispersing from natal territories (Olsen and Olsen 1985; Marchant and Higgins 1993).

Distribution and Breeding: Grey Goshawks occur in all Australian states and the Northern Territory, though never far inland. Breeding occurs once per year, usually from August to December (Beruldsen 2003). Mature forests are important for this species as large habitat trees provide the best nesting sites. Regrowth forest less than 30 years old is seldom used (Marchant and Higgins 1993).

Threats: There has been a slight decrease in populations of Grey Goshawk since European settlement, probably due to habitat loss and persecution (Olsen 1998). The species is still threatened by habitat loss, particularly in south-eastern Australia (Debus 1998).

#### **5.4.8 Beach Stone-curlew *Esacus magnirostris***

Status: NC Act Vulnerable.

Alternative nomenclature: *Esacus neglectus*

Two Beach Stone-curlews were observed foraging along the high tide mark on the beach adjacent to Trap site T1. The species was also recorded nearby in the 2006 survey. Adult Beach Stone-curlews appear to be sedentary and it is expected the species commonly uses the beach front area.

Ecology and Habitat: The Beach Stone-curlew generally occurs singularly or in pairs, and occasionally in small groups. The species inhabits sandy beaches, especially where sandflats, mudflats or reefs are exposed at low tide, and are often around river mouths. They are mainly nocturnal or crepuscular and adult birds appear to be sedentary. The species feeds predominately on crabs and other marine invertebrates in the intertidal zone (Clancy 1986; Marchant and Higgins 1993).

Distribution and Breeding: Beach Stone-curlews are exclusively coastal, found around eastern and northern Australia from Ballina in



New South Wales to Broome in Western Australia.

Pairs lay a single egg in a scrape in the sand, often in the same area year after year. Once hatched, young are dependant on adults for approximately 7-12 months (Clancy 1986; Marchant and Higgins 1993).



**Photo 4: Beach Stone-curlews, Ella Bay  
November 2008**

Threats: This species can still be found in coastal locations where human activity is high. However, the lack of young birds in such areas suggests that reproduction is being affected by human disturbance (Freeman 2003). Breeding success may also be significantly reduced from predation by Cats *Felis catus*, Dogs *Canis lupus* and feral Pigs (Garnett and Crowley 2000).

#### **5.4.9 Rufous Owl (southern subspecies) *Ninox rufa queenslandica***

Status: NC Act Vulnerable.

One Rufous Owl responded to call playback at Trap site T2 along a forested creekline surrounded by cleared land.

Ecology and Habitat: Rufous Owls are most often observed roosting in thick vegetation including gallery forests, melaleuca thickets, tropical rainforests, monsoon forests, mangroves and vine thickets. It is thought that these roosts may be used seasonally (Estbergs and Braithwaite 1985) and therefore the species could be absent from an area at a particular time of the year (Higgins 1999).

Estbergs and Braithwaite (1985) found that Rufous Owls in the Northern Territory had extremely variable diets. The dominant food item was medium-sized arboreal mammals but

other common prey items included bats (particularly *Pteropus* species) and terrestrial mammals (including antechinus, bandicoots and rodents). Most significantly, these authors found that prey preferences were highly seasonal and related this to the life histories of mammalian prey.

Distribution and Breeding: Three sub-species of Rufous Owl are currently recognised. *Ninox rufa rufa* occurs in the northern portion of the Northern Territory and Western Australia, *N. r. meesi* occurs on Cape York Peninsula south to around the Endeavour River (Cooktown) and *N. r. queenslandica* occurs in eastern Queensland from Cooktown to Rockhampton (Pizzey and Knight 2003). Only *N. r. queenslandica* is listed as conservation significant.

Nesting usually occurs in a large hollow, usually within a eucalypt or melaleuca. The same nest may be used for many years (Higgins 1999).

Threats: Clearing of lowland habitat for agriculture has reduced suitable vegetation by an estimated 85% and the continued clearing of vegetation still poses a threat to the species (Garnett and Crowley 2000).

#### **5.4.10 Australian Swiftlet *Aerodramus terrareginae***

Status: NC Act Rare.

Alternative nomenclature: White-rumped Swiftlet *Collocalia spodiopygius*

Several individuals were observed circling over largely cleared land near Trap sites 2 and 4 and were observed throughout the north of the study site. The species occurs over a variety of landscapes and requires caves/rocky recesses for nesting which is unlikely to occur on the study site.

Ecology and Habitat: Other than its nesting requirements, the Australian Swiftlet is largely aerial, foraging for insects on the wing over a variety of habitats including remnant forests, rainforests and woodlands as well as agricultural land and other altered landscapes.

Distribution and Breeding: It occurs from Iron Range in northern Queensland south to around Carmila. However within its range it is most commonly observed in the Wet Tropics

from Cairns to Tully and also around Eungella National Park west of Mackay. Its concentration in these areas is probably largely due to the close proximity of suitable nesting locations.

The species nests in caves or dark recesses, usually with an entrance sheltered from wind and rain. Occasionally, they have been recorded nesting within abandoned mine tunnels (Higgins 1999).

Threats: The species is threatened by activities which destroy or disturb nesting sites.

#### **5.4.11 (Macleays) Double-eyed Fig-Parrot** *Cyclopsitta diophthalma* *macleayana*

Status: NC Act Vulnerable.

This species was observed flying over several survey sites throughout the study area (**Figure 5.1**), and were also observed in Flying Fish Point.

Ecology and Habitat: the Macleay's race of the Double-eyed Fig-Parrot typically inhabits lowland and upland rainforests, particularly those containing fig trees (Higgins 1999). While they are usually observed in large tracts of forest, they can be located around edges, partly cleared rainforest and even gardens or parklands (Forshaw 2002).

Their diet consists predominantly of fig seeds, but they may also take fruit, nectar, insects and larvae (Forshaw 2002). Most feeding occurs in the upper canopy of tall trees, however they can be recorded at all strata including less than one m from the ground. Consequently, areas with abundant fig trees are seen to be particularly important to the survival of local populations.

Distribution and Breeding: Macleay's Fig-Parrot occurs in rainforests and adjacent open forests up to 700 m elevation, from Shipton's Flat (south of Cooktown) south to Paluma.

Nests are located in a limb or trunk of a dead tree, or the dead limb of a living tree. The nests are constructed by excavating rotten wood and it appears that only the female constructs the nest (Higgins 1999).

Threats: The loss of rainforest with its abundant figs poses the most significant threat

to this species and has severely affected populations of the southern subspecies (*C. d. coxeni*). While still relatively common, the same process is likely to be threatening Macleay's Fig-Parrot.

#### **5.4.12 Short-beaked Echidna** *Tachyglossus aculeatus*

Status: NC Act Special Least Concern  
(Culturally Significant).

One individual was recorded on a rainforest track near Trap site R4.

The NC Act lists the Short-beaked Echidna as a 'Special Least Concern' species. This listing recommends that Governments have regard to "the special cultural significance of the animal" and "the need to conserve existing populations of the animal". The Short-beaked Echidna is, with the Platypus and the Long-beaked Echidna *Zaglossus bruijnii* of New Guinea, one of the three extant species of monotreme, a group of mammals believed to have diverged early in the evolution of mammals, possibly about 200 million years ago (Augee *et al.* 2008).

Ecology and Habitat: The Short-beaked Echidna is specialised for feeding on ants, termites and beetle larvae. It occurs in almost all terrestrial habitats except for intensively managed farms. The species is active both by day and night and shelters in logs, crevices, burrows and leaf litter (Menkhorst and Knight 2004; Augee 2008).

Distribution and Breeding: This species occurs throughout Australia and can be expected in all well forested areas. Mating takes place in July and August with juveniles seen from September (Augee 2008).

Threats: Short-beaked Echidnas are killed by dingoes/dogs and motor vehicles.

#### **5.4.13 Spectacled Flying-fox *Pteropus*** *conspicillatus*

Status: EPBC Act Vulnerable.

Several individuals were observed feeding in a large fruiting *Szygium* at Trap site R3 and one individual was seen at Trap site R1. Individuals were also observed feeding in trees at Flying Fish Point. A large permanent camp of Spectacled Flying-foxes was observed in a

melaleuca wetland in Innisfail, approximately seven km from the study site. No other species was observed roosting at the camp. Flying-foxes were also recorded several times on the study site, however they were unable to be identified. Given the close proximity of the camp to the study area, and the lack of confirmed observations of Black Flying-fox *P. alecto*, it seems likely these records were also Spectacled Flying-foxes.

**Ecology and Habitat:** The Spectacled Flying-fox is the only Australian mainland Flying-fox species that is specialised to rainforest (Richards *et al.* 2008). They feed on more than 35 species of rainforest trees and are rarely observed far from this habitat. Large groups of hundreds to tens of thousands may roost at a single location, called a camp. Camps are usually located in rainforest and gallery forest trees, but they have also been recorded roosting in mangroves, paperbark, eucalypt forest and tall acacia trees (Churchill 1998).

The animals can move a great distance from camps in search of fruit and they disperse seeds up to 20 km from the source tree (Churchill 1998). Consequently, they are considered to be a major dispersal agent of rainforest seeds across the landscape and between rainforest patches (Richards *et al.* 2008).

**Distribution and Breeding:** Spectacled Flying-foxes are found in eastern Indonesia, New Guinea, the Torres Strait and coastal Queensland from the tip of Cape York Peninsula south to Hinchinbrook Island.

Breeding activity is continuous from January to, with most young being born from October to December (Churchill 1998). Females do not breed until they are three years of age. Juveniles are nursed for up to five months, and will then congregate in 'nursery' trees within the colony (Richards *et al.* 2008).

**Threats:** Past clearing to facilitate agriculture, silviculture and developments have significantly reduced suitable habitat for this species. While this has slowed, it still poses a threat. In addition, large numbers have been lost through electrocution and/shooting around orchards (Duncan *et al.* 1999).

**Management Actions:** An EMP Sub-plan has been prepared for the EBIR Site and access road for pre-construction and

operational phases of the project. Within the EMP, a specific FHMP has been prepared for the Spectacled Flying-fox. Actions to be adopted under the FHMP to protect local Flying-fox populations include:

- Sensitive road and building design to minimise vegetation clearing, particularly feed trees utilised by flying-foxes;
- Prior identification of flying-fox camps within 250 m of works;
- Powerlines and cabling to be installed underground to prevent flying-fox deaths through electrocution; and
- Restoration/rehabilitation of native vegetation including flying-fox feed trees, on completion of site development.

#### **5.4.14 Coastal Sheathtail Bat *Taphozous australis***

**Status:** NC Act Vulnerable.

**Occurrence on the subject site:** During the 2006 survey, calls of a *Taphozous* species were recorded on the sonic detector (ANABAT) at Trapping site T1. Current ANABAT technology does not allow the specific identification of *Taphozous* calls to the species level but the subject site is within the ranges of two *Taphozous* species, *T. australis* and *T. georgianus*. *Taphozous georgianus* is not currently recognised as EVR under legislation, however *T. australis* is listed as Vulnerable under the NC Act. A WildNet database search also lists several records of an unidentified *Taphozous* species. In fact, very few microchiropteran (insectivorous) bats are known from the local area. This is likely to be the results of low survey effort rather than the absence of this group.

In order to clarify the identity of *Taphozous* species within and around the subject site, further work would be required to capture individuals, although this is not considered necessary as impacts would be minimal if it is ensured that no breeding areas are affected.

No suitable roosting sites were located during the 2008 survey for this species.

**Ecology and Habitat:** Due possibly to a dependence on warm and humid microclimates, this species is restricted to coastal roosts, with a preference for sea caves



and rocky crevices, often on coastal islands, but also occupies boulder piles and man-made buildings (Churchill 1998). Colony size is generally small (i.e. <20) and they only travel a few kilometres inland to forage for beetles and other insects within a wide range of habitats, from coastal heathlands and scrub to monsoon forests and mangroves (Churchill 1998; Duncan *et al.* 1999).

**Distribution and Breeding:** The species occurs within the immediate coastal fringe from Torres Strait to between Cape Hillsborough and Shoalwater Bay on the central Queensland coast (Churchill 1998; Duncan *et al.* 1999). Breeding habits are not well known, although it is thought that single young are generally born in October/November (Churchill 1998; Menkhurst and Knight 2004).

**Threats:** Major threats probably include loss of foraging habitat from coastal development and roost disturbance, particularly in the southern part of their range (Duncan *et al.* 1999).

## 5.5 MIGRATORY SPECIES

**Status:** NC Act Special Least Concern; EPBC Act Migratory.

A total of nine Migratory species have been identified within the study area as listed in **Table 5.5**. One of these species (Saltwater Crocodile) is considered to be EVR under legislation and is considered in greater depth in **Section 5.4**.

Eight migratory species have been recorded to date:

*Bubulcus ibis* Cattle Egret (also known as *Ardea ibis*)

*Egretta sacra* Eastern Reef Egret

*Pandion haliaetus* Osprey (also known as *P. cristatus* Eastern Osprey)

*Haliaeetus leucogaster* White-bellied Sea-Eagle;

*Merops ornatus* Rainbow Bee-eater;

*Rhipidura rufifrons* Rufous Fantail;

*Monarcha melanopsis* Black-faced Monarch;  
and

*Monarch trivirgatus* Spectacled Monarch (also known as *Symphysarchus trivirgatus*).

Cattle Egrets utilise modified habitats, including pasture, and are common and widespread.

Eastern Reef Egrets are generally restricted to rocky coastal outcrops/headlands. One individual was observed at Flying Fish Point and there is no suitable habitat on the study site.

White-bellied Sea-Eagles and Ospreys are wide-ranging birds. Nesting Ospreys were recorded within the study area, but are tolerant of human activity and are known to readily utilise artificial structures for nesting.

Rainbow Bee-eater is a common, widespread species that occurs in a wide variety of habitats, including highly modified lands such as pasture.

Rufous Fantails, Black-faced Monarchs and Spectacled Monarchs occur in riparian and rainforest habitats.

## 5.6 EVR VERTEBRATES NOT DETECTED DURING THE SURVEY BUT PREDICTED TO OCCUR

In addition to those species discussed in **Section 5.4**, 15 EVR vertebrates not recorded on the study area or nearby during BAAM surveys are predicted to occur based on suitable habitat and previous local records. These species are discussed in the following sections.

### 5.6.1 Apollo Jewel Butterfly *Hypochrysops apollo apollo*

**Status:** NC Act Vulnerable.

No individual of this species was identified during the survey and no food plants were located during surveys. However the species has been recorded from nearby wetland vegetation to the north of the subject site. The species is highly mobile and may occur in locations within the subject site not assessed during the current survey. The lack of records during the current survey may reflect several factors:

- Detailed and systematic survey methods for butterflies was not within the scope of this survey; and
- The species flies high and fast within or above the canopy, often alighting on leaves on the canopy species within which the food plant grows. This behaviour makes the species difficult to observe (Braby 2000).

Further survey work would therefore be required to determine the presence and/or distribution of this species and its habitat within the subject site. Such work would need to be conducted during favourable conditions.

Ecology and Habitat: The Apollo Jewel Butterfly is a small butterfly of coastal northern Queensland. It occurs in coastal areas, particularly lowland paperbark woodlands and wetlands. It feeds exclusively on the ant-plant *Myrmecodia tuberosa* which grows on melaleucas and sometimes on *Lophostemon suaveolens*.

Distribution and Breeding: Two subspecies are recognised, *H. a. apollo* which occurs between Cooktown and Ingham and *H. a. phoebus* which occurs north from Leo Creek in the McIlwraith Range.

Breeding is largely unknown, although adults are known to fly between October and April in Cardwell. Larvae are usually attended by small golden ants *Philidris cordatus* (Braby 2000). The larvae live inside the plant tuber which contains a network of chambers inhabited by the ant species. The larva gradually enlarge chambers of the ant plant by feeding on the internal tissue of the plant, but they sometimes emerge from holes bored through the plant wall to feed on leaves at night (Braby 2000). Generally no more than one larva is located within any given plant.

Threats: Clearing of suitable lowland habitat for agriculture, silviculture and developments is the major threat to this subspecies. In recent years several colonies have become extinct and it is now estimated that 60 to 80% of original paperbark woodland between Cooktown and Ingham has been lost (Braby 2000). Remaining habitats and populations have therefore become increasingly important to the long-term survival of the species. In addition to loss of habitat, existing populations are threatened by inappropriate burning

regimes and removal of ant plants by collectors.

### **5.6.2 Australian Lacelid *Nyctimystes dayi***

Status: NC Act Endangered; EPBC Act Endangered.

The species was not located during the 2006 or 2008 survey. However suitable habitat is present for the species which is often recorded co-existing with Common Mist Frog. It may therefore occur in the same locations within the study area. Further survey effort would be required to determine the presence/absence of this species and to determine its distribution within the subject site, although habitat protection and impact mitigation measures adopted for Common Mist Frog would also protect the habitat of Australian Lacelid.

Ecology and Habitat: The Australian Lacelid is restricted to the Wet Tropics region. It prefers fast-flowing rocky streams, but may be found in slow-flowing watercourses as well. Adults are largely found on rocks and vegetation adjacent to the stream.

Distribution and Breeding: The species occurs along rocky creeks in rainforests between Cooktown and the Paluma Range. It occurs in lowland and highland habitats but has significantly declined in highland locations and is now not found above 300 m elevation (EPA 2001).

The species breeds during the warmer months, typically between September and April. Tadpoles complete development in 3 - 4 months and may be found sheltering under rocks in riffles in fast-flowing streams (EPA 2001).

Threats: The reasons for the dramatic decline in highland populations remain unknown, but may be attributable to the frog pathogen *Batrachochytrium dendrobatidis* (Chytrid Fungus).

Management Actions: An independent assessment and sampling of the presence of the frog pathogen *Batrachochytrium dendrobatidis* (Chytrid Fungus) in the Ella Bay development area has been undertaken by Alford (2010), and established that the fungus is present, and that the high temperatures in the area are suppressing the virulence of the disease.

An Environmental Management Sub-plan (EMP) for Stream Dwelling Rainforest Frog Species has been prepared for the EBIR Site and access road for pre-construction and operational phases of the project. Within the Sub-plan, a specific Fauna Management and Monitoring Plan (FHMP) has been prepared for the Common Mist Frog and other Stream Dwelling Rainforest Frog Species including details of road crossings over creeklines, water quality management and monitoring.

Actions to be adopted under the FHMP to protect aquatic and terrestrial environments include:

- Erosion and sedimentation controls to protect areas downstream of works;
- Water quality monitoring programs;
- Control of herbicides and fertilisers in the vicinity of creeklines;
- Sensitive design and construction practices for bridges/culverts over creek crossings including minimal vegetation clearing practices, and appropriate post-construction maintenance;
- Ensuring that retained and rehabilitated vegetation is similar in composition, structure and diversity to pre-disturbance levels;
- Declaring 'no go zones' to prohibit recreational activities and associated disturbance on creeklines;
- Programs to monitor significant frog populations on a regular basis; and
- Ensuring that personnel involved with accessing creeks adhere to Frog Hygiene Protocols.

### 5.6.3 Marine Turtles

Although there are no WildNet or Queensland Museum records of marine turtles within the study area, and there are no known rookeries present, nesting has been reported (Thorogood 2009). Based on their ranges the following marine turtles could potentially utilise the coastline of the study area:

- Loggerhead Turtle *Caretta caretta* (NC Act Endangered; EPBC Act Endangered and Migratory). In Queensland, breeding and nesting occurs mainly in the southern Great Barrier Reef (Capricorn/Bunker group) and adjacent mainland near

Bundaberg. Approximately 95 per cent of all nesting marine turtles on the Bundaberg coast are loggerheads. A few hundred females now nest annually in the region (GBRMPA 2009).

- Green Turtle *Chelonia mydas* (NC Act Vulnerable; EPBC Act Vulnerable and Migratory); Two genetic stocks of green turtles breed within the Great Barrier Reef Marine Park, a southern and a northern stock. These two stocks are the two main management units. The southern stock has nesting concentrated in the Capricorn/Bunker group of islands, with an average annual nesting population estimated at 8000 females. The northern stock has nesting concentrated around Raine Island and Moulter Cay with an average annual nesting population of 30 000 females. There is low density nesting on many islands and along the Queensland coastline (GBRMPA 2009).
- Hawksbill Turtle *Eretmochelys imbricate* (NC Act Vulnerable; EPBC Act Vulnerable and Migratory). The entire far northern section of the Great Barrier Reef Marine Park and the Torres Strait region is internationally significant for hawksbill turtle nesting as the species numbers have declined in many parts of the world. There are three main breeding areas in Australia - northern Great Barrier Reef (several thousand nesting females), north-eastern Arnhem Land (about 2000 nesting females), and Western Australia (several thousand nesting females) (GBRMPA 2009).
- Pacific Ridley *Lepidochelys olivacea* (NC Act Endangered; EPBC Act Endangered and Migratory). There are two main breeding areas for this species in Australia, one in the Northern Territory with about 1000 nesting females per year, and the other in the Gulf of Carpentaria with less than 100 nesting females per year. No nesting by the species has been recorded in the Great Barrier Reef World Heritage Area (GBRMPA 2009).
- Leathery Turtle (Luth) *Dermochelys coriacea* (NC Act Endangered; EPBC Act Vulnerable and Migratory). No large rookeries for this species occur in



Australia. Most leatherback turtles living in Australian waters are presumed to migrate to breed in neighbouring countries, particularly Papua New Guinea and Indonesia. However, some Australian nesting occurs on the mainland coast near Bundaberg and on the coast of Arnhem Land in the Northern Territory. Fewer than 10 animals nest annually in Australia (GBRMPA 2009).

- Flatback Turtle *Natator depressus* (NC Act Vulnerable; EPBC Act Vulnerable and Migratory). All known breeding sites of the Flatback Turtle are in Australia. Breeding is centred in the southern Great Barrier Reef around Peak, Wild Duck, Curtis and Facing Islands. However, low density nesting by flatbacks occurs on many mainland beaches and offshore islands north of Gladstone. The largest amount of nesting occurs on Crab Island in western Torres Strait (GBRMPA 2009).

The Recovery Plan for Marine Turtles in Australia (Environment Australia 2003) identifies the following threats to marine turtle nesting success: marine debris that may tangle or choke turtles; light pollution from coastal developments, street lights and industrial complexes (that can disorientate hatchlings, as well as nesting females, leading to stranding and/or increased predation); tourism and recreation activities (e.g. nesting females may refuse to land on a beach subject to high levels of uncontrolled human access for fishing, camping, etc); vehicle damage (that can crush nests and/or damage nesting habitat by compacting sand and creating wheel ruts that trap hatchlings); and faunal predation of eggs (including introduced predators such as feral Pigs, Foxes *Vulpes vulpes* and feral Dogs). In addition, urban runoff can affect offshore turtle habitat.

#### Mitigation and Management Actions

Proposed mitigation and management actions for Marine Turtles are provided in the project EMP.

The proposed development will not directly interfere with any potential turtle nesting habitat, although lighting and increased human

presence are to be managed so as to reduce potential impacts from these sources.

As part of the 'Environmental Code of Conduct' for construction workers and residents within the development area, the importance of responsible solid waste management will be stressed, including during netting or line fishing. Receptacles for solid waste will be strategically located in public areas to minimise the potential for careless waste disposal.

Dense vegetation separates the development area from the beach. The design covenant will require a dark sky policy. All lighting within the development area will be designed as localised down lighting with shrouded fittings. As a result, lighting will not be visible from potential turtle nesting habitat.

As no carparks, lighting or recreational facilities are to be located on the foreshore, human presence will be minimal during night-time hours. Vehicles and camping are prohibited from the beach, and no dogs are permitted in the development area at any time, removing these potential threats.

All stormwater runoff for the development will be treated through either constructed wetlands or a bioretention filter.

Gross pollutant traps are not recommended for wetlands as the anaerobic conditions generate Nitrogen and surveys have shown that the amount of anthropogenic waste is extremely small. The risk is primarily during periods of highflow bypass which would not be processed through the GPT. Regular monitoring of the foreshore during turtle nesting season is proposed, and when/if any nests are detected, these will be cordoned off to prevent their disturbance by humans. Aside from this precautionary measure, the nests will be left alone, and the record will be registered with Queensland Parks and Wildlife. Any details turtle activity in the area adjacent to the development area will be reported to Queensland Parks and Wildlife.

The pest animal control program currently underway on the property, and the implementation of a Pest Animal Management Plan during the construction and operation of the development, will significantly reduce the risk posed by feral species to turtle nests.

### Species Recovery

The subject area is not a recognised, significant marine turtle natal, mating or feeding area. Available information suggests that low density nesting by Green Turtles, and possibly Hawkesbill and Flatback Turtles may occur.

The Recovery Plan for Marine Turtles in Australia (Environment Australia 2003) adopts a threat-based approach, where the premise is to reduce the likelihood that current threats will cause mortalities, or to modify activities to reduce the potential for future mortalities at all stages of a marine turtle's life, and to ensure that traditional harvest of marine turtles by indigenous Australians and Torres Strait Islanders is ecologically sustainable.

While the subject area is not critical to these species, and the recovery actions (Environment Australia 2003) are primarily in the hands of the regulators, a number of the identified threats and possible actions are relevant to the development area and have been incorporated into the Marine Turtle Sub-Plan, which sits under the Fauna Management Plan in the project EMP.

#### **5.6.4 Limbless Snake-tooth Skink *Coeranoscincus frontalis***

Status: NC Act Rare.

No individual was recorded during the 2006 or 2008 surveys, however Queensland Museum database records from the region exist for the species. Suitable habitat occurs on the subject site and along road access areas. Consequently it is considered likely to occur. Its absence during the survey may relate to its cryptic nature, survey duration and survey timing.

Ecology and Habitat: The Limbless Snake-tooth Skink typically shelters in deep leaf litter, beneath logs and rocks in rainforests between Thornton Peak and the Paluma Range (Wilson and Swan 2005). The species has been located in both lowland and highland rainforests, but is rarely encountered due to its cryptic habits. Consequently, the species may be overlooked in short duration, one-off surveys, particularly if conducted outside of optimal survey periods (i.e. summer months).

Threats: Little information exists, however clearing of its preferred habitat is presumably a threat to the species.

#### **5.6.5 Black-necked Stork *Ephippiorhynchus asiaticus***

Status: NC Act Rare.

This species was not observed in either the 2006 or 2008 survey period, although there are several WildNet database records for the region. Suitable habitat exists at Target Site 5 in the form of a permanent wetland, and in ephemeral pools present on the floodplain in the wet season. Consequently it is considered likely to sporadically occur on the study site.

Ecology and Habitat: Black-necked Storks occur in terrestrial wetlands, estuaries, littoral habitats and, occasionally, grasslands. They occur in both fresh and saline waters but are most frequently recorded in open fresh waters such as shallow wetlands, billabongs and pools on floodplains. Generally birds occur singly. They appear to be largely sedentary, though some birds move long distances and the species may be partially nomadic (Pringle 1985; Marchant and Higgins 1990).

The species feeds on a variety of aquatic prey items including insects, crustaceans, fish, amphibians and reptiles (Barker and Vestjens 1989; Marchant and Higgins 1990; Dorfman *et al.* 2001).

Distribution and Breeding: The Black-necked Stork is found from Pakistan and India through south-east Asia to New Guinea and Australia. It is widespread in northern and eastern Australia and occurs through much of Queensland (Marchant and Higgins 1990).

The species is very sparsely distributed throughout its range and it appears that the maintenance of even one pair may require large areas of freshwater swamps (Pringle 1985). Breeding is very poorly known, although they nest in tall trees, both live and dead, in or near freshwater swamps (Marchant and Higgins 1990).

Threats: The species is threatened by collision with powerlines, the use of herbicides, insecticides and other chemicals near wetlands, the loss of suitable nesting trees, disturbance by livestock, ingestion of cane toads, and loss of wetlands due to agriculture



and development (Garnett and Crowley 2000; Dorfman *et al.* 2001; NPWS 2002).

### **5.6.6 Australian Painted Snipe *Rostratula australis***

Status: NC Act Vulnerable; EPBC Act Vulnerable. Listed as Migratory (EPBC) as *Rostratula benghalensis s. lat.*

Alternative nomenclature: *Rostratula benghalensis australis*; *Rostratula benghalensis s. lat.*

This species was not recorded during the 2006 or 2008 surveys, and has not been recorded in the region in database searches. However, the highly secretive nature of this species means that its presence is easily overlooked and it may well be present, at least sporadically, particularly during the wet season when ephemeral pools may be present.

Ecology and Habitat: The Australian Painted Snipe is a secretive, cryptic, crepuscular species that occurs in terrestrial shallow wetlands, both ephemeral and permanent, usually freshwater but occasionally brackish. They also use inundated grasslands, saltmarsh, dams, rice crops, sewage farms and bore drains. The species feeds on vegetation, seeds, and invertebrates including crustaceans and molluscs (Marchant and Higgins 1993).

Distribution and Breeding: Australian Painted Snipes have been considered a subspecies of *Rostratula benghalensis*, a species found in sub-Saharan Africa and Asia (Marchant and Higgins 1993). Recently the Australian birds have been considered by some to be a full species, in which case *R. benghalensis* does not occur in Australia (Garnett and Crowley 2000). The species is patchily distributed throughout Australia, with most records being in the south-east. Records are erratic, the species being absent from areas in some years and common in others.

Breeding occurs mainly in the Murray-Darling region, though is also recorded in other parts of Queensland, New South Wales and South Australia. Nests are on the ground in swamps and grassland and nesting occurs between May and February, dependent on location (Marchant and Higgins 1993).

Threats: The Australian Painted Snipe is threatened by drainage of wetlands, diversion of water from rivers, clearance of wetland vegetation, and overgrazing (Garnett and Crowley 2000).

### **5.6.7 Little Tern *Sterna albifrons***

Status: NC Act Endangered; EPBC Act Migratory.

Alternative nomenclature: *Sternula albifrons*.

This species was not recorded in either the 2006 or 2008 surveys, however there are several WildNet database records for the region. There is very little suitable nesting habitat on the study site, however it is considered likely the species may utilise the beach habitat for foraging.

Ecology and Habitat: The Little Tern is gregarious and usually occurs in small flocks, although it often roosts in large flocks. The species is found along a variety of coastal areas, including lagoons, estuaries, river mouths, lakes, bays, harbours and inlets, especially those with exposed sandbanks. They feed primarily on small fish and invertebrates (Higgins and Davies 1996).

Distribution and Breeding: Little Terns occur in Europe, Asia and Australasia. Within Australia, the species occurs along the coastal regions of eastern Australia, south to Tasmania, and across northern Australia, west to northern parts of Western Australia (Higgins and Davies 1996).

Pairs are monogamous and nest on sand containing shell grit, with less than 5% vegetation cover. Nests are generally located in elevated areas five metres from the high water mark and consist of a scrape in the substrate. Breeding occurs during September to January within eastern Australia (Pizzey and Knight 2003).

Threats: In south-eastern and eastern Australia this species has suffered serious declines as a result of beachgoers, dogs and vehicles intruding on beach nest sites (Pizzey and Knight 2003). Little Terns are also threatened by nest predation by rats, gulls, ravens, Foxes and feral Pigs, and by degradation of estuaries, pesticide residues in fish, and oil-fouling of both birds and beaches (Garnett and Crowley 2000).

### 5.6.8 Northern Quoll *Dasyurus hallucatus*

Status: EPBC Act Endangered.

This species was not recorded in either the 2006 or 2008 surveys and there is no database record for the region. However, the species is known to occur in both disturbed and undisturbed areas in the lowlands of the Wet Tropics. There is suitable habitat in the study area and it is considered possible the species occurs.

Ecology and Habitat: The Northern Quoll is the smallest of the quoll species and the most arboreal. Although found in a variety of habitats, it is most common in rocky eucalypt woodland and open forest within 200 km of the coast (Menkhorst and Knight 2004). The species is generally nocturnal but may also be active during the day in overcast weather or during the breeding season. They are opportunistic omnivores feeding on invertebrates, small birds and mammals, frogs, reptiles, fruits and nectar). Northern Quolls will den in tree hollows, termite mounds, fallen logs and rock crevices and will use a number of dens across their territory (Oakwood 2000, 2008).

Distribution and Breeding: This species was formerly distributed across northern Australia, from the Pilbara in Western Australia to south-eastern Queensland. It is now largely confined to six areas within its former range often dominated by rocky escarpment country. Births occur between June and September. Young leave the den in January coinciding with the wet season and abundant food resources. All males die after mating and it is the largest mammal in the world to do so (Oakwood 2000, 2008).

Threats: The Northern Quoll has undergone substantial declines throughout its range, including eastern Queensland. Past threats to the species are uncertain, although habitat modification due to livestock and incorrect fire regimes have been implicated in increased predation by cats and dogs (Oakwood 2000). In recent years populations have been decimated by the Cane Toad *Bufo marinus* due to poisoning when attempting to feed on the species. Declines in coastal lowland areas in north Queensland have occurred subsequent to agricultural and urban development (Maxwell *et al.* 1996; Burnett 1997).

### 5.6.9 Large-eared Horseshoe Bat (large form) *Rhinolophus philippinensis macros*

Status: NC Act Endangered; EPBC Act Endangered.

This species was not recorded in either the 2006 or 2008 surveys and there is no database record for the region. Very few microchiropteran bats are known from the local area. This is likely to be the results of low survey effort rather than the absence of this group. There is much suitable habitat and it is considered possible the species occurs in the study area.

Ecology and Habitat: Large-eared Horseshoe Bats occur in a variety of tropical habitats including rainforest, gallery forest, eucalypt woodlands and melaleuca forests (Churchill 1998). Their diet is dominated by moths and beetles and they have been observed foraging in rainforest gaps including roads and tracks (Pavey and Kutt 2008).

They have been recorded roosting in caves and disused mines in small colonies of up to six individuals. They generally prefer to roost alone at a minimum of 30 cm between individuals. Observations and captures of individuals well away from cave/mine areas indicate the species will also roost in other locations such as dense vegetation and tree hollows (Churchill 1998).

Distribution and Breeding: The species occurs in a broad coastal strip from Townsville north to Iron Range on Cape York Peninsula, and may also be found further inland where suitable cave systems exist such as Chillagoe (Pavey and Kutt 2008).

Breeding habits are not well known, although it is thought that single young are generally born in October/November (Churchill 1998).

Threats: Major threats probably include loss of foraging habitat from coastal development and roost disturbance, particularly in the southern part of their range (Duncan *et al.* 1999).

### 5.6.10 Semon's Leafnosed-Bat *Hipposideros semoni*

Status: NC Act Endangered; EPBC Act Endangered.

This little known species was not recorded in either the 2006 or 2008 surveys and there is no database record for the region. However, there is much suitable habitat and it is considered possible the species occurs in the study area.

**Ecology and Habitat:** This species occurs in a variety of tropical habitats including rainforest, monsoon forest and open savanna woodlands. It is known to eat moths, foraging close to the forest floor and often in groups (Churchill 1998). The species is known to roost in disused mines, caves, rocky overhangs and cracks, generally as solitary individuals (Hall 2008). However they are also thought to utilise tree roosts and have also been found roosting in unusual places such as a car door handle, an oven, and a picture rail in a disused house (Churchill 1998).

**Distribution and Breeding:** The species occurs in a broad coastal strip in north Queensland and an isolated population exists at Kroombit Tops, south of Gladstone. Breeding habits are not well known, although pregnant females have been captured in October (Churchill 1998).

**Threats:** Major threats probably include loss of foraging habitat from coastal development and roost disturbance, particularly in the southern part of their range (Duncan *et al.* 1999).

## 5.7 AQUATIC VERTEBRATE SPECIES

In total nine fish species were recorded during the 2006 and 2008 surveys. Two species were common throughout the study area on both surveys: Jungle Perch *Kuhlia rupestris* and the Empire Gudgeon *Hyseleoteris compressa*. All other species were recorded in one or two sites only and include: Marbled Eel *Anguilla reinhardtii* (R3 and Target site 2); Cairns Rainbowfish *Cairnsichthys rhombosomoides* (Target sites 2 and 4); McCulloch's Rainbowfish *Melanotaenia maccullochi* (T1 and Target site2); Eastern Rainbowfish *Melanotaenia splendida splendida* (T1 and Target site2); Pacific Blue-eye *Pseudomugil signifier* (R4); Spangled Perch *Leiopotherapan unicolor* (Target site 2); and Greenback Gauvinia *Bunaka gyronoides* (R3).

None of these species is listed under Commonwealth or State legislation, however the Cairns Rainbowfish is listed on the IUCN Red List (2006 Red List of Threatened Species) as Vulnerable because of its restricted distribution and uncommon occurrence.

## 5.8 FERAL TERRESTRIAL VERTEBRATE SPECIES

The feral terrestrial vertebrate species noted during the survey and from database searches are listed in **Table 5.6**. Two of these species are recognised as Class 2 pests under the *Lands Protection (Pest and Stock Route Management) Act 2002* (LP Act).

Under the LP Act, a Class 2 pest is one that "is established in Queensland and has, or could have a substantial adverse economic, environmental, or social impact. The management of these pests requires co-ordination and they are subject to local government-, community or landowner-led programs. Landowners must take reasonable steps to keep land free from Class 2 pests."

**Table 5.6. Feral Terrestrial Vertebrate Species Records**

<b>Zoological Name</b>	<b>Common Name</b>	<b>LPA Status</b>
<i>Bufo marinus</i>	Cane Toad	
<i>Hemidactylus frenatus</i>	House Gecko	
<i>Lepidodactylus lugubris</i>	Mourning Gecko	
<i>Acridotheres tristis</i>	Common Myna	
<i>Passer domesticus</i>	House Sparrow	
<i>Lonchura punctulata</i>	Nutmeg Mannikin	
<i>Oryctolagus cuniculus</i>	Rabbit	Class 2
<i>Sus scrofa</i>	Pig	Class 2

Most of these species are commonly found in north-east Queensland. However a rabbit was recorded in the 2008 survey and this species is not noted to occur in coastal areas in the region.

## 5.9 HABITAT VALUES FOR TERRESTRIAL VERTEBRATE SPECIES

The habitat values for the study area are discussed under six broad categories. To some degree these categories reflect differences in fauna assemblages and are largely structural, rather than being based on vegetation species composition. Woodlands, for example, encompass a number of RE types, the differences of which are not readily



identifiable in terms of the fauna that utilise woodland resources.

- (i) Lowland Rainforest on lower slopes/amphibolites and alluvial plains;
- (ii) Coastal Scrub/Vine Forest;
- (iii) Creeklines;
- (iv) Coastal Wetlands/Lagoons;
- (v) Shoreline/Beach; and
- (vi) Grasslands/Pasture.

#### **5.9.1 Lowland Rainforest on lower slopes/amphibolites and alluvial plains**

Although these habitats occur on quite different substrates they are structurally similar and contain a similar species assemblage, so here they are considered together.



**Photo 5: Rainforest at trap site T3, Ella Bay November 2008**

Other than open pasture this is the dominant habitat type in the study area and was the habitat in which the majority of fauna trapping was conducted. Rainforests in the area have a tall multi-layered canopy with a diverse range of canopy species, often with emergent fig trees. The understorey layer would usually be sparse and relatively open, however the area was severely affected by cyclone Larry in 2006. As a result, rainforests in the area have a patchy canopy layer and the understorey is extremely dense in places where the canopy has been opened up, allowing increased light penetration.

Only four of the native frog species recorded were found in this habitat, however it is likely that other species present locally would utilise

rainforest for foraging. For example, many species often recorded at creeklines, including conservation significant species such as New Guinea Tree Frog and Inelegant Frog, are known to forage significant distances away from creeks.

Eleven species of reptile were recorded in this habitat, from an overall survey total of 16 species. Eight of these species were only caught in rainforest or rainforest adjacent to creeklines. Although this may be a result of sampling bias, it is likely many of these species are dependent on this habitat due to its dominance of the natural landscape locally. This is likely a result of abundant micro-habitat (woody debris and rocky slopes) and foraging resources. One reptile species recorded in this habitat is conservation significant, the Yellow-blotched Forest-Skink. The Limbless Snake-tooth Skink, also conservation significant, has not been recorded from the area but is considered likely to occur. This species is extremely cryptic and may easily remain undetected. In the lowlands both of these species are only found in rainforest.

Many of the bird species recorded during the 2006 and 2008 surveys for the study area regularly occur in, or are dependent on, this habitat type. This is largely a result of abundant food resources in the form of rainforest fruits (for pigeon species, Metallic Starling *Aplonis metallica* and Figbird *Sphecotheres vieilloti*), invertebrates (for monarch, scrubwren and gerygone species, Rufous Fantail,) and nectar (for honeyeater species and Olive-backed Sunbird *Cinnyris jugularis*).

Four of the recorded bird species are considered conservation significant: Southern Cassowary; Grey Goshawk; Macleay's Fig-Parrot; and Rufous Owl. All of these species are at least partly dependent on this habitat, but Southern Cassowary in particular is heavily dependent on rainforest fruits for its diet. Three small, insectivorous bird species considered to be Migratory under the EPBC Act were also recorded in this habitat: Spectacled Monarch, Black-faced Monarch and Rufous Fantail.

Eleven mammal species were recorded in this habitat type, with rodents being particularly common. One recorded species, the Spectacled Flying-fox, is considered Vulnerable under the EPBC Act. This species is dependent on this habitat, as it is known to feed on a wide range of rainforest fruits. A single Short-beaked Echidna was also

observed on a rainforest track. This species is considered Culturally Significant under the NC Act but could occur in any habitat present, including pasture. Two conservation significant insectivorous bat species, Large-eared Horseshoe Bat and Semon's Leafnosed Bat, have not been recorded previously but may also occur in this habitat in the study area.

Overall, this habitat within the study area is providing good resources for frogs, reptiles, birds and both arboreal and terrestrial mammals. Leaf litter is generally scarce, but abundant fallen timber, dense vegetation and a wide range of forage types are providing valuable resources for a range of taxa.

### 5.9.2 Coastal Scrub/Vine Forest

This habitat occupies a narrow strip along the eastern boundary of the resort development site between the shoreline and adjacent habitat. This habitat is less complex than nearby rainforest habitat with little understorey and less woody debris. One trapping site was located in this habitat. As a result the recorded species assemblage is a depauperate subset of those found in adjacent habitats.



**Photo 6: Coastal scrub at trap site T1, Ella Bay November 2008**

One frog species and two reptile species were observed in this habitat, none of which is conservation significant. This is almost certainly an underestimation of the species assemblage that utilise this habitat for either taxa. Habitat values may be less suitable than adjacent habitats as there are less sheltering and foraging opportunities. However, it is likely a range of frog and reptile species utilise this habitat at times, particularly in the wet season when seasonal inundation of adjacent wetland habitats may increase frog activity.

The bird species assemblage recorded in this habitat was largely a subset of that recorded in rainforest habitat. This included the conservation significant Macleay's Fig-Parrot.

Ten native mammal species were recorded in this habitat type. This included two rodent species, Agile Wallaby *Macropus agilis*, Long-nosed Bandicoot *Perameles nasuta* and six species of micro-bat, four of which were not recorded elsewhere in the study area. Unidentified calls of a Sheathtail Bat, *Taphozous* species, were recorded in this habitat (see **Section 5.4.14**). One of these species, Coastal Sheathtail Bat is listed as conservation significant and is known to forage in coastal vegetation.

Overall, this habitat provides limited resources and shelter for fauna compared to adjacent rainforest. However, the comparative openness of the understorey and the number of recorded micro-bat species may indicate this habitat is an important foraging area for local micro-bat populations.

### 5.9.3 Creeklines

The study area encompasses several rainforested creeklines on the resort development site and the access road. All creeks were flowing at the time of the November 2008 survey and it is likely flow would be continual throughout the year, except during prolonged dry periods. Two creeks were chosen for a systematic survey (i.e. trapping), and four creek sites were also chosen as target sites. Harp trapping for microbats was conducted over a creekline at trap site T2.



**Photo 7: Harp traps on creekline at trap site T2, Ella Bay November 2008**

Nine of the 12 recorded frog species were located along creeklines from the study area. This includes two conservation significant species dependent on creeks for breeding



purposes; the Common M1st Frog and New Guinea Tree Frog. Another species of conservation significance, Australian Lacelid, is also considered likely to occur. The Inelegant Frog was located calling from creekline habitat adjacent to the access road. This species, however, is not dependent on creeks for breeding.

Freshwater turtle species such as Saw-shelled Turtle *Elseya latisternum* are expected to utilise larger pools in lowland areas on the study site. Other reptile species may forage on the banks of creeks, for example Water Dragon *Physignathus lesueurii* was recorded at the water's edge of one creek.

An important function of rivers and creeks is as corridors (Naiman *et al.* 1993), particularly in a degraded landscape, but riparian vegetation also allows some fauna species to extend their distributions into otherwise unsuitable areas (Woinarski *et al.* 2000). Riparian vegetation is often more susceptible to the impacts of grazing by livestock (e.g. Martin and McIntyre 2007) and weed invasion (Hancock *et al.* 1996) than other nearby habitats. Indeed, riparian corridors may be the component within an ecosystem most sensitive to environmental change and effective management of the riparian zone may ameliorate many land use issues (Naiman *et al.* 1993).

The recorded bird species assemblage is similar to that found in rainforest habitat, although recorded species such as Azure Kingfisher *Ceyx azurea* and Shining Flycatcher *Myiagra alecto* are associated with waterbodies. Wider creeklines may also serve as foraging areas for bird predators such as cormorant and heron species.

Sections of creek with overhanging vegetation act as flyways for foraging micro-bats though activity patterns will vary with season and flying insect activity. Large-footed Myotis *Myotis macropus* were caught on a creekline at Trap site T2. This species is known to commonly forage from water. An additional three micro-bat species were recorded by Anabat from the same site.

Riparian vegetation on the resort development site varies in width and in some areas is subject to substantial weed invasion. It would, however, still serve as a route by which species traverse the landscape, and provides sufficient habitat for rainforest species unable to survive in adjacent pasture areas. Seven mammal species were recorded in this habitat including Cape York Rat *Rattus leucopus* and

the arboreal Striped Possum *Dactylopsila trivirgatus*, both of which would extend into other wooded habitats. The creeks provide important shelter and watering sites for Agile Wallabies on the site. The creeks would also provide habitat for amphibious mammal species, such as the Water Rat *Hydromys chrysogaster*.

#### 5.9.4 Coastal Wetlands/Lagoons

The study area encompasses ephemeral and permanent coastal wetlands. A large permanent coastal wetland is located adjacent to the eastern side of the access road and north of the fish farm. One systematic trapping site (R2) was placed in rainforest opposite this area and some captures reflected its proximity. The eastern portion of the resort development site contains a large seasonal wetland, much of which was dry at the time of the November 2008 survey. A large permanent coastal lagoon is also located in the north-east corner of the development site. No trapping was conducted at these sites, however the coastal lagoon was chosen as a target site (5), specifically for the Saltwater Crocodile.



**Photo 8: Ephemeral coastal wetland near trap site T1, Ella bay November 2008**

No frogs were recorded from this habitat, however it is likely that Wood Frog *Rana daemeli* utilises this habitat during suitable conditions. Two reptile species were recorded that are associated with this habitat. Signs indicating the presence of Saltwater Crocodile were observed at the lagoon in the north-east of the site. Local contacts suggest this site and the permanent wetland north of the fish farm are regularly utilised by this species. Freshwater Snake *Tropidonophis mairii* was trapped in habitat adjacent to the wetland north of the fish farm. Other generalist reptile species may forage on the banks of

wetlands/lagoons, such as Lace Monitor *Varanus varius*.

A number of bird species were recorded in association with this habitat including kingfisher species and Shining Flycatchers. Larger waterbodies also serve as important foraging areas for several bird predators such as White-bellied Sea-Eagle, Osprey and cormorant and heron species. One White-bellied Sea-Eagle was observed at Target site 5.

Few mammals are reliant on this habitat apart from for watering purposes. Abundant evidence of Agile Wallaby use was observed at the lagoon. Water Rat was trapped at trap site R2, adjacent to a permanent wetland. This species is largely amphibious and reliant on waterbodies for foraging.

### 5.9.5 Shoreline/Beach

The eastern boundary of the resort site development is adjacent to approximately 2.65 km of shoreline. Foredune vegetation is dominated by *Casuarina equisetifolia*.

No frog species was recorded in this habitat and none is expected due to saline conditions. Two reptile species were recorded. One, Supralittoral Shinning-Skink *Cryptoblepharus littoralis*, is restricted to rocky areas subject to tidal influence. A single Saltwater Crocodile was observed near the council picnic ground on Ella Bay Road. Evidence of crocodile use of a coastal lagoon was also detected at the northern end of the resort development site. This species is likely to forage in near-shore waters adjacent to the shoreline. It may use the shoreline directly for basking and crossing into more suitable habitat such as coastal wetland areas.

All marine turtle species are conservation significant and all Australian species may utilise the waters in Ella Bay. Turtle nesting has been recorded along the foreshore (Thorogood, 2009) though successful hatching is unlikely as the shoreline habitat is considered marginal for this purpose due to the lack of open sand above the spring high tide mark and the very limited areas above a typical high tide mark (Hays et al. 1995; Whiting et al. 2007).

Bird species recorded in this habitat during the BAAM surveys were relatively few. The Vulnerable (NC Act) Beach Stone-curlew was recorded in both the 2006 and 2008 surveys. This species would regularly forage in the intertidal zone. The Little Tern, also a

conservation significant species, was not recorded but is known from the area and is also likely to forage along the shoreline at times. This habitat is also suitable foraging habitat for wading birds generally, including conservation significant migratory species, such as sandpipers and plovers.

No mammal species were observed, although tracks of Agile Wallabies were common.

### 5.9.6 Grassland/Pasture

This habitat forms the majority of the resort development and is a result of clearing for previous landuse (cattle grazing). Vegetation is dominated by introduced grasses. Patches of other introduced weed species also occur. No formal trapping was conducted in this habitat, resulting in a low species count dependent on incidental observations.



**Photo 10: Agile Wallabies in pastureland, Ella Bay November 2008**

No native frog or reptile was recorded. The density of the ground cover meant that either taxon was very difficult to record in grassland. It is likely that some species will utilise this habitat at times. This may in particular apply to some species of frogs during the wet season, when pools formed in lower-lying depressions may be utilised for breeding. Snakes and goannas would forage in this habitat.

Birds were a conspicuous component of the fauna assemblage of the grasslands. Cattle Egrets used the grasslands and were relatively common. Smaller species observed included Australian Pipit *Anthus australis*, Golden-headed Cisticola *Cisticola exilis* and Chestnut-breasted Mannikin *Lonchura castaneothorax*. A small flock of the conservation significant Australian Swiftlet was observed foraging over this habitat, however this species is aerial and will forage over a range of habitats including human infrastructure and open water.



Two conservation significant species were not recorded in BAAM surveys but are known from the area and may utilise this habitat at times. The Black-necked Stork and Australian Painted Snipe are wetland species known to utilise ephemeral wetlands and may use the area after high rainfall inundates low-lying areas.

Other than micro-bat species that may forage above the grasslands but roost and breed elsewhere, the mammal assemblage was restricted to the Agile Wallaby, which was present in very high densities during the 2008 survey.

## 5.10 EFFECTS OF CYCLONE LARRY ON HABITAT VALUES

In March of 2006 the study area was damaged by severe tropical cyclone Larry. The cyclone damaged vegetation, particularly of pioneer species and larger trees (Pohlman and Goosem 2007; Bruce *et al.* 2008). Damage to vegetation varied with topography (Metcalf *et al.* 2008) and the high wind intensity overcame the wind protection afforded by forest resulting in similar levels of destruction within forest interiors compared to forest edges (Grimbacher *et al.* 2008). Stream edges, however, suffered more severe damage than in the forest interior due to flood damage and a disproportionate loss of pioneer plant species, which are more common on edges than in interiors (Pohlman and Goosem 2007).

The damage to vegetation altered understorey microclimates with the understoreys becoming brighter, warmer, drier and windier. Such changes have encouraged the growth of pioneer and weed species within the rainforest understorey (Pohlman and Goosem 2007).

After the cyclone frugivorous and omnivorous bird species decreased in abundance but insectivorous species decreased in some locations and increased in others. However, bird communities on the Atherton tablelands took only seven months to recover (Freeman *et al.* 2008). A comparison of bird species at Ella Bay shows only a minor increase in species richness for the areas investigated during both the 2006 and 2008 surveys, i.e. the EBIR site. The slight increase for 2008 may reflect some recovery since the cyclone, although the 2006 surveys were seven months after the cyclone and the bird species assemblages may have recovered during that time as for the Tablelands.

There was also a slight increase from 2006 to 2008 in the species richness of frogs but again this is not considered significant. The number of reptile species, however, increased substantially in 2008. Two of the additional species, *Saproscincus basiliscus* (no common name) and Rainforest Sunskink *Lampropholis coggeri*, are rainforest species and may have suffered declines in abundance when the forest canopy was opened. The other additional species are more generalist and may simply reflect the patchy nature of reptile activity.

An additional two ground-dwelling mammals, Long-nosed Bandicoot *Perameles nasuta* and Northern Brown Bandicoot *Isodon macrourus*, were recorded in 2008. As for the rainforest skinks, these two species may have suffered population declines as a result of the vegetation damage. One arboreal mammal, Striped Possum *Dactylopsila trivirgata*, was added to the species list in 2008 but this species is difficult to record and is likely to have been present in 2006, particularly as it is largely insectivorous.

Overall there was a notable increase in Spectacled Flying-fox activity in the Ella Bay area from 2006 to 2008. Shilton *et al.* (2008) found that after cyclone Larry Spectacled Flying-foxes roosted in smaller camps, probably to locate blossom and fruit, and hence dispersed across the landscape. There is no evidence that the cyclone caused significant direct mortality but 90% of the known population was unaccounted for six months after the cyclone. Records from Ella Bay are consistent with a return to the camp in Innisfail since 2006.

In terms of habitat values for vertebrates the shoreline/beach, grasslands/pasture and coastal wetlands/lagoon habitats at Ella Bay probably suffered little from the cyclone. Coastal scrub/vine forest and creeklines may have been impacted to some degree but the greatest impact would have been in the lowland rainforest. Nonetheless it appears that the rainforest has recovered reasonably well from the damage, particularly in terms of providing resources for conservation significant fauna as demonstrated by the numbers of such species recorded during the surveys.



### **5.11 MOVEMENT OPPORTUNITIES FOR TERRESTRIAL VERTEBRATE SPECIES**

The resort development site is located within a coastal enclave, bound to the north, west and south by the Seymour Range which intersects with the coastline at Cooper Point to the north and Heath Point to the south. The site is also bound by Ella Bay National Park to the immediate north, west and south. The Seymour Range encompasses the last remaining lowland rainforest in the area.

The largely cleared nature of this section of the study area reduces the likelihood of its contribution to local fauna corridor values. However corridors of riparian vegetation facilitate the movement of some species between larger, intact patches of vegetation in the south and west to coastal vegetation in the east. The riparian vegetation traversing the development site is used by a range of species. Macropods, bandicoots, rodents, bats, possums and birds in particular are likely to move through these areas. Several species were observed moving along riparian habitats suggesting these vegetation strips are in fact utilised by local populations.

The Ella Bay access road divides extensive rainforest in Ella Bay National Park from habitat patches directly to the north and south of the fish farm and east of the access road. At present the access road provides little barrier to movement of most species between these patches. Several reptile species were observed crossing the access road during the November 2008 survey, as well as macropods. Trapping also suggested that Water Rat crossed the road and Southern Cassowary scats show that this species utilised the road for movement during the survey period.

Management Actions: The upgrade of the section of existing access road will involve widening the road and clearing of roadside vegetation, including 0.66 ha of Ella Bay National Park. The road design includes 3 significant underpasses and an overpass to allow safe passage of cassowaries and other fauna between habitat patches. One underpass is proposed for the section of road between Flying Fish Point and the fish farm and two other underpasses are proposed to the north at the two creek crossings with high level bridges. The overpass will be formed by the tunnel cover of the Flying Fish Bypass section of the road. Much of the road is proposed to be fenced in order to 'funnel' fauna to crossing points.

Four purpose built small fauna underpasses will be located along the road over ephemeral creek crossings and drainage lines. The small fauna crossings will aid safe passage for macropods, understorey and ground dwelling amphibious and aquatic fauna.

## 6.0 BIBLIOGRAPHY

**3D Environmental (2008).** 'Supplementary Vegetation Survey Report: Ella Bay Integrated Resort Project.' Unpublished report prepared for Satori Resorts.

**Alford, R. (2010).** 'The host-pathogen biology of the amphibian chytrid skin fungus, *Batrachochytrium dendrobatidis*, and its implications for work proposed to be carried out at Ella Bay, Queensland.' Unpublished report for Satori Resorts.

**Allen, GR, Midgley, SH and Allen, M (2002).** *Field Guide to the Freshwater Fishes of Australia*. Western Australian Museum, Perth.

**Augee, ML (2008).** 'Short-beaked Echidna.' In: S. Van Dyck and R. Strahan (eds.), *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. pp. 37-39.

**Augee, ML, Carrick, FN, Grant, TR and Temple-Smith, PD (2008).** 'Order Monotremata Platypus and Echidnas' In: S. Van Dyck and R. Strahan (eds.), *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. pp. 30-31.

**BAAM (2006).** 'Terrestrial and Freshwater Fauna Assessment – Ella Bay Integrated Resort Development' unpublished report for Satori Resorts Pty Ltd.

**Barker, J, Grigg, GC and Tyler, MJ (1995).** *A field guide to Australian frogs*. Surrey Beatty and Sons, Sydney.

**Barker, RD and Vestjens, WJM (1989).** *The food of Australian birds, volume 1, Non-passerines*. CSIRO Division of Wildlife and Ecology, Melbourne.

**Berger, L, Speare, R and Hyatt, AD (1999).** 'Chytrid fungi and amphibian declines: overview, implications and future directions.' In A. Campbell (ed.), *Declines and Disappearances of Australian frogs*. Environment Australia, Canberra. pp. 23-33.

**Beruldsen, G (2003).** *Australian birds, their nests and eggs*. Phoenix Offset, China.

**Braby, MF (2000).** *The Butterflies of Australia: their identification, biology and distribution*. CSIRO Publishing, Collingwood.

**Brisbane Courier (1903).** 'Agriculture in the North, Ella Bay and The Tully River' Friday 16 October 1903 p5.

**Bruce, C, Kroon, F, Sydes, D and Ford, A (2008).** 'Cyclone damage sustained by riparian vegetation sites in the Tully-Murray floodplain, Queensland, Australia.' *Austral Ecology*, **33**: 516-524.

**Burnett, S (1997).** 'Colonizing cane toads cause population declines in native predators: reliable anecdotal information and management implications.' *Pacific Conservation Biology*, **3**: 65-72.

**Berger, L, Speare, R, Dasak, P, Green, DE, Cunningham, AA, Goggin, CL, Slocombe, R, Ragan, MA, Hyatt, AD, McDonald, KR, Hines, HB, Lips, KR, Marantelli, G and Parkes, H (1998).** Chytridiomycosis causes amphibian mortality associated with population declines in the rainforests of Australia and Central America. *Proceedings of the National Academy of Science USA*, **95**: 9031-9036.

**Churchill, S (1998).** *Australian bats*. Reed New Holland, Sydney.

**Clancy, GP (1986).** 'Observations of nesting Beach Thick-knees *Burhinus neglectus* at Red Rock, New South Wales.' *Corella*, **10**: 114-118.

**Debus, S (1998).** *The birds of prey of Australia: a field guide to Australian raptors*. Oxford University Press, Melbourne.

**Dennis, A and Trenerry, M (1984).** 'Observations on species diversity and habitat compartmentalisation of the frogs of Mt Lewis rainforests, North Queensland.' *North Queensland Naturalist*, **52**: 2-9.

**Dorfman, EJ, Lamont, A and Dickman, CR (2001).** 'Foraging behaviour and success of Black-necked Storks (*Ephippiorhynchus asiaticus*) in Australia: implications for management.' *Emu*, **101**: 145-149.

- Duncan, A, Barker, GB and Montgomery, N (1999).** *The action plan for Australian bats.* Environment Australia, Canberra.
- Ehmann, H (ed.) (1992).** *Encyclopedia of Australian animals: reptiles.* Angus and Robertson, Sydney.
- Ella Bay (2009).** Ella Bay Cassowary Water Survey October 2009. Unpublished report by Satori Resorts.
- Environment Australia (2003).** 'The recovery plan for marine turtles in Australia.' Environment Australia, Canberra.
- EPA (2001).** 'Recovery plan for the stream-dwelling rainforest frogs of the Wet Tropics biogeographic region of north-east Queensland 2000-2004.' Report to Environment Australia, Canberra. Queensland Parks and Wildlife Service, Brisbane.
- EPA (2003).** 'Wet Tropical Coast Regional Coastal management Plan.' Environmental Protection Agency. December 2003.
- EPA (2007).** 'Nature conservation (Estuarine Crocodile) plan 2007 and management program 2007-2017.' Environmental Protection Agency, Brisbane.
- EPA (2008).** 'WildNet database.' Queensland Environmental Protection Agency, Southern Region, Brisbane. Nov 2008.
- Estbergs, JA and Braithwaite, RW (1985).** 'The diet of the Rufous Owl *Ninox rufa* near Cooina in the Northern Territory.' *Emu*, **85**: 202-205.
- Forshaw, JM (2002).** *Australian Parrots.* Avi-Trader Publishing, Robina Town Centre.
- Freeman, AND (2003).** 'The distribution of Beach Stone-curlews and their response to disturbance on far north Queensland's Wet Tropical Coast.' *Emu*, **103**: 369-372.
- Freeman, AND, Pias, K and Vinson, M (2008).** 'The impact of tropical cyclone Larry on bird communities in fragments of the endangered rainforest type 5b.' *Austral Ecology*, **33**: 532-540.
- Fukuda, Y, Whitehead, P and Boggs, G (2007).** 'Broad-scale environmental influences on the abundance of saltwater crocodiles (*Crocodylus porosus*) in Australia.' *Wildlife Research*, **34**: 167-176.
- Garnett, ST and Crowley, GM (2000).** *The action plan for Australian birds.* Environment Australia, Canberra.
- GBRMPA (2009).** 'Marine Turtle Species Descriptions'. Great Barrier Reef Marine Park Authority Website [www.gbrmpa.gov.au/corp\\_site/key\\_issues/conservation/natural\\_values/marine\\_turtles/marine\\_turtle/species/descriptions#](http://www.gbrmpa.gov.au/corp_site/key_issues/conservation/natural_values/marine_turtles/marine_turtle/species/descriptions#). Accessed February 2009.
- Geering, A, Agnew, L and Harding, S (2007).** *Shorebirds of Australia.* CSIRO Publishing, Collingwood.
- Grimbacher, PS, Catterall, CP and Stork, NE (2008).** 'Do edge effects increase the susceptibility of rainforest fragments to structural damage resulting from a severe tropical cyclone?.' *Austral Ecology*, **33**: 525-531.
- Hall, LS (2008).** 'Semon's Leaf-nosed Bat.' In: S. Van Dyck and R. Strahan (eds.), *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. pp. 465-466.
- Hancock, CN, Ladd, PG and Froend, RH (1996).** 'Biodiversity and management of riparian vegetation in Western Australia.' *Forest Ecology and Management*, **85**: 239-250.
- Hays, GC, Mackay, A, Adams, CR, Mortimer, JA, Speakman, JR and Boerema, M (1995).** 'Nest site selection by sea turtles. *Journal of Marine Biology Ass UK*, **75**: 667-674.
- Higgins, PJ (ed.) (1999).** *Handbook of Australian, New Zealand and Antarctic birds, Volume 4, Parrots to dollarbird.* Oxford University Press, Melbourne.
- Higgins, PJ and Davies, SJF (eds.) (1996).** *Handbook of Australian, New Zealand and Antarctic birds, Volume 3, Snipe to pigeons.* Oxford University Press, Melbourne.

- Higgins, PJ, Peter, JM and Cowling, SJ (eds.) (2006).** *Handbook of Australian, New Zealand and Antarctic birds Volume 7, Boatbills to starlings, Part B, Dunnock to starlings.* Oxford University Press, Melbourne.
- Hodgkinson, S and Hero, JM (2003).** 'Seasonal, sexual and ontogenic variations in the diet of the 'declining' frogs *Litoria nannotis*, *Litoria rheocola* and *Nyctimystes dayi*.' *Wildlife Research*, **30**: 345-354.
- Hoskin, CJ (2007).** 'Description, biology and conservation of a new species of Australian tree frog (Amphibia: Anura: Hylidae: *Litoria*) and an assessment of the remaining populations of *Litoria genimaculata* Horst 1883: systematic and conservation implications of an unusual speciation event.' *Biological Journal of the Linnean Society*, **91**: 549-563.
- Hoskin, C and Hero, JM (2008).** *Rainforest Frogs of the Wet Tropics north-east Australia.* Griffith University, Gold Coast.
- Ingram, GJ and McDonald, KR (1993).** 'An update on the decline of Queensland's frogs.' In Lunney, D. and Ayers, D. (eds.) *Herpetology in Australia: a diverse discipline.* Surrey Beatty and Sons, Chipping Norton. pp. 297-303.
- Kanowski, J (1998).** 'The abundance of the Rufous Owl in upland and highland rainforests in north-east Queensland.' *Emu*, **98**: 58-61.
- Liem, DS (1974).** 'A review of the *Litoria nannotis* species group and a description of a new species of *Litoria* from north-east Queensland.' *Memoirs of the Queensland Museum*, **17**: 151-168.
- Marchant, S and Higgins, PJ (eds.) (1990).** *Handbook of Australian, New Zealand and Antarctic birds, Volume 1, Ratites to Ducks, Part B Australian pelican to ducks.* Oxford University Press, Melbourne.
- Marchant, S and Higgins, PJ (eds.) (1993).** *Handbook of Australian, New Zealand and Antarctic birds, Volume 2, Raptors to lapwings.* Oxford University Press, Melbourne.
- Martin, TG and McIntyre, S (2007).** 'Impacts of livestock grazing and tree clearing on birds of woodland and riparian habitats.' *Conservation Biology*, **21**: 504-514.
- Maxwell, S, Burbidge, AA and Morris, K (1996).** *The action plan for Australian marsupials and monotremes.* Wildlife Australia, Canberra.
- McDonald, K and Alford, R (1999).** 'Review of declining frogs in northern Queensland.' In A Campbell (ed.) *Decline and disappearances of Australian frogs*. Environment Australia, Canberra. pp. 14-22.
- Menkhorst, PW and Knight, F (2004).** *A field guide to the mammals of Australia.* Oxford University Press, Melbourne.
- Metcalfe, DJ, Bradford, MG and Ford, AJ (2008).** 'Cyclone damage to tropical rain forests: species- and community-level impacts.' *Austral Ecology*, **33**: 432-441.
- Naiman, RJ, Décamps, H and Pollock, M (1993).** 'The role of riparian corridors in maintaining regional biodiversity.' *Ecological Applications*, **3**: 209-212.
- NPWS (2002).** *Threatened species of the upper north coast of New South Wales: fauna.* NSW Parks and Wildlife Service, Coffs Harbour.
- NRW (2006).** 'Regional Vegetation Management Code for Coastal Bioregions.' Department of Natural Resources and Water, Brisbane. November 2006.
- Oakwood, M. (2000).** 'Reproduction and demography of the northern quoll, *Dasyurus hallucatus*, in the lowland savanna of northern Australia.' *Australian Journal of Zoology*, **48**: 519-539.
- Oakwood, M. (2002).** 'Spatial and social organisation of a carnivorous marsupial, *Dasyurus hallucatus* (Marsupiala: Dasyuridae).' *Journal of Zoology. (Lond.)*, **257**: 237-248.
- Oakwood, M. (2008).** 'Northern Quoll.' In: S Van Dyck and R Strahan (eds.), *The mammals of Australia.* Reed New Holland, Sydney. pp. 57-59.



- Olsen, P. (1998).** 'Australia's raptors: diurnal birds of prey and owls.' Supplement to *Wingspan*, **8**: I-XVI.
- Olsen, PD and Olsen, J (1985).** 'A natural hybridization of the Brown Goshawk *Accipiter fasciatus* and Grey Goshawk *Accipiter novaehollandiae* in Australia, and a comparison of the two species.' *Emu*, **85**: 250-257.
- Pavey, CR and Kutt, AS (2008).** 'Large-eared Horseshoe Bat.' In: S Van Dyck and R Strahan (eds.), *The mammals of Australia*. Reed New Holland, Sydney. pp. 454-456.
- Pizzey, G and Knight, F (2003).** *The field guide to the birds of Australia*. HarperCollins, Sydney.
- Pohlman, CL and Goosem, M (2007).** 'The effects of severe tropical cyclone Larry on rainforest vegetation and understorey microclimate adjacent to powerlines, highways and streams in the Wet Tropics World Heritage Area.' Report to the Marine and Tropical Sciences Research Facility. Reef and Rainforest Research Centre Limited, Cairns.
- Pohlman, CL, Goosem, M and Turton, SM (2008).** 'Effects of severe tropical cyclone Larry on rainforest vegetation and understorey microclimate near a road, powerline and stream.' *Austral Ecology*, **33**: 503-515.
- Pringle, JD (1985).** *The waterbirds of Australia: the national photographic index of Australian wildlife*. Angus and Robertson, North Ryde.
- Read, MA, Miller, JD, Bell, IP and Felton, A (2004).** 'The distribution and abundance of the estuarine crocodile, *Crocodylus porosus*, in Queensland.' *Wildlife Research*, **31**: 527-534.
- Richards, SJ and Alford, RA (2005).** 'Structure and dynamics of a rainforest frog (*Litoria genimaculata*) population in northern Queensland.' *Australian Journal of Zoology*, **53**: 229-236.
- Richards, GC, Spencer, HJ and Fox, S (2008).** 'Spectacled Flying-fox.' In: S Van Dyck and R Strahan (eds.), *The mammals of Australia*. Reed New Holland, Sydney. pp. 438-440.
- Rowley, JJJ and Alford, R (2007).** 'Movement patterns and habitat use of rainforest stream frogs in northern Queensland, Australia: implications for extinction vulnerability.' *Wildlife Research*, **34**: 371-378.
- Shilton, LA, Latch, PJ, McKeown, A, Pert, P and Westcott, DA (2008).** 'Landscape-scale redistribution of a highly mobile threatened species, *Pteropus conspicillatus* (Chiroptera, Pteropodidae), in response to tropical cyclone Larry.' *Austral Ecology*, **33**: 549-561.
- Stewart, D (1998a).** 'Rail and bittern call playback surveys – Queensland and NSW.' Nature Sound, Mullumbimby.
- Stewart, D (1998b).** 'Nocturnal bird and mammal calls of north-east New South Wales.' Nature Sound, Mullumbimby.
- Thorogood, J (2009).** 'Ella Bay Integrated Resort Development Marine Turtle Review.' Unpublished report for Satori Resorts.
- Tucker, AD, Limpus, CJ, McCallum, HI and McDonald, KR (1997).** 'Movements and home ranges of *Crocodylus johnstoni* in the Lynd River, Queensland.' *Wildlife Research*, **24**: 379-396.
- Whiting, S.D., Long, J.L., Hadden, K.M., Lauder, A.D.K. and Koch, A.U. (2007).** 'Insights into size, seasonality and biology of a nesting population of the Olive Ridley turtle in northern Australia.' *Wildlife Research*, **34**: 200-210.
- Wilson, S (2005).** *A field guide to reptiles of Queensland*. Reed New Holland, Sydney.
- Wilson, S and Swan, G (2008).** *A complete guide to reptiles of Australia*. Reed New Holland, Sydney.
- Woinarski, JCZ, Brock, C, Armstrong, M, Hempel, C, Cheal, D and Brennan, K (2000).** 'Bird distribution in riparian vegetation in the extensive natural landscape of Australia's tropical savanna: a broad-scale survey and analysis of a distributional data base.' *Journal of Biogeography*, **27**: 843-868.

## **Appendix 1: Terrestrial Vertebrate Species List**

**Ella Bay Project: Species list derived from surveys and database searches****Abbreviations**

**Data Source:** **BAAM 2008** = Data collected by BAAM staff in November 2008; **BAAM 2006** = Data collected by BAAM staff in October 2006; **BA** = Birds Australia New Atlas 1998-2006 database; **QM** = Queensland Museum database; **WN** = Environmental Protection Agency Queensland WildNet database.

**Status:** **EPBC:** E = Endangered; V = Vulnerable; M = Migratory. **NCA:** E = Endangered; V = Vulnerable; R = Rare; S = of Special Concern (Migratory); CS = Cultural Significance; LC = Least Concern; I = Introduced.

Unless otherwise noted, this table follows the nomenclature provided by the CSIRO List of Australian Vertebrates (Clayton *et al.* 2006) as it provides a single point of reference for all terrestrial vertebrate groups. Any notable variations in common and/or scientific names of conservation significant species are identified in the report text and as footnotes hereunder. With the exception of alterations due to subsequent taxonomic revision, species reported by sources other than BAAM are accepted at face value. Fish nomenclature is taken from Allen *et al.* (2002).

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<b>FISH</b>								
ANGUILLIDAE								
<i>Anguilla obscura</i>	Pacific Short-fin Eel			X				
<i>Anguilla reinhardtii</i>	Marbled Eel	X						
MELANOTAENIIDAE								
<i>Cairnsichthys rhombosomoides</i>	Cairns Rainbowfish	X	X					
<i>Melanotaenia maccullochi</i>	McCulloch's Rainbowfish		X					
<i>Melanotaenia splendida splendida</i>	Eastern Rainbowfish		X	X				
PSEUDOMUGILIDAE								
<i>Pseudomugil signifer</i>	Pacific Blue-eye	X		X				
<i>Leiopotherapan unicolor</i>	Spangled Perch	X						
ELEOTRIDAE								
<i>Kuhlia rupestris</i>	Jungle Perch	X	X					
<i>Bunaka gyrinoides</i>	Greenback Gauvinia	X						
<i>Hypseleotris compressus</i>	Empire Gudgeon	X	X	X				
<b>AMPHIBIANS</b>								
MYOBATRACHIDAE								
<i>Limnodynastes peronii</i>	Brown-striped Frog	X	X		X		LC	
HYLIDAE								
<i>Litoria bicolor</i>	Northern Dwarf Tree Frog	X	X		X		LC	
<i>Litoria caerulea</i>	Green Tree Frog			X	X		LC	
<i>Litoria fallax</i>	Eastern Dwarf Tree Frog	X					LC	
<i>Litoria genimaculata</i>	New Guinea Tree Frog	X	X		X		R	
<i>Litoria gracilentia</i>	Dainty Green Tree Frog	X					LC	



Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Litoria inermis</i>	Peter's Frog			X			LC	
<i>Litoria infrafrenata</i>	Giant Tree Frog	X		X	X		LC	
<i>Litoria latopalmata</i>	Broad-palmed Frog			X			LC	
<i>Litoria rheocola</i>	Common Mist Frog	X	X		X		E	E
<i>Litoria rothii</i>	Roth's Tree Frog				X		LC	
<i>Litoria rubella</i>	Desert Tree Frog	X		X			LC	
<i>Litoria wilcoxii</i>	no common name	X					LC	
MICROHYLIDAE								
<i>Cophixalus infacetis</i>	Inelegant Frog	X		X	X		R	
<i>Cophixalus ornatus</i>	Ornate Frog	X	X	X	X		LC	
RANIDAE								
<i>Rana daemeli</i>	Wood Frog	X	X		X		LC	
BUFONIDAE								
<i>Bufo marinus</i>	Cane Toad	X		X			I	
REPTILES								
CROCODYLIDAE								
<i>Crocodylus porosus</i>	Saltwater Crocodile	X		X			V	M
CHELUIDAE								
<i>Elseya latisternum</i>	Saw-shelled Turtle			X			LC	
GEKKONIDAE								
<i>Hemidactylus frenatus</i>	House Gecko	X	X		X		I	
<i>Lepidodactylus lugubris</i>	Mourning Gecko	X					LC	
<i>Saltuarius cornutus</i>	Northern Leaf-tailed Gecko			X			LC	
SCINCIDAE								
<i>Carlia rubrigularis</i>	Red-throated Rainbow-skink	X	X	X	X		LC	
<i>Coeranoscincus frontalis</i>	Limbless Snake-tooth Skink			X			R	
<i>Cryptoblepharus litoralis</i>	Supralittoral Shinning-skink	X		X	X		LC	
<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink	X	X	X	X		LC	
<i>Cyclodomorphus gerrardii</i>	Pink-tongued Skink	X			X		LC	
<i>Egernia frerei</i>	Major Skink	X					LC	
<i>Eulamprus quoyii</i>	Eastern Water-Skink			X			LC	
<i>Eulamprus tigrinus</i>	Yellow-blotched Forest-skink	X		X	X		R	
<i>Glaphyromorphus fuscicaudus</i>	Brown-tailed Bar-lipped Skink			X			LC	
<i>Lampropholis coggeri</i>	Rainforest Sunskink	X		X	X		LC	
<i>Saproscincus basiliscus</i>	no common name	X		X	X		LC	
<i>Saproscincus tetradactylus</i>	Four-fingered Shadaskink				X		LC	
AGAMIDAE								
<i>Hypsilurus boydii</i>	Boyd's Forest Dragon			X	X		LC	
<i>Physignathus lesueurii</i>	Water Dragon	X			X		LC	

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<b>VARANIDAE</b>								
<i>Varanus varius</i>	Lace Monitor	X			X		LC	
<b>BIODAE</b>								
<i>Morelia amthistina</i>	Amethyst Python		X		X		LC	
<b>COLUBRIDAE</b>								
<i>Boiga irregularis</i>	Brown Tree Snake	X			X		LC	
<i>Tropidonophis mairii</i>	Freshwater Snake	X					LC	
<b>ELAPIDAE</b>								
<i>Cryptophis nigrescens</i>	Small-eyed Snake			X			LC	
<b>BIRDS</b>								
<b>CASUARIIDAE</b>								
<i>Casuarus casuarius</i>	Southern Cassowary	X	X	X	X	X	E	E
<b>MEGAPODIIDAE</b>								
<i>Alectura lathami</i>	Australian Brush-turkey					X	LC	
<i>Megapodius reinwardt</i>	Orange-footed Scrubfowl	X	X		X	X	LC	
<b>PHASIANIDAE</b>								
<i>Coturnix ypsilophora</i>	Brown Quail					X	LC	
<b>ANSERANATIDAE</b>								
<i>Anseranas semipalmata</i>	Magpie Goose				X	X	LC	
<b>ANATIDAE</b>								
<i>Dendrocygna eytoni</i>	Plumed Whistling-Duck				X	X	LC	
<i>Dendrocygna arcuata</i>	Wandering Whistling-Duck				X	X	LC	
<i>Malacorhynchus membranaceus</i>	Pink-eared Duck				X	X	LC	
<i>Chenonetta jubata</i>	Australian Wood Duck				X	X	LC	
<i>Nettapus coromandelianus</i>	Cotton Pygmy-goose				X	X	LC	
<i>Nettapus pulchellus</i>	Green Pygmy-goose				X	X	LC	
<i>Anas superciliosa</i>	Pacific Black Duck				X	X	LC	
<i>Anas gracilis</i>	Grey Teal				X	X	LC	
<i>Anas castanea</i>	Chestnut Teal				X		LC	
<i>Aythya australis</i>	Hardhead					X	LC	
<b>PROCELLARIDAE</b>								
<i>Ardenna tenuirostris</i>	Short-tailed Shearwater				X		LC	
<b>PODICIPEDIDAE</b>								
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe					X	LC	
<b>CICONIIDAE</b>								
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork				X	X	R	
<b>THRESKIORNITHIDAE</b>								
<i>Threskiornis molucca</i>	Australian White Ibis		X	X		X	LC	

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Threskiornis spinicollis</i>	Straw-necked Ibis			X		X	LC	
<i>Plegadis falcinellus</i>	Glossy Ibis			X		X	S	M
<i>Platalea regia</i>	Royal Spoonbill			X		X	LC	
<i>Platalea flavipes</i>	Yellow-billed Spoonbill					X	LC	
ARDEIDAE								
<i>Ixobrychus flavicollis</i>	Black Bittern		X		X	X	LC	
<i>Nycticorax caledonicus</i>	Nankeen Night Heron					X	LC	
<i>Butorides striata</i>	Striated Heron					X	LC	
<i>Bubulcus ibis</i>	Cattle Egret	X	X		X	X	S	M
<i>Ardea pacifica</i>	White-necked Heron					X	LC	
<i>Ardea alba</i>	Great Egret				X	X	S	M
<i>Egretta intermedia</i>	Intermediate Egret				X	X	LC	
<i>Egretta novaehollandiae</i>	White-faced Heron				X	X	LC	
<i>Ardea sumatrana</i>	Great-billed Heron					X	LC	
<i>Egretta garzetta</i>	Little Egret				X	X	LC	
<i>Egretta sacra</i>	Eastern Reef Egret	X			X	X	S	M
PELECANIDAE								
<i>Pelecanus conspicillatus</i>	Australian Pelican				X	X	LC	
PHALACROCORACIDAE								
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant				X	X	LC	
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant				X	X	LC	
<i>Phalacrocorax varius</i>	Pied Cormorant				X	X	LC	
<i>Phalacrocorax carbo</i>	Great Cormorant				X	X	LC	
ANHINGIDAE								
<i>Anhinga melanogaster</i>	Darter				X	X	LC	
ACCIPITRIDAE								
<i>Falco cenchroides</i>	Australian Kestrel					X	LC	
<i>Falco longipennis</i>	Australian Hobby					X	LC	
<i>Pandion haliaetus</i>	Osprey	X	X		X	X	S	M
<i>Aviceda subcristata</i>	Pacific Baza	X	X		X	X	LC	
<i>Elanus axillaris</i>	Black-shouldered Kite					X	LC	
<i>Milvus migrans</i>	Black Kite				X	X	LC	
<i>Haliastur sphenurus</i>	Whistling Kite		X		X	X	LC	
<i>Haliastur indus</i>	Brahminy Kite	X			X	X	LC	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	X	X		X	X	S	M
<i>Circus approximans</i>	Swamp Harrier				X	X	LC	
<i>Accipiter novaehollandiae</i>	Grey Goshawk	X	X		X	X	R	
<i>Accipiter fasciatus</i>	Brown Goshawk					X	LC	
<i>Accipiter cirrhocephalus</i>	Collared Sparrowhawk					X	LC	



Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<b>RALLIDAE</b>								
<i>Rallina tricolor</i>	Red-necked Crake				X	X	LC	
<i>Gallirallus phillippensis</i>	Buff-banded Rail					X	LC	
<i>Amaurornis olivaceus</i>	Bush-hen			X	X	X	LC	
<i>Porzana pusilla</i>	Baillon's Crake				X		LC	
<i>Porzana cinerea</i>	White-browed Crake					X	LC	
<i>Porphyrio porphyrio</i>	Purple Swamphen				X	X	LC	
<i>Gallinula tenebrosa</i>	Dusky Moorhen					X	LC	
<i>Fulica atra</i>	Eurasian Coot					X	LC	
<b>GRUIDAE</b>								
<i>Grus rubicunda</i>	Brolga					X	LC	
<b>BURHINIDAE</b>								
<i>Burhinus grallarius</i>	Bush Stone-curlew	X				X	LC	
<i>Esacus magnirostris</i>	Beach Stone-curlew	X	X		X	X	V	
<b>HAEMATOPODIDAE</b>								
<i>Haematopus longirostris</i>	Pied Oystercatcher	X			X		LC	
<b>RECURVIROSTRIDAE</b>								
<i>Himantopus himantopus</i>	Black-winged Stilt				X	X	LC	
<b>CHARADRIIDAE</b>								
<i>Vanellus miles</i>	Masked Lapwing	X	X		X	X	LC	
<i>Erythrogonys cinctus</i>	Red-kneed Dotterel					X	LC	
<i>Charadrius ruficapillus</i>	Red-capped Plover				X	X	LC	
<i>Charadrius mongolus</i>	Lesser Sand Plover				X	X	LC	
<i>Charadrius leschenaultii</i>	Greater Sand Plover				X		LC	
<i>Elseyornis melanops</i>	Black-fronted Dotterel				X	X	LC	
<b>JACANIDAE</b>								
<i>Irediparra galinacea</i>	Comb-crested Jacana				X	X	LC	
<b>SCOLOPACIDAE</b>								
<i>Gallinago hardwickii</i>	Latham's Snipe			X		X	S	M
<i>Numenius phaeopus</i>	Whimbrel				X	X	S	M
<i>Tringa nebularia</i>	Common Greenshank				X	X	S	M
<i>Heteroscelus brevipes</i>	Grey-tailed Tattler				X	X	S	M
<b>LARIDAE</b>								
<i>Sterna bergii</i>	Crested Tern		X		X	X	S	M
<i>Sterna hirundo</i>	Common Tern				X		S	M
<i>Sterna albifrons</i>	Little Tern				X		E	M
<i>Chlidonius hybrida</i>	Whiskered Tern				X	X	LC	
<b>COLUMBIDAE</b>								
<i>Columba leucomela</i>	White-headed Pigeon					X	LC	

---

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<b>APODIDAE</b>								
<i>Aerodramus terraereginae</i>	Australian Swiftlet	X			X	X	R	
<i>Hirundapus caudacutus</i>	White-throated Needletail				X	X	S	M
<i>Apus pacificus</i>	Fork-tailed Swift				X	X	S	M
<b>CORACIIDAE</b>								
<i>Euryostomus orientalis</i>	Dollarbird	X	X		X	X	LC	
<b>ALCEDINIDAE</b>								
<i>Tanysiptera sylvia</i>	Buff-breasted Paradise-Kingfisher	X				X	LC	
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	X	X		X	X	LC	
<i>Dacelo leachii</i>	Blue-winged Kookaburra	X				X	LC	
<i>Todiramphus macleayii</i>	Forest Kingfisher	X	X		X	X	LC	
<i>Todiramphus chloris</i>	Collared Kingfisher				X	X	LC	
<i>Todiramphus sanctus</i>	Sacred Kingfisher	X		X	X	X	LC	
<i>Todiramphus pyrrhopygia</i>	Red-backed Kingfisher					X	LC	
<i>Alcedo azurea</i>	Azure Kingfisher	X	X	X	X	X	LC	
<i>Alcedo pusilla</i>	Little Kingfisher			X		X	LC	
<b>MEROPIIDAE</b>								
<i>Merops ornatus</i>	Rainbow Bee-eater	X	X		X	X	S	M
<b>PITTIDAE</b>								
<i>Pitta versicolor</i>	Noisy Pitta			X	X	X	LC	
<b>MALURIDAE</b>								
<i>Malurus amabilis</i>	Lovely Fairy-wren		X		X	X	LC	
<i>Malurus melanocephalus</i>	Red-backed Fairy-wren					X	LC	
<b>ACANTHIZIDAE</b>								
<i>Sericornis frontalis</i>	White-browed Scrubwren	X					LC	
<i>Sericornis magnirostra</i>	Large-billed Scrubwren	X		X	X	X	LC	
<i>Gerygone mouki</i>	Brown Gerygone					X	LC	
<i>Gerygone levigaster</i>	Mangrove Gerygone					X	LC	
<i>Gerygone magnirostris</i>	Large-billed Gerygone	X	X	X	X	X	LC	
<i>Gerygone olivacea</i>	White-throated Gerygone					X	LC	
<i>Gerygone palpebrosa</i>	Fairy Gerygone	X	X	X	X	X	LC	
<b>MELIPHAGIDAE</b>								
<i>Xanthotis macleayana</i>	Macleay's Honeyeater	X		X	X	X	LC	
<i>Lichenostomus chrysops</i>	Yellow-faced Honeyeater				X	X	LC	
<i>Lichenostomus versicolor</i>	Varied Honeyeater				X		LC	
<i>Lichenostomus unicolor</i>	White-gaped Honeyeater					X	LC	
<i>Lichenostomus flavus</i>	Yellow Honeyeater	X			X	X	LC	
<i>Meliphaga lewinii</i>	Lewin's Honeyeater					X	LC	
<i>Meliphaga notata</i>	Yellow-spotted Honeyeater	X	X	X	X	X	LC	



Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Meliphaga gracilis</i>	Graceful Honeyeater	X	X	X	X	X	LC	
<i>Philemon citreogularis</i>	Little Friarbird					X	LC	
<i>Philemon buceroides</i>	Helmeted Friarbird	X	X		X	X	LC	
<i>Philemon argenticeps</i>	Silver-crowned Friarbird				X		LC	
<i>Philemon corniculatus</i>	Noisy Friarbird				X	X	LC	
<i>Lichmera indistincta</i>	Brown Honeyeater					X	LC	
<i>Ramsayornis modestus</i>	Brown-backed Honeyeater	X			X	X	LC	
<i>Myzomela sanguinolenta</i>	Scarlet Honeyeater	X					LC	
<i>Myzomela obscura</i>	Dusky Honeyeater	X	X	X	X	X	LC	
PETROICIDAE								
<i>Poecilodryas superciliosa</i>	White-browed Robin					X	LC	
<i>Peneoenanthe pulverulenta</i>	Mangrove Robin					X	LC	
<i>Tregellasia capito</i>	Pale-yellow Robin			X	X	X	LC	
<i>Microeca flavigaster</i>	Lemon-bellied Flycatcher					X	LC	
ORTHONYCHIDAE								
<i>Orthonyx spaldingii</i>	Chowchilla					X	LC	
EUPETIDAE								
<i>Psophodes olivaceus</i>	Eastern Whipbird					X	LC	
PACHYCEPHALIDAE								
<i>Pachycephala simplex</i>	Grey Whistler	X		X	X	X	LC	
<i>Pachycephala pectoralis</i>	Golden Whistler			X		X	LC	
<i>Pachycephala rufiventris</i>	Rufous Whistler					X	LC	
<i>Colluricincla megarhyncha</i>	Little Shrike-thrush	X	X	X	X	X	LC	
<i>Colluricincla harmonica</i>	Grey Shrike-thrush					X	LC	
DICRURIDAE								
<i>Rhipidura rufifrons</i>	Rufous Fantail	X		X	X	X	S	M
<i>Rhipidura fuliginosa</i>	Grey Fantail					X	LC	
<i>Rhipidura rufiventris</i>	Northern Fantail			X	X	X	LC	
<i>Rhipidura leucophrys</i>	Willie Wagtail	X	X		X	X	LC	
<i>Dicrurus bracteatus</i>	Spangled Drongo	X	X		X	X	LC	
<i>Monarcha leucotis</i>	White-eared Monarch	X			X	X	LC	
<i>Monarcha trivirgatus</i>	Spectacled Monarch	X	X	X	X	X	S	M
<i>Monarcha melanopsis</i>	Black-faced Monarch		X		X	X	S	M
<i>Arses kaupi</i>	Pied Monarch			X		X	LC	
<i>Grallina cyanoleuca</i>	Magpie-lark	X			X	X	LC	
<i>Myiagra rubecula</i>	Leaden Flycatcher			X	X	X	LC	
<i>Myiagra cyanoleuca</i>	Satin Flycatcher					X	LC	
<i>Myiagra alecto</i>	Shining Flycatcher	X	X	X	X	X	LC	
<i>Myiagra inquieta</i>	Restless Flycatcher				X	X	LC	

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Machaerirhynchus flaviventer</i>	Yellow-breasted Boatbill					X	LC	
PARADISEAEIDAE								
<i>Ptiloris victoriae</i>	Victoria's Riflebird					X	LC	
ARTAMIDAE								
<i>Cracticus quoyii</i>	Black Butcherbird	X	X	X	X	X	LC	
<i>Gymnorhina tibicen</i>	Australian Magpie		X				LC	
<i>Strepera graculina</i>	Pied Currawong	X			X	X	LC	
<i>Artamus leucorhynchus</i>	White-breasted Woodswallow	X	X		X	X	LC	
<i>Artamus personatus</i>	Masked Woodswallow					X	LC	
CAMPEPHAGIDAE								
<i>Coracina tenuirostris</i>	Cicadabird	X	X	X	X	X	LC	
<i>Coracina lineata</i>	Barred Cuckoo-shrike				X	X	LC	
<i>Coracina novehollandiae</i>	Black-faced Cuckoo-shrike	X	X		X	X	LC	
<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike	X	X		X	X	LC	
<i>Lalage leucomela</i>	Varied Triller	X	X		X	X	LC	
ORIOIDAE								
<i>Sphecotheres vieilloti</i>	Australasian Figbird	X	X		X	X	LC	
<i>Oriolus flavicinctus</i>	Yellow Oriole	X	X		X	X	LC	
<i>Oriolous sagittatus</i>	Olive-backed Oriole					X	LC	
CORVIDAE								
<i>Corvus orru</i>	Torresian Crow	X			X	X	LC	
PTILONORHYNCHIDAE								
<i>Ailuroedus melanotis</i>	Spotted Catbird				X	X	LC	
STURNIDAE								
<i>Aplonis metallica</i>	Metallic Starling	X	X	X	X	X	LC	
<i>Acridotheres tristis</i>	Common Myna	X			X	X	I	
HIRUNDINIDAE								
<i>Hirundo rustica</i>	Barn Swallow					X	S	M
<i>Hirundo neoxena</i>	Welcome Swallow	X	X		X	X	LC	
<i>Petrochelidon ariel</i>	Fairy Martin				X	X	LC	
<i>Petrochelidon nigricans</i>	Tree Martin				X	X	LC	
ZOSTEROPIDAE								
<i>Zosterops lateralis</i>	Silvereye	X	X	X	X	X	LC	
SYLVIIDAE								
<i>Acrocephalus australis</i>	Australian Reed-warbler					X	S	M
<i>Megalurus timoriensis</i>	Tawny Grassbird					X	LC	
<i>Cisticola exilis</i>	Golden-headed Cisticola	X		X	X	X	LC	
DICAIDAE								
<i>Dicaeum hirundinaceum</i>	Mistletoebird	X		X	X	X	LC	

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<b>NECTARANIIDAE</b>								
<i>Cinnyris jugularis</i>	Olive-backed Sunbird	X	X	X	X	X	LC	
<b>PASSERIDAE</b>								
<i>Passer domesticus</i>	House Sparrow				X	X	I	
<b>MOTACILLIDAE</b>								
<i>Anthus australis</i>	Australian Pipit	X	X		X	X	LC	
<b>ESTRILDIDAE</b>								
<i>Neochmia temporalis</i>	Red-browed Finch				X	X	LC	
<i>Neochmia phaeton phaeton</i>	Crimson Finch				X	X	V	
<i>Neochmia modesta</i>	Plum-headed Finch					X	LC	
<i>Lonchura punctulata</i>	Nutmeg Mannikin				X	X	I	
<i>Lonchura castaneothorax</i>	Chestnut-breasted Mannikin	X			X	X	LC	
<b>MAMMALS</b>								
<b>TACHYGLOSSIDAE</b>								
<i>Tachyglossus aculeata</i>	Short-beaked Echidna	X					S	
<b>DASYURIDAE</b>								
<i>Antechinus flavipes rubeculus</i>	Yellow-footed Antechinus (north-east Queensland subspecies)	X	X		X		LC	
<b>PERAMELIDAE</b>								
<i>Isodon macrourus</i>	Northern Brown Bandicoot	X		X			LC	
<i>Perameles nasuta</i>	Long-nosed Bandicoot	X			X		LC	
<b>BURRAMYIDAE</b>								
<i>Cercartetus caudatus</i>	Long-tailed Pygmy Possum				X		LC	
<b>PETAURIDAE</b>								
<i>Dactylopsila trivirgatus</i>	Striped Possum	X		X			LC	
<b>MACROPODIDAE</b>								
<i>Dendrolagus lumholtzi</i>	Lumholtz's Tree Kangaroo			X			R	
<i>Macropus agilis</i>	Agile Wallaby	X	X		X		LC	
<b>PTEROPODIDAE</b>								
<i>Syconycteris australis</i>	Common Blossom Bat			X				
<i>Pteropus conspicillatus</i>	Spectacled Flying-fox	X	X		X		LC	V
<b>RHINOLOPHIDAE</b>								
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe-Bat		X		X		LC	
<b>EMBALLONURIDAE</b>								
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-Bat				X		LC	
<i>Taphozous australis/georgianus</i>	Sheath-tail-Bat species		X				V	
<b>MOLOSSIDAE</b>								
<i>Chaerophon jobensis</i>	Northern Freetail-Bat				X		LC	



Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Mormopterus beccarii</i>	Beccari's Freetail-Bat		X		X		LC	
<i>Tadarida australis</i>	White-striped Freetail-Bat		X		X		LC	
VESPERTILIONIDAE								
<i>Miniopterus australis</i>	Little Bentwing-Bat		X		X		LC	
<i>Miniopterus schreibersii</i>	Common Bentwing-Bat		X		X		LC	
<i>Nyctophilus bifax/gouldii</i>	Long-eared Bat species		X				LC	
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat				X		LC	
<i>Myotis macropus</i>	Large-footed Myotis	X			X		LC	
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat				X		LC	
<i>Vespadelus pumilis</i>	Eastern Forest Bat		X		X		LC	
MURIDAE								
<i>Hydromys chromogaster</i>	Water Rat	X					LC	
<i>Melomys burtoni</i>	Grassland Melomys			X			LC	
<i>Melomys cervinipes</i>	Fawn-footed Melomys	X	X	X	X		LC	
<i>Uromys caudimaculatus</i>	Giant White-tailed Rat	X	X		X		LC	
<i>Mus musculus</i>	House Mouse		X		X		LC	
<i>Rattus sp.</i>	Rat species	X						
<i>Rattus fuscipes</i>	Bush Rat			X	X		LC	
<i>Rattus leucopus</i>	Cape York Rat		X		X		LC	
LEPORIDAE								
<i>Oryctolagus cuniculus</i>	Rabbit	X					I	
SUIDAE								
<i>Sus scrofa</i>	Pig	X	X		X		I	
INVERTEBRATES								
DECAPODA								
<i>Macrobrachium lar</i>	Giant Jungle Prawn	X						
<i>Varuna litterata</i>	River Swimming Crab	X						
LEPIDOPTERA (Butterfly/moths)								
HESPERIIDAE								
<i>Chaetocneme porphyropis</i>	Purple Dusk-flat				X			
<i>Notocrypta waigensis</i>	Banded Demon		X		X			
PAPILIONIDAE								
<i>Graphium sarpedon</i>	Blue Triangle	X	X		X			
<i>Graphium euryplus</i>	Pale Triangle	X	X		X			
<i>Graphium agamemnon</i>	Green-spotted Triangle	X	X		X			
<i>Papilio aegaeus</i>	Orchard Swallowtail	X						
<i>Papilio fuscus</i>	Fuscous Swallowtail		X		X			
<i>Papilio ulysses</i>	Ulysses Swallowtail	X	X		X			

Family Genus Species	Common Name	BAAM 2008	BAAM 2006	QM	WN	BA	NCA	EPBC
<i>Cressida cressida</i>	Clearwing Swallowtail	X	X		X			
PIERIDAE								
<i>Eurema hecabe</i>	Large Grass-yellow		X		X			
<i>Delias mysis</i>	Red-banded Jezebel		X		X			
<i>Delias argenthona</i>	Scarlet Jezebel		X		X			
<i>Catopsilia pomona</i>	Lemon Migrant		X		X			
NYMPHALIDAE								
<i>Mycalesis terminus</i>	Orange Bush-brown	X	X		X			
<i>Mycalesis perseus</i>	Dingy Bush-brown		X					
<i>Melanitis leda</i>	Evening Brown	X	X		X			
<i>Polyura sempronius</i>	Tailed Emperor		X		X			
<i>Hypolimnas bolina</i>	Common Eggfly		X		X			
<i>Vindula arsinoe</i>	Cruiser	X						
<i>Cupha prosopoe</i>	Bordered Rustic		X		X			
<i>Junonia orithya</i>	Blue Argus	X						
<i>Neptus praslini</i>	Yellow-eyed Plane	X						
<i>Tellervo zoilus</i>	Hamadryad	X						
<i>Euploea tilliulus</i>	Purple Crow		X					
<i>Euploea alcatheae</i>	Two-brand Crow	X						
<i>Euploea core</i>	Common Crow	X						
<i>Danaus affinis</i>	Swamp Tiger		X		X			
<i>Danaus plexippus</i>	Wanderer	X	X		X			
LYCAENIDAE								
<i>Hypochrysops apollo apollo</i>	Apollo Jewel (Wet Tropics subspecies)				X		V	
<i>Hypochrysops apollo phoebus</i>	Apollo Jewel (Torres Strait subspecies)				X			
<i>Arhopala madytus</i>	Bright Oak-blue	X						
<i>Jalmenus daemeli</i>	Emerald Hairstreak		X					
<i>Nacaduba cyanea</i>	Green-banded Line-blue	X			X			
<i>Psychonotis caelius</i>	Small Green-banded Blue		X		X			
URANIIDAE								
<i>Alcides metaurus</i>	North Queensland Day Moth	X						
<i>Lyssa macleayi</i>	No common name	X						

## **Appendix 2: Database Search Results**



EPA WildNet Database Search Results

Search Criteria:	Species List for a Defined Area
	Species: Animals
	Type: All
	Status: All
	Records: All
	Date: All
	Latitude: 17.4394755612751 to 17.529400709159
	Longitude: 145.996273815744 to 146.09092513537
	Email: adam@biodiversity.tv
	Date submitted: Tuesday 04 Nov 2008 09:08:41
	Date extracted: Tuesday 04 Nov 2008 09:23:03

The number of records retrieved = 225  
Disclaimer

As the EPA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

## Appendix 2 – Fauna Database Search Results

### Description of the CODES

- I - Y indicates that the taxon is introduced to Queensland and has naturalised.
- Q - Indicates the Queensland conservation status of each taxon under the Nature Conservation Act 1992. The codes are Presumed Extinct (PE), Endangered (E), Vulnerable (V), Rare (R), Common (C) or Not Protected ( ).
- A - Indicates the Australian conservation status of each taxon under the Environment Protection and Biodiversity Conservation Act 1999. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).

The second number located after the / indicates the number of specimen records for the taxon.

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	amphibians	Bufonidae	Rhinella marina	cane toad	I		5	0
animals	amphibians	Hylidae	Litoria rothii	northern laughing treefrog	C		2	0
animals	amphibians	Hylidae	Litoria bicolor	northern sedgefrog	C		2	0
animals	amphibians	Hylidae	Litoria rheocola	common mistfrog	E	E	4	0
animals	amphibians	Hylidae	Litoria genimaculata	tapping green eyed frog	R		1	0
animals	amphibians	Hylidae	Litoria caerulea	common green treefrog	C		1	0
animals	amphibians	Hylidae	Litoria infrarenata	white lipped treefrog	C		1	0
animals	amphibians	Limnodynastidae	Limnodynastes peronii	striped marshfrog	C		3	0
animals	amphibians	Microhylidae	Cophixalus ornatus	ornate nurseryfrog	C		5	1
animals	amphibians	Microhylidae	Cophixalus infacetus	creaking nurseryfrog	R		4	0
animals	amphibians	Ranidae	Hylarana daemeli	Australian woodfrog	C		3	0
animals	birds	Acanthizidae	Gerygone palpebrosa	fairy gerygone	C		12	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	birds	Acanthizidae	Sericornis magnirostra	large-billed scrubwren	C		4	0
animals	birds	Acanthizidae	Gerygone magnirostris	large-billed gerygone	C		7	0
animals	birds	Accipitridae	Milvus migrans	black kite	C		2	0
animals	birds	Accipitridae	Haliastur indus	brahminy kite	C		8	0
animals	birds	Accipitridae	Pandion cristatus	eastern osprey	C		9	0
animals	birds	Accipitridae	Accipiter novaehollandiae	grey goshawk	R		3	0
animals	birds	Accipitridae	Haliaeetus leucogaster	white-bellied sea-eagle	C		5	0
animals	birds	Accipitridae	Haliastur sphenurus	whistling kite	C		4	0
animals	birds	Accipitridae	Aviceda subcristata	Pacific baza	C		5	0
animals	birds	Accipitridae	Circus approximans	swamp harrier	C		2	0
animals	birds	Alcedinidae	Ceyx azureus	azure kingfisher	C		9	0
animals	birds	Anatidae	Anas castanea	chestnut teal	C		1	0
animals	birds	Anatidae	Dendrocygna eytoni	plumed whistling-duck	C		1	0
animals	birds	Anatidae	Malacorhynchus membranaceus	pink-eared duck	C		1	0
animals	birds	Anatidae	Nettapus coromandelianus	cotton pygmy-geese	R		1	0
animals	birds	Anatidae	Nettapus pulchellus	green pygmy-geese	C		2	0
animals	birds	Anatidae	Dendrocygna arcuata	wandering whistling-duck	C		3	0
animals	birds	Anatidae	Chenonetta jubata	Australian wood duck	C		1	0
animals	birds	Anatidae	Anas gracilis	grey teal	C		1	0
animals	birds	Anatidae	Anas superciliosa	Pacific black duck	C		3	0
animals	birds	Anhingidae	Anhinga novaehollandiae	Australasian darter	C		4	0
animals	birds	Anseranatidae	Anseranas semipalmata	maggie goose	C		1	0
animals	birds	Apodidae	Apus pacificus	fork-tailed swift	C		2	0
animals	birds	Apodidae	Hirundapus caudacutus	white-throated needletail	C		1	0
animals	birds	Apodidae	Aerodramus terraereginae	Australian swiftlet	R		11	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	birds	Ardeidae	Ardea ibis	cattle egret	C		2	0
animals	birds	Ardeidae	Egretta garzetta	little egret	C		2	0
animals	birds	Ardeidae	Egretta novaehollandiae	white-faced heron	C		4	0
animals	birds	Ardeidae	Ixobrychus flavicollis	black bittern	C		3	0
animals	birds	Ardeidae	Ardea intermedia	intermediate egret	C		4	0
animals	birds	Ardeidae	Ardea modesta	eastern great egret	C		5	0
animals	birds	Ardeidae	Egretta sacra	eastern reef egret	C		1	0
animals	birds	Artamidae	Cracticus quoyi	black butcherbird	C		20	0
animals	birds	Artamidae	Artamus leucorhynchus	white-breasted woodswallow	C		15	0
animals	birds	Artamidae	Strepera graculina	pied currawong	C		1	0
animals	birds	Burhinidae	Esacus magnirostris	beach stone-curlew	V		6	1
animals	birds	Cacatuidae	Cacatua galerita	sulphur-crested cockatoo	C		9	0
animals	birds	Campephagidae	Coracina lineata	barred cuckoo-shrike	C		1	0
animals	birds	Campephagidae	Lalage leucomela	varied triller	C		28	0
animals	birds	Campephagidae	Coracina papuensis	white-bellied cuckoo-shrike	C		6	0
animals	birds	Campephagidae	Coracina tenuirostris	cicadabird	C		3	0
animals	birds	Campephagidae	Coracina					
animals	birds	Campephagidae	novaeahollandiae	black-faced cuckoo-shrike	C		2	0
animals	birds	Caprimulgidae	Caprimulgus macrurus	large-tailed nightjar	C		1	0
			Casuaris casuaris					
animals	birds	Casuariidae	johnsonii (southern population)	southern cassowary (southern population)	E	E	12	0
animals	birds	Charadriidae	Vanellus miles	masked lapwing	C		9	0
animals	birds	Charadriidae	Charadrius mongolus	lesser sand plover	C		1	0
animals	birds	Charadriidae	Elseyonis melanops	black-fronted dotterel	C		1	0
animals	birds	Charadriidae	Charadrius leschenaultii	greater sand plover	C		1	0
animals	birds	Charadriidae	Charadrius ruficapillus	red-capped plover	C		1	0
			Vanellus miles miles	masked lapwing (northern subspecies)	C		2	0
animals	birds	Charadriidae	Ephippiorhynchus	black-necked stork	R		3	0



Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
			asiaticus					
animals	birds	Cisticolidae	Cisticola exilis	golden-headed cisticola	C		3	0
animals	birds	Columbidae	Ducula bicolor	pied imperial-pigeon	C		5	0
animals	birds	Columbidae	Geopelia humeralis	bar-shouldered dove	C		7	0
animals	birds	Columbidae	Macropygia amboinensis	brown cuckoo-dove	C		4	0
animals	birds	Columbidae	Streptopelia chinensis	spotted dove	Y		9	0
animals	birds	Columbidae	Ptilinopus magnificus	wompoo fruit-dove	C		2	0
animals	birds	Columbidae	Chalcophaps indica	emerald dove	C		8	0
animals	birds	Columbidae	Geopelia striata	peaceful dove	C		19	0
animals	birds	Columbidae	Ptilinopus regina	rose-crowned fruit-dove	C		2	0
animals	birds	Coraciidae	Eurystomus orientalis	dollarbird	C		1	0
animals	birds	Corvidae	Corvus orru	Torresian crow	C		1	0
animals	birds	Cuculidae	Eudynamys orientalis	eastern koel	C		5	0
animals	birds	Cuculidae	Centropus phasianinus	pheasant coucal	C		16	0
animals	birds	Cuculidae	Chalcites minutillus russatus	Gould's bronze-cuckoo	C		3	0
animals	birds	Cuculidae	Chalcites minutillus minutillus	little bronze-cuckoo	C		6	0
animals	birds	Cuculidae	Chalcites lucidus	shining bronze-cuckoo	C		1	0
animals	birds	Cuculidae	Cuculus optatus	oriental cuckoo	C		1	0
animals	birds	Cuculidae	Scythrops novaehollandiae	channel-billed cuckoo	C		1	0
animals	birds	Cuculidae	Cacomantis variolosus	brush cuckoo	C		3	0
animals	birds	Dicruridae	Dicrurus bracteatus	spangled drongo	C		13	0
animals	birds	Estrildidae	Neochmia phaeton	crimson finch	V		5	0
animals	birds	Estrildidae	Lonchura punctulata	nutmeg mannikin	Y		6	0
animals	birds	Estrildidae	Neochmia temporalis	red-browed finch	C		6	0
animals	birds	Estrildidae	Lonchura castaneothorax	chestnut-breasted mannikin	C		6	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	birds	Haematopodidae	Haematopus longirostris	Australian pied oystercatcher	C		1	0
animals	birds	Halcyonidae	Dacelo novaeguineae	laughing kookaburra	C		9	0
animals	birds	Halcyonidae	Todiramphus chloris	collared kingfisher	C		3	0
animals	birds	Halcyonidae	Todiramphus macleayii	forest kingfisher	C		13	0
animals	birds	Halcyonidae	Todiramphus sanctus	sacred kingfisher	C		8	0
animals	birds	Hirundinidae	Hirundo neoxena	welcome swallow	C		12	0
animals	birds	Hirundinidae	Petrochelidon nigricans	tree martin	C		1	0
animals	birds	Hirundinidae	Petrochelidon ariel	fairy martin	C		2	0
animals	birds	Jacaniidae	Irediparra gallinacea	comb-crested jacana	C		4	0
animals	birds	Laridae	Sterna hirundo	common tern	C		1	0
animals	birds	Laridae	Chlidonias hybrida	whiskered tern	C		1	0
animals	birds	Laridae	Sternula albigrons	little tern	E		7	0
animals	birds	Laridae	Thalasseus bergii	crested tern	C		6	0
animals	birds	Maluridae	Malurus amabilis	lovely fairy-wren	C		4	0
animals	birds	Megapodiidae	Megapodius reinwardt	orange-footed scrubfowl	C		11	0
animals	birds	Meliphagidae	Meliphaga notata	yellow-spotted honeyeater	C		28	0
animals	birds	Meliphagidae	Myzomela obscura	dusky honeyeater	C		15	0
animals	birds	Meliphagidae	Philemon buceroides	helmeted friarbird	C		11	0
animals	birds	Meliphagidae	Ramsayornis modestus	brown-backed honeyeater	C		1	0
animals	birds	Meliphagidae	Philemon argenticeps	silver-crowned friarbird	C		1	0
animals	birds	Meliphagidae	Lichenostomus flavus	yellow honeyeater	C		3	0
animals	birds	Meliphagidae	Meliphaga gracilis	graceful honeyeater	C		10	0
animals	birds	Meliphagidae	Philemon corniculatus	noisy friarbird	C		2	0
animals	birds	Meliphagidae	Lichenostomus versicolor	varied honeyeater	C		1	0
animals	birds	Meliphagidae	Lichenostomus chrysops	yellow-faced honeyeater	C		1	0
animals	birds	Meliphagidae	Xanthotis macleayanus	Macleay's honeyeater	C		6	0
animals	birds	Meropidae	Merops ornatus	rainbow bee-eater	C		11	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	birds	Monarchidae	Myiagra alecto	shining flycatcher	C		2	0
animals	birds	Monarchidae	Myiagra inquieta	restless flycatcher	C		1	0
animals	birds	Monarchidae	Myiagra rubecula	leaden flycatcher	C		12	0
animals	birds	Monarchidae	Monarcha melanopsis	black-faced monarch	C		1	0
animals	birds	Monarchidae	Symposiachrus trivirgatus	spectacled monarch	C		12	0
animals	birds	Monarchidae	Carteromis leucotis	white-eared monarch	C		2	0
animals	birds	Monarchidae	Grallina cyanoleuca	magpie-lark	C		11	0
animals	birds	Motacillidae	Anthus novaeseelandiae	Australasian pipit	C		2	0
animals	birds	Nectariniidae	Nectarinia jugularis	olive-backed sunbird	C		24	0
animals	birds	Nectariniidae	Dicaeum hirundinaceum	mistletoebird	C		17	0
animals	birds	Oriolidae	Oriolus flavocinctus	yellow oriole	C		15	0
animals	birds	Oriolidae	Sphecotheres vieilloti	Australasian figbird	C		21	0
animals	birds	Pachycephalidae	Colluricincla megarrhyncha	little shrike-thrush	C		9	0
animals	birds	Pachycephalidae	Pachycephala simplex peninsulae	grey whistler	C		5	0
animals	birds	Passeridae	Passer domesticus	house sparrow	Y		2	0
animals	birds	Pelecanidae	Pelecanus conspicillatus	Australian pelican	C		3	0
animals	birds	Petroicidae	Tregellasia capito	pale-yellow robin	C		1	0
animals	birds	Phalacrocoracidae	Phalacrocorax carbo	great cormorant	C		5	0
animals	birds	Phalacrocoracidae	Phalacrocorax varius	pied cormorant	C		3	0
animals	birds	Phalacrocoracidae	Phalacrocorax sulcirostris	little black cormorant	C		3	0
animals	birds	Phalacrocoracidae	Microcarbo melanoleucos	little pied cormorant	C		3	0
animals	birds	Pittidae	Pitta versicolor	noisy pitta	C		1	0
animals	birds	Procellariidae	Ardenna tenuirostris	short-tailed shearwater	C		3	1
animals	birds	Psittacidae	Alisterus scapularis	Australian king-parrot	C		4	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	birds	Psittacidae	Cyclopsitta diophthalma macleayana	Macleay's fig-parrot	V		8	0
animals	birds	Psittacidae	Trichoglossus haematodus moluccanus	rainbow lorikeet	C		8	0
animals	birds	Ptilonothynchidae	Ailuroedus melanotis	spotted catbird	C		3	0
animals	birds	Rallidae	Porzana pusilla	Bailon's crane	C		1	0
animals	birds	Rallidae	Rallina tricolor	red-necked crane	C		1	0
animals	birds	Rallidae	Porphyrio porphyrio	purple swamphen	C		3	0
animals	birds	Rallidae	Amaurornis moluccana	pale-vented bush-hen	C		1	0
animals	birds	Recurvirostridae	Himantopus himantopus	black-winged stilt	C		1	0
animals	birds	Rhipiduridae	Rhipidura rufifrons	rufous fantail	C		7	0
animals	birds	Rhipiduridae	Rhipidura leucophrys	willie wagtail	C		14	0
animals	birds	Rhipiduridae	Rhipidura rufiventris	northern fantail	C		2	0
animals	birds	Scolopacidae	Tringa brevipes	grey-tailed tattler	C		2	0
animals	birds	Scolopacidae	Tringa nebularia	common greenshank	C		1	0
animals	birds	Scolopacidae	Numenius phaeopus	whimbrel	C		2	0
animals	birds	Sturnidae	Sturnus tristis	common myna	Y		17	0
animals	birds	Sturnidae	Aplornis metallica	metallic starling	C		16	0
animals	birds	Threskiornithidae	Platalea regia	royal spoonbill	C		3	0
animals	birds	Threskiornithidae	Threskiornis spinicollis	straw-necked ibis	C		3	0
animals	birds	Threskiornithidae	Threskiornis molucca	Australian white ibis	C		5	0
animals	birds	Threskiornithidae	Plegadis falcinellus	glossy ibis	C		1	0
animals	birds	Timaliidae	Zosterops lateralis	silveryeye	C		5	0
animals	bony fish	Anguillidae	Anguilla obscura	Pacific shortfin eel			1	0
animals	bony fish	Eleotridae	Hypseleotris compressa	empire gudgeon			1	1
animals	bony fish	Melanotaeniidae	Melanotaenia splendida	eastern rainbowfish			1	1
animals	bony fish	Pseudomugilidae	Pseudomugil signifer	Pacific blue eye			1	1
animals	insects	Hesperiidae	Chaetocneme	purple dusk-flat			6	0



Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
			porphyropis					
animals	insects	Hesperiidae	Notocrypta waigensis proserpina	banded demon			1	0
animals	insects	Lycaenidae	Psychonotis caelius	small green-banded blue			1	0
animals	insects	Lycaenidae	Hypochrysops apollo apollo	Apollo jewel (Wet Tropics subspecies)	V		2	1
animals	insects	Lycaenidae	Hypochrysops apollo phoebus	Apollo jewel (Torres Strait subspecies)			2	0
animals	insects	Lycaenidae	Nacaduba cyanea arinia	green-banded line-blue			1	0
animals	insects	Nymphalidae	Melanitis leda bankia	common evening-brown			3	0
animals	insects	Nymphalidae	Cupha prosopo				1	0
animals	insects	Nymphalidae	Danaus affinis affinis	marsh tiger			1	0
animals	insects	Nymphalidae	Hypolimnias bolina nerina	varied eggfly			2	0
animals	insects	Nymphalidae	Danaus plexippus plexippus	monarch			1	0
animals	insects	Nymphalidae	Mycalesis terminus terminus	orange bush-brown			7	0
animals	insects	Nymphalidae	Polyura sempronius sempronius	tailed emperor			1	0
animals	insects	Papilionidae	Papilio fuscus				1	0
animals	insects	Papilionidae	Graphium eurypylus				1	0
animals	insects	Papilionidae	Papilio ulysses joesa	Ulysses butterfly	C		2	0
animals	insects	Papilionidae	Cressida cressida cressida	greasy swallowtail			1	0
animals	insects	Papilionidae	Graphium agamemnon ligatum	green-spotted triangle			2	0
animals	insects	Papilionidae	Graphium sarpedon choredon	blue triangle			4	0
animals	insects	Pieridae	Delias mysis				2	0
animals	insects	Pieridae	Eurema hecabe phoebus	large grass-yellow			2	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	insects	Pieridae	Delias argenthona argenthona	scarlet jezebel			2	0
animals	insects	Pieridae	Catopsilia pomona pomona	lemon migrant			2	0
animals	mammals	Burramyidae	Cercartetus caudatus	long-tailed pygmy-possum	C		1	0
animals	mammals	Dasyuridae	Antechinus flavipes rubeculus	yellow-footed antechinus (north-east Queensland)	C		1	0
animals	mammals	Emballonuridae	Taphozous sp.				4	0
animals	mammals	Emballonuridae	Saccolaimus flaviventris	yellow-bellied sheath-tail bat	C		1	0
animals	mammals	Macropodidae	Macropus agilis	agile wallaby	C		7	0
animals	mammals	Molossidae	Tadarida australis	white-striped freetail bat	C		1	0
animals	mammals	Molossidae	Mormopterus beccarii	Beccari's freetail bat	C		2	0
animals	mammals	Molossidae	Chaerephon jobensis	northern freetail bat	C		2	0
animals	mammals	Muridae	Rattus sp.				1	0
animals	mammals	Muridae	Melomys cervinipes	fawn-footed melomys	C		6	0
animals	mammals	Muridae	Uromys caudimaculatus	giant white-tailed rat	C		2	0
animals	mammals	Muridae	Rattus leucopus	Cape York rat	C		3	0
animals	mammals	Muridae	Mus musculus	house mouse	Y		1	0
animals	mammals	Muridae	Rattus fuscipes	bush rat	C		2	0
animals	mammals	Peramelidae	Perameles nasuta	long-nosed bandicoot	C		2	0
animals	mammals	Pteropodidae	Pteropus conspicillatus	spectacled flying-fox	C	V	7	1
animals	mammals	Rhinolophidae	Rhinolophus megaphyllus	eastern horseshoe-bat	C		5	0
animals	mammals	Suidae	Sus scrofa	pig	Y		2	0
animals	mammals	Vespertilionidae	Myotis macropus	large-footed myotis	C		3	0
animals	mammals	Vespertilionidae	Nyctophilus sp.				5	0
animals	mammals	Vespertilionidae	Vespertilio pumilus	eastern forest bat	C		1	0
animals	mammals	Vespertilionidae	Chalinolobus gouldii	Gould's wattled bat	C		1	0
animals	mammals	Vespertilionidae	Scoteanax rueppellii	greater broad-nosed bat	C		1	0
animals	mammals	Vespertilionidae	Miniopterus australis	little bent-wing bat	C		8	0

Appendix 2 – Fauna Database Search Results

Kingdom	Class	Family	Scientific Name	Common Name	Q	A	Sighting Records	Specimen Records
animals	mammals	Vespertilionidae	Miniopterus schreibersii oceanensis	eastern bent-wing bat	C		3	0
animals	reptiles	Agamidae	Hypsilurus boydii	Boyd's forest dragon	C		2	0
animals	reptiles	Agamidae	Physignathus lesueurii	eastern water dragon	C		1	0
animals	reptiles	Boidae	Morelia amethistina	amethystine python (New Guinean form)	C		1	0
animals	reptiles	Colubridae	Boiga irregularis	brown tree snake	C		1	0
animals	reptiles	Gekkonidae	Hemidactylus frenatus	house gecko	Y		2	0
animals	reptiles	Scincidae	Eulamprus tigrinus		R		1	0
animals	reptiles	Scincidae	Carlia rubrigularis		C		10	1
animals	reptiles	Scincidae	Lampropholis coggeri		C		1	0
animals	reptiles	Scincidae	Saproscincus basiliscus		C		3	0
animals	reptiles	Scincidae	Cyclodomorphus gerrardii	pink-tongued lizard	C		1	0
animals	reptiles	Scincidae	Saproscincus tetradactylus		C		4	0
animals	reptiles	Scincidae	Cryptoblepharus litoralis	coastal snake-eyed skink	C		1	1
animals	reptiles	Scincidae	Cryptoblepharus virgatus sensu lato		C		1	0
animals	reptiles	Varanidae	Varanus varius	lace monitor	C		1	0

## Birds Australia Database Search Results

Data from New Atlas 1998-2008

Species list for the area within 10 km of 17 28 / 146 03

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
2	2	Southern Cassowary	Casuarius casuarius	42	EN			
4	8	Australian Brush-turkey	Alectura lathami	43				
6	6	Orange-footed Scrubfowl	Megapodius reinwardt	106				
8	11	Brown Quail	Coturnix ypsilophora	2				
15	199	Magpie Goose	Anseranas semipalmata	26				marine
16	205	Plumed Whistling-Duck	Dendrocygna eytoni	4				
17	204	Wandering Whistling-Duck	Dendrocygna arcuata	48				marine
29	202	Australian Wood Duck	Chenonetta jubata	7				
30	200	Cotton Pygmy-geese	Nettapus coromandelianus	1				
31	201	Green Pygmy-geese	Nettapus pulchellus	51				marine
33	208	Pacific Black Duck	Anas superciliosa	41				
36	211	Grey Teal	Anas gracilis	4				
40	213	Pink-eared Duck	Malacorhynchus membranaceus	1				
41	215	Hardhead	Aythya australis	24				
42	61	Australasian Grebe	Tachybaptus novaehollandiae	18				
129	101	Darter	Anhinga melanogaster	55				
130	100	Little Pied Cormorant	Phalacrocorax melanoleucos	51				



Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
132	99	Pied Cormorant	Phalacrocorax varius	4				
133	97	Little Black Cormorant	Phalacrocorax sulcirostris	32				
134	96	Great Cormorant	Phalacrocorax carbo	1				
136	106	Australian Pelican	Pelecanus conspicillatus	8				marine
140	188	White-faced Heron	Egretta novaehollandiae	22				
141	185	Little Egret	Egretta garzetta	16				marine
142	191	Eastern Reef Egret	Egretta sacra	1			C	marine
143	189	White-necked Heron	Ardea pacifica	13				
144	184	Great-billed Heron	Ardea sumatrana	3				
146	187	Great Egret	Ardea alba	55		J	C	marine
147	186	Intermediate Egret	Ardea intermedia	38				marine
148	977	Cattle Egret	Ardea ibis	24		J	C	marine
149	193	Striated Heron	Butorides striatus	1				
151	192	Nankeen Night Heron	Nycticorax caledonicus	11				marine
155	196	Black Bittern	Ixobrychus flavicollis	2				
157	178	Glossy Ibis	Plegadis falcinellus	8			C	marine
158	179	Australian White Ibis	Threskiornis molucca	42				marine
159	180	Straw-necked Ibis	Threskiornis spinicollis	23				marine
160	181	Royal Spoonbill	Platelea regia	23				
161	182	Yellow-billed Spoonbill	Platelea flavipes	5				
162	183	Black-necked Stork	Ephippiorhynchus asiaticus	20				
164	241	Osprey	Pandion haliaetus	9				marine
165	234	Pacific Baza	Aviceda subcristata	50				
166	232	Black-shouldered Kite	Elanus notatus	7				
170	229	Black Kite	Milvus migrans	36				
171	228	Whistling Kite	Haliastur spheurnus	33				marine
172	227	Brahminy Kite	Haliastur indus	26				marine

Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
173	226	White-bellied Sea-Eagle	Haliaeetus leucogaster	51			C	marine
175	219	Swamp Harrier	Circus approximans	11				marine
176	221	Brown Goshawk	Accipiter fasciatus	12				marine
177	220	Grey Goshawk	Accipiter novaehollandiae	8				
178	222	Collared Sparrowhawk	Accipiter cirrhopcephalus	3				
184	235	Australian Hobby	Falco longipennis	2				
188	240	Nankeen Kestrel	Falco cenchroides	7				marine
190	177	Brolga	Grus rubicunda	9				
191	48	Red-necked Crane	Rallina tricolor	39				
193	46	Buff-banded Rail	Gallinallus philippensis	9				marine
196	53	Bush-hen	Amaurornis olivaceus	4				marine
202	52	White-browed Crane	Porzana cinerea	12				
205	58	Purple Swamphen	Porphyrio porphyrio	22				marine
206	56	Dusky Moorhen	Gallinula tenebrosa	1				
209	59	Eurasian Coot	Fulica atra	9				
219	168	Latham's Snipe	Gallinago hardwickii	2		J	C	marine
226	150	Whimbrel	Numenius phaeopus	1		J	C	marine
232	158	Common Greenshank	Tringa nebularia	1		J	C	marine
237	155	Grey-tailed Tattler	Heteroscelus brevipes	1		J	C	marine
262	171	Comb-crested Jacana	Irediparra gallinacea	53				
265	174	Bush Stone-curlew	Burhinus magnirostris	17				
266	175	Beach Stone-curlew	Burhinus neglectus	6	VU			marine
270	146	Black-winged Stilt	Himantopus himantopus	10				marine
278	143	Red-capped Plover	Charadrius ruficapillus	1				marine
280	139	Lesser Sand Plover	Charadrius mongolus	1		J	C	marine
285	144	Black-fronted Dotterel	Elseyornis melanops	2				
287	132	Red-kneed Dotterel	Erythrogonys cinctus	1				

Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
289	133	Masked Lapwing	Vanellus miles	74				
308	115	Crested Tern	Sterna bergii	5		J		marine
319	110	Whiskered Tern	Chlidonias hybridus	1				marine
328	28	White-headed Pigeon	Columba leucomela	23				
330	989	Spotted Turtle-Dove	Streptopelia chinensis	31				
331	29	Brown Cuckoo-Dove	Macropygia amboinensis	60				
332	33	Emerald Dove	Chalcophaps indica	50				
343	30	Peaceful Dove	Geopelia striata	79				
344	32	Bar-shouldered Dove	Geopelia humeralis	57				
347	25	Wompoo Fruit-Dove	Ptilinopus magnificus	77				
348	23	Superb Fruit-Dove	Ptilinopus superbus	40				marine
349	21	Rose-crowned Fruit-Dove	Ptilinopus regina	27				
353	26	Pied Imperial-Pigeon	Ducula bicolor	15				marine
354	27	Topknot Pigeon	Lopholaimus antarcticus	7				
367	269	Sulphur-crested Cockatoo	Cacatua galerita	94				
369	254	Rainbow Lorikeet	Trichoglossus haematodus	52				
370	256	Scaly-breasted Lorikeet	Trichoglossus chlorolepidotus	6				
377	261	Double-eyed Fig-Parrot	Psittaculirostris diophthalma	93	ENVU			
378	281	Australian King-Parrot	Alisterus scapularis	69				
408	336	Oriental Cuckoo	Cuculus saturatus	3		J	C	marine
409	337	Pallid Cuckoo	Cuculus pallidus	1				marine
410	339	Brush Cuckoo	Cacomantis variolosus	42				
414	342	Horsfield's Bronze-Cuckoo	Chrysococcyx basalis	10				marine
415	344	Shining Bronze-Cuckoo	Chrysococcyx lucidus	1				marine

Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
416	345	Little Bronze-Cuckoo	Chrysococcyx minutillus	72				marine
418	347	Common Koel	Eudynamis scolopacea	30				marine
420	348	Channel-billed Cuckoo	Scythrops novaehollandiae	29				marine
421	349	Pheasant Coucal	Centropus phasianinus	43				
428	253	Sooty Owl	Tyto tenebricosa	4				
432	252	Grass Owl	Tyto capensis	3				
442	333	White-rumped Swiftlet	Collocalia spodiopygia	85				
444	334	White-throated Needletail	Hirundapus caudacutus	13		J	C	marine
445	335	Fork-tailed Swift	Apus pacificus	2		J	C	marine
447	319	Azure Kingfisher	Ceyx azurea	27				
448	320	Little Kingfisher	Ceyx pusilla	1				
449	328	Buff-breasted Paradise-Kingfisher	Tanyptera sylvia	26				marine
450	322	Laughing Kookaburra	Dacelo novaeguineae	116				
451	323	Blue-winged Kookaburra	Dacelo leachii	1				
453	324	Forest Kingfisher	Todiramphus macleayi	112				marine
454	325	Red-backed Kingfisher	Todiramphus pyrrhopygia	1				
455	326	Sacred Kingfisher	Todiramphus sanctus	13				marine
456	327	Collared Kingfisher	Todiramphus chloris	1				
457	329	Rainbow Bee-eater	Merops ornatus	78				marine
458	318	Dollarbird	Eurystomus orientalis	8				marine
461	352	Noisy Pitta	Pitta versicolor	35				marine
477	539	Lovely Fairy-wren	Malurus amabilis	6				
481	541	Red-backed Fairy-wren	Malurus melanocephalus	31				
507	494	Large-billed Scrubwren	Sericornis magnirostris	80				



Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
517	454	Brown Gerygone	Gerygone mouki	6				
520	460	Mangrove Gerygone	Gerygone laevigaster	2				
522	457	Large-billed Gerygone	Gerygone magnirostris	34				
524	456	Fairy Gerygone	Gerygone palpebrosa	28				
		White-throated						
525	453	Gerygone	Gerygone olivacea	1				
546	642	Helmeted Friarbird	Philemon buceroides	79				
548	645	Noisy Friarbird	Philemon corniculatus	2				
549	646	Little Friarbird	Philemon citreogularis	1				
556	615	Macleay's Honeyeater	Xanthotis macleayana	69				
558	605	Lewin's Honeyeater	Meliphaga lewinii	1				
		Yellow-spotted						
559	606	Honeyeater	Meliphaga notata	133				
560	612	Graceful Honeyeater	Meliphaga gracilis	99				
564	614	Yellow-faced Honeyeater	Lichenostomus chrysops	1				
568	628	White-gaped Honeyeater	Lichenostomus unicolor	1				
569	626	Yellow Honeyeater	Lichenostomus flavus	30				
587	597	Brown Honeyeater	Lichmera indistincta	6				
		Brown-backed Honeyeater						
595	595	Dusky Honeyeater	Ramsayornis modestus	15				
605	590	Lemon-bellied Flycatcher	Myzomela obscura	89				
614	379	Pale-yellow Robin	Microeca flavigaster	4				
623	396	Mangrove Robin	Tregellasia capito	50				
628	388	White-browed Robin	Eopsaltria pulverulenta	1				
629	390	Chowchilla	Poecilodryas superciliosa	1				
634	435	Eastern Whipbird	Orthonyx spaldingii	48				
639	421		Psophodes olivaceus	55				

Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
653	398	Golden Whistler	Pachycephala pectoralis	28				
655	406	Grey Whistler	Pachycephala simplex	53				
656	401	Rufous Whistler	Pachycephala rufiventris	22				
658	413	Little Shrike-thrush	Colluricincla megarhyncha	96				
661	408	Grey Shrike-thrush	Colluricincla harmonica	1				
662	368	Yellow-breasted Boatbill	Machaeirhynchus flaviventer	29				
663	373	Black-faced Monarch	Monarcha melanopsis	10				marine
665	375	Spectacled Monarch	Monarcha trivirgatus	105				marine
666	376	White-eared Monarch	Monarcha leucotis	63				
668	370	Pied Monarch	Arses kaupi	30				
670	365	Leaden Flycatcher	Myiagra rubecula	67				
671	366	Satin Flycatcher	Myiagra cyanoleuca	1				marine
672	372	Shining Flycatcher	Myiagra alecto	50				
673	728	Restless Flycatcher	Myiagra inquieta	1				
674	415	Magpie-Lark	Grallina cyanoleuca	72				marine
675	362	Rufous Fantail	Rhipidura rufifrons	78				marine
676	361	Grey Fantail	Rhipidura fuliginosa	15				
678	363	Northern Fantail	Rhipidura rufiventris	3				
679	364	Willie Wagtail	Rhipidura leucophrys	90				
680	673	Spangled Drongo	Dicrurus hottentottus	100				marine
681	424	Shrike	Coracina novaehollandiae	9				marine
682	428	Barred Cuckoo-Shrike	Coracina lineata	69				
683	425	White-bellied Cuckoo-Shrike	Coracina papuensis	28				marine
684	429	Cicadabird	Coracina tenuirostris	8				marine
687	431	Varied Triller	Lalage leucomela	116				

Appendix 2 – Fauna Database Search Results

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
688	672	Yellow Oriole	Oriolus flavocinctus	90				
689	671	Olive-backed Oriole	Oriolus sagittatus	1				
690	432	Figbird	Sphecotheres viridis	129				
691	543	White-breasted Woodswallow	Artamus leucorhynchus	113				
692	544	Masked Woodswallow	Artamus personatus	1				
697	701	Black Butcherbird	Cracticus quoyi	131				
702	694	Pied Currawong	Strepera graculina	2				
706	687	Victoria's Riflebird	Ptiloris victoriae	3				
713	692	Torresian Crow	Corvus orru	27				
717	677	Spotted Catbird	Ailuroedus melanotis	88				
729	647	Richard's Pipit	Anthus novaeseelandiae	7				marine
736	995	House Sparrow	Passer domesticus	27				
743	664	Crimson Finch	Neochmia phaeton	32	VU			
745	661	Plum-headed Finch	Neochmia modesta	1				
746	662	Red-browed Finch	Neochmia temporalis	11				
751	983	Nutmeg Mannikin	Lonchura punctulata	36				
753	657	Chestnut-breasted Mannikin	Lonchura castaneothorax	36				
763	572	Yellow-bellied Sunbird	Nectarinia jugularis	120				
764	564	Mistletoebird	Dicaeum hirundinaceum	128				
766	879	Barn Swallow	Hirundo rustica	9		J	C	marine
767	357	Welcome Swallow	Hirundo neoxena	58				marine
769	359	Tree Martin	Hirundo nigricans	18				marine
770	360	Fairy Martin	Hirundo ariel	14				
772	524	Clamorous Reed-Warbler	Acrocephalus stentoreus	13				marine
775	523	Tawny Grassbird	Megalurus timoriensis	15				
781	525	Golden-headed	Cisticola exilis	49				

Species order	Species	Common_name	Scientific_name	No of sightings from 188 surveys	Queensland Listings	Jamba	Camba	EPBC marine
		Cisticola						
785	574	Silvereye	Zosterops lateralis	104				marine
793	674	Metallic Starling	Aplonis metallica	90				marine
796	998	Common Myna	Acridotheres tristis	50				

## Queensland Museum Database Search Results

FAMILY	GENUS	SPECIES	LOCALITY	LAT	LONG	DATE
BUFONIDAE	Bufo	marinus	Innisfail General Hospital Grounds	17.32	146.01	7-Mar-66 01 Nov 95-6 Feb
MICROHYLIDAE	Cophixalus	infacetus	Stone Ck	17.28	146.01	96
MICROHYLIDAE	Cophixalus	ornatus	2Km W of Flying Fish Pt, Innisfail	17.3	146.03	17-Jan-65
MICROHYLIDAE	Cophixalus	ornatus	Stone Ck	17.28	146.01	1 Oct-1 Nov 1995 01 Mar-14 Nov 2000
MICROHYLIDAE	Cophixalus	ornatus	Stone Ck	17.28	146.01	2-Aug-74
MYOBATRACHIDAE	Limnodynastes	ornatus	Innisfail	17.32	146.01	4-Apr-73
HYLIDAE	Litoria	caerulea	Innisfail	17.32	146.01	08 Nov 1885
HYLIDAE	Litoria	inermis	Innisfail	17.32	146.01	4-Apr-73
HYLIDAE	Litoria	infraenata	Innisfail, nr river	17.32	146.02	08 Nov 1885
HYLIDAE	Litoria	latopalmata	Innisfail	17.32	146.01	4-Apr-73
HYLIDAE	Litoria	rubella	Innisfail	17.32	146.01	4-Apr-73
HYLIDAE	Litoria	rubella	Pin Gin Hill, Innisfail	17.32	146.02	4-Apr-73
CROCODYLIDAE	Crocodylus	porosus	Innisfail	17.32	146.01	0
Cheluidae	Eiseya	latisternum	Johnstone R, cibor camp site	17.3	146	0
GEKKONIDAE	Saltuarius	cornutus	Innisfail	17.32	146.01	0
SCINCIDAE	Carlia	rubrigularis	Innisfail	17.32	146.01	1915

## Appendix 2 – Fauna Database Search Results

<b>FAMILY</b>	<b>GENUS</b>	<b>SPECIES</b>	<b>LOCALITY</b>	<b>LAT</b>	<b>LONG</b>	<b>DATE</b>
SCINCIDAE	Carlia	rubrigularis	Innisfail	17.32	146.01	23-Oct-68
SCINCIDAE	Carlia	rubrigularis	Flying Fish Pt	17.3	146.05	23-Jan-75
SCINCIDAE	Carlia	rubrigularis	Polly Ck, Seymour Ra	17.28	146.02	12 Sep-22 Oct 1991
SCINCIDAE	Carlia	rubrigularis	Stone Ck, Hasenpusch Property	17.28	146.01	1/11/95-6/2/96
SCINCIDAE	Carlia	rubrigularis	Innisfail, ca 64km E, Elizabeth St-Flying Fish Pt	17.29	146.03	0
SCINCIDAE	Carlia	rubrigularis	Innisfail	17.32	146.01	0
SCINCIDAE	Carlia	rubrigularis	Innisfail, ca 64km E, Elizabeth St-Flying Fish Pt	17.3	146.04	0
SCINCIDAE	Carlia	rubrigularis	Geraldton	17.32	146.01	0
SCINCIDAE	Coeranoscincus	frontalis	Innisfail	17.32	146.01	0
SCINCIDAE	Coeranoscincus	frontalis	Geraldton	17.32	146.01	0
SCINCIDAE	Cryptoblepharus	litoralis	Flying Fish Pt	17.3	146.05	23-Jan-75
SCINCIDAE	Cryptoblepharus	litoralis	Polly Ck, Seymour Ra	17.28	146.02	12-Sep-91
SCINCIDAE	Cryptoblepharus	virgatus	Flying Fish Pt	17.3	146.05	23-Jan-75
SCINCIDAE	Eulamprus	quoyii	Innisfail	17.32	146.01	26-Oct-68
SCINCIDAE	Eulamprus	tigrinus	Stone Ck	17.28	146.01	1 Oct 95-1 Nov 95
SCINCIDAE	Eulamprus	tigrinus	Geraldton	17.32	146.01	0
SCINCIDAE	Glaphyromorphus	fuscicaudis	Polly Creek (Hasenpusch)	17.28	146.01	25-Nov-94
SCINCIDAE	Lampropholis	coggeri	Polly Creek (Hasenpusch)	17.28	146.01	25-Nov-94
SCINCIDAE	Lampropholis	coggeri	Stone Ck, Hasenpusch Property	17.28	146.01	1/11/95-6/2/96
SCINCIDAE	Saproscincus	basiliscus	Innisfail	17.32	146.01	24-Oct-68
SCINCIDAE	Saproscincus	basiliscus	Flying Fish Pt	17.3	146.05	23-Jan-75
SCINCIDAE	Saproscincus	basiliscus	W Innisfail, town swamp	17.31	146	20-Jun-76
SCINCIDAE	Saproscincus	basiliscus	Polly Creek (Hasenpusch)	17.28	146.01	25-Nov-94
SCINCIDAE	Saproscincus	basiliscus	Stone Ck, via Carradinga	17.28	146.01	14-19/Apr/1997
AGAMIDAE	Hypsilurus	boydii	Innisfail	17.32	146.01	0
ELAPIDAE	Cryptophis	nigrescens	Innisfail	17.32	146.01	0
CASUARIIDAE	Casuarius	casuarius	Innisfail	17.32	146.01	14 Jul 1885
CASUARIIDAE	Casuarius	casuarius	Innisfail	17.32	146.01	14-Oct-32
RALLIDAE	Amaurornis	olivacea	Innisfail	17.32	146.01	3-Feb-65



## Appendix 2 – Fauna Database Search Results

<b>FAMILY</b>	<b>GENUS</b>	<b>SPECIES</b>	<b>LOCALITY</b>	<b>LAT</b>	<b>LONG</b>	<b>DATE</b>
SCOLOPACIDAE	Gallinago	hardwickii	Innisfail	17.32	146.01	28-Sep-65
COLUMBIDAE	Ptilinopus	magnificus	Innisfail area	17.32	146.01	10-Aug-65
PSITTACIDAE	Platycercus	elegans	Jordan Ck, near Innisfail	17.32	146.01	18-Aug-65
CUCULIDAE	Cacomantis	flabelliformis	Jordan Ck, near Innisfail	17.32	146.01	-0-
ALCEDINIDAE	Alcedo	azurea	Innisfail	17.32	146.01	4-Aug-65
ALCEDINIDAE	Ceyx	pusillus	Innisfail	17.32	146.01	13-Aug-65
ALCEDINIDAE	Todiramphus	sanctus	Innisfail	17.32	146.01	3-Aug-65
PITTIDAE	Pitta	versicolor	Innisfail	17.32	146.01	24-Jun-65
PITTIDAE	Pitta	versicolor	Innisfail area	17.32	146.01	1-Jul-65
PITTIDAE	Pitta	versicolor	Innisfail area	17.32	146.01	4-Aug-65
CAMPEPHAGIDAE	Coracina	tenuirostris	Ella Bay, Innisfail	17.27	146.05	9-Aug-65
SYLVIIDAE	Cisticola	exilis	Innisfail	17.32	146.01	-0-
ACANTHIZIDAE	Gerygone	magnirostris	Innisfail	17.32	146.01	23-Jun-65
ACANTHIZIDAE	Gerygone	magnirostris	Innisfail	17.32	146.01	3-Aug-65
ACANTHIZIDAE	Gerygone	magnirostris	Innisfail	17.32	146.01	18-Aug-65
ACANTHIZIDAE	Gerygone	palpebrosa	Innisfail	17.32	146.01	27-Oct-70
ACANTHIZIDAE	Gerygone	palpebrosa	Innisfail area	17.32	146.01	1-Jul-65
ACANTHIZIDAE	Gerygone	palpebrosa	Innisfail area	17.32	146.01	3-Aug-65
ACANTHIZIDAE	Gerygone	palpebrosa	Ella Bay, Innisfail	17.27	146.05	16-Aug-65
ACANTHIZIDAE	Gerygone	palpebrosa	Innisfail	17.32	146.01	-0-
ACANTHIZIDAE	Sericornis	magnirostris	Innisfail	17.32	146.01	11-Nov-64
ACANTHIZIDAE	Sericornis	magnirostris	Innisfail area	17.32	146.01	29-Jun-65
ACANTHIZIDAE	Sericornis	magnirostris	Innisfail area	17.32	146.01	20-Jul-65
ACANTHIZIDAE	Sericornis	magnirostris	Innisfail	17.32	146.01	19-Aug-65
MONARCHIDAE	Arses	kaupi	Innisfail	17.32	146.01	5-Aug-65
MONARCHIDAE	Arses	kaupi	Innisfail	17.32	146.01	Oct-70
MONARCHIDAE	Monarcha	trivirgatus	Innisfail	17.32	146.01	25-Apr-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail	17.32	146.01	24-Jun-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail	17.32	146.01	25-Jun-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail area	17.32	146.01	29-Jun-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail area	17.32	146.01	30-Jun-65

## Appendix 2 – Fauna Database Search Results

<b>FAMILY</b>	<b>GENUS</b>	<b>SPECIES</b>	<b>LOCALITY</b>	<b>LAT</b>	<b>LONG</b>	<b>DATE</b>
MONARCHIDAE	Monarcha	trivirgatus	Innisfail area	17.32	146.01	1-Jul-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail area	17.32	146.01	2-Jul-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail area	17.32	146.01	21-Jul-65
MONARCHIDAE	Monarcha	trivirgatus	Innisfail	17.32	146.01	21-Jul-65
MONARCHIDAE	Myiagra	alecto	Innisfail	17.32	146.01	3-Aug-65
MONARCHIDAE	Myiagra	alecto	Innisfail area	17.32	146.01	3-Aug-65
MONARCHIDAE	Myiagra	alecto	Dinner Ck, near Innisfail	17.26	146	4-Aug-65
MONARCHIDAE	Myiagra	alecto	Innisfail	17.32	146.01	Oct-70
MONARCHIDAE	Myiagra	alecto	Mouth of Johnstone R	17.31	146.04	Oct-70
MONARCHIDAE	Myiagra	rubecula	Innisfail	17.32	146.01	8-Nov-64
MONARCHIDAE	Rhipidura	rufifrons	Innisfail area	17.32	146.01	29-Jun-65
MONARCHIDAE	Rhipidura	rufifrons	Innisfail area	17.32	146.01	30-Jun-65
MONARCHIDAE	Rhipidura	rufifrons	Innisfail area	17.32	146.01	-0-
MONARCHIDAE	Rhipidura	rufifrons	Innisfail	17.32	146.01	24-Jun-65
MONARCHIDAE	Rhipidura	rufiventris	Innisfail	17.32	146.01	13-Jul-65
PETROICIDAE	Tregellasia	capito	Innisfail area	17.32	146.01	6-Jul-65
PETROICIDAE	Tregellasia	capito	Innisfail	17.32	146.01	19-Aug-65
PETROICIDAE	Tregellasia	capito	Innisfail area	17.32	146.01	10-Sep-65
PETROICIDAE	Tregellasia	capito	Innisfail area	17.32	146.01	-0-
PACHYCEPHALIDAE	Colluricincla	megarhyncha	Innisfail	17.32	146.01	8-Nov-64
PACHYCEPHALIDAE	Colluricincla	megarhyncha	Innisfail area	17.32	146.01	7-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail	17.32	146.01	23-Jun-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail area	17.32	146.01	30-Jun-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail area	17.32	146.01	8-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail area	17.32	146.01	9-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail area	17.32	146.01	20-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail	17.32	146.01	23-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail area	17.32	146.01	29-Jul-65
PACHYCEPHALIDAE	Pachycephala	griseiceps	Innisfail	17.32	146.01	18-Aug-65
PACHYCEPHALIDAE	Pachycephala	pectoralis	Innisfail	17.32	146.01	-0-
DICAEDAE	Dicaeum	hirundinaceum	Innisfail	17.32	146.01	26-Jun-65

## Appendix 2 – Fauna Database Search Results

<b>FAMILY</b>	<b>GENUS</b>	<b>SPECIES</b>	<b>LOCALITY</b>	<b>LAT</b>	<b>LONG</b>	<b>DATE</b>
NECTARINIDAE	Nectarinia	jugularis	Johnstone R	17.3	146	28-Sep-03
NECTARINIDAE	Nectarinia	jugularis	Innisfail	17.32	146.01	5-Aug-65
NECTARINIDAE	Nectarinia	jugularis	Ella Bay, Innisfail	17.27	146.05	9-Aug-65
NECTARINIDAE	Nectarinia	jugularis	Ella Bay, Innisfail	17.27	146.05	12-Aug-71
ZOSTEROPIDAE	Zosterops	lateralis	Innisfail	17.32	146.01	24-Jun-65
ZOSTEROPIDAE	Zosterops	lateralis	Innisfail area	17.32	146.01	21-Jul-65
MELIPHAGIDAE	Meliphaga	gracilis	Innisfail area	17.32	146.01	30-Jun-65
MELIPHAGIDAE	Meliphaga	gracilis	Innisfail	17.32	146.01	5-Aug-65
MELIPHAGIDAE	Meliphaga	gracilis	Innisfail area	17.32	146.01	5-Aug-65
MELIPHAGIDAE	Meliphaga	gracilis	Innisfail	17.32	146.01	18-Aug-65
MELIPHAGIDAE	Meliphaga	gracilis	Innisfail	17.32	146.01	31-Aug-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail	17.32	146.01	22-Jun-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail	17.32	146.01	24-Jun-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail area	17.32	146.01	30-Jun-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail area	17.32	146.01	6-Jul-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail area	17.32	146.01	7-Jul-65
MELIPHAGIDAE	Meliphaga	notata	Innisfail area	17.32	146.01	13-Jul-65
MELIPHAGIDAE	Myzomela	obscura	Innisfail area	17.32	146.01	30-Jun-65
MELIPHAGIDAE	Myzomela	obscura	Ella Bay, Innisfail	17.27	146.05	4-Aug-65
MELIPHAGIDAE	Xanthotis	macleayana	Innisfail area	17.32	146.01	6-Jul-65
MELIPHAGIDAE	Xanthotis	macleayana	Innisfail area	17.32	146.01	8-Jul-65
MELIPHAGIDAE	Xanthotis	macleayana	Ella Bay, Innisfail	17.27	146.05	11-Aug-65
MELIPHAGIDAE	Xanthotis	macleayana	Ella Bay, Innisfail	17.27	146.05	12-Aug-65
STURNIDAE	Aplonis	metallica	Innisfail	17.32	146.01	20/12/1976
STURNIDAE	Aplonis	metallica	Palmerston Hwy, near Innisfail	17.32	145.59	Jan-70
STURNIDAE	Aplonis	metallica	Innisfail	17.32	146.01	-0-
CRATICIDAE	Cracticus	quoyi	Innisfail area	17.32	146.01	1-Jul-65
Peramelidae	Isoodon	macrourus	Innisfail	17.32	146.01	0
Petauridae	Dactylopsila	trivirgata	Innisfail	17.32	146.01	9-Feb-66
Macropodidae	Dendrolagus	lumholtzi	Innisfail	17.32	146.01	0
Pteropodidae	Syconycteris	australis	Innisfail	17.32	146.01	19-Dec-64

## Appendix 2 – Fauna Database Search Results

<b>FAMILY</b>	<b>GENUS</b>	<b>SPECIES</b>	<b>LOCALITY</b>	<b>LAT</b>	<b>LONG</b>	<b>DATE</b>
Muridae	Melomys	burtoni	Innisfail Common	17.32	146.01	8-Nov-66
Muridae	Melomys	cervinipes	Innisfail Common	17.32	146.01	8-Nov-66
Muridae	Rattus	fuscipes	Innisfail Common	17.32	146.01	8-Nov-66
Muridae	Rattus	fuscipes	Palmerston SF	17.32	146.01	20-Sep-69

**Appendix 3:**  
**Commonwealth EPBC Act Online Protected Matters**  
**Search Tool Results**





## Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

4 November 2008 10:18

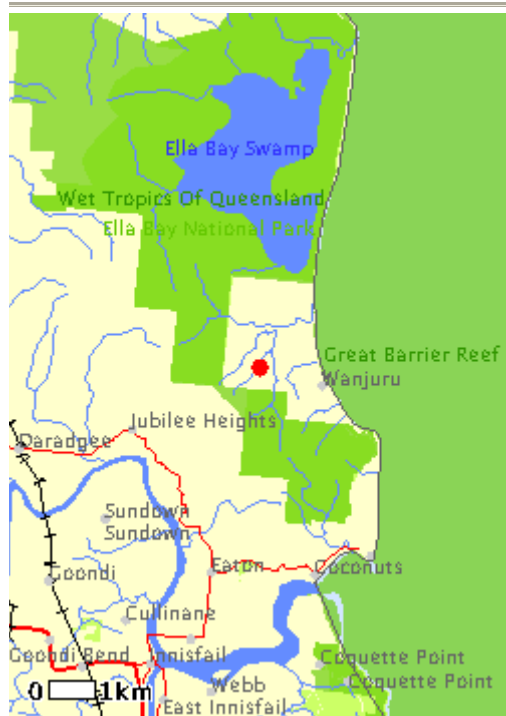
# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at

<http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>



This map may contain data which are  
© Commonwealth of Australia  
(Geoscience Australia)  
© 2007 MapData Sciences Pty Ltd, PSMA

**Search Type:** Point  
**Buffer:** 5 km  
**Coordinates:** -17.463755,146.053334



**Report Contents:** [Summary](#)  
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)  
[Acknowledgments](#)

## Summary

### Matters of National Environmental Significance

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

<http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

<b><u>World Heritage Properties:</u></b>	2
<b><u>National Heritage Places:</u></b>	2
<b>Wetlands of International Significance: (Ramsar Sites)</b>	None
<b>Commonwealth Marine Areas:</b>	None
<b><u>Threatened Ecological Communities:</u></b>	1
<b><u>Threatened Species:</u></b>	30
<b><u>Migratory Species:</u></b>	33

### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity

that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

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

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

<b>Commonwealth Lands:</b>	None
<b>Commonwealth Heritage Places:</b>	None
<b><u>Places on the RNE:</u></b>	2
<b><u>Listed Marine Species:</u></b>	84
<b><u>Whales and Other Cetaceans:</u></b>	12
<b>Critical Habitats:</b>	None
<b>Commonwealth Reserves:</b>	None

## Extra Information

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

<b><u>State and Territory Reserves:</u></b>	3
<b><u>Other Commonwealth Reserves:</u></b>	1
<b>Regional Forest Agreements:</b>	None

## Matters of National Environmental Significance

World Heritage Properties [ [Dataset Information](#) ]

[Great Barrier Reef QLD](#)

[Wet Tropics of Queensland QLD](#)

National Heritage Places [ [Dataset Information](#) ]

[Great Barrier Reef QLD](#)

[Wet Tropics of Queensland QLD](#)

Threatened Ecological Communities [ <a href="#">Dataset Information</a> ]	Status	Type of Presence
<a href="#">Littoral Rainforest and Coastal Vine Thickets of Eastern Australia</a>	Critically Endangered	Community likely to occur within area
Threatened Species [ <a href="#">Dataset Information</a> ]	Status	Type of Presence

**Birds**

<a href="#">Casuarius casuarius johnsonii</a> Southern Cassowary (Australian), Southern Cassowary	Endangered	Species or species habitat known to occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe	Vulnerable	Species or species habitat may occur within area

**Frogs**

<a href="#">Litoria nannotis</a> Waterfall Frog, Torrent Tree Frog	Endangered	Species or species habitat may occur within area
<a href="#">Litoria rheocola</a> Common Mistfrog	Endangered	Species or species habitat may occur within area
<a href="#">Nyctimystes dayi</a> Lace-eyed Tree Frog, Australian Lacelid	Endangered	Species or species habitat may occur within area

**Mammals**

<a href="#">Balaenoptera musculus</a> Blue Whale	Endangered	Species or species habitat may occur within area
<a href="#">Dasyurus hallucatus</a> Northern Quoll	Endangered	Species or species habitat may occur within area
<a href="#">Hipposideros semoni</a> Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat	Endangered	Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale	Vulnerable	Breeding known to occur within area
<a href="#">Pteropus conspicillatus</a> Spectacled Flying-fox	Vulnerable	Species or species habitat may occur within area
<a href="#">Rhinolophus philippinensis (large form)</a>	Endangered	Species or species habitat may

Greater Large-eared Horseshoe Bat		occur within area
<a href="#"><u>Saccolaimus saccolaimus nudicluniatu</u></a>	Critically	Species or species habitat may
Bare-rumped Sheathail Bat	Endangered	occur within area

## Reptiles

<a href="#"><u>Caretta caretta</u></a>	Endangered	Species or species habitat may
Loggerhead Turtle		occur within area
<a href="#"><u>Chelonia mydas</u></a>	Vulnerable	Species or species habitat may
Green Turtle		occur within area
<a href="#"><u>Dermochelys coriacea</u></a>	Vulnerable	Species or species habitat may
Leathery Turtle, Leatherback Turtle, Luth		occur within area
<a href="#"><u>Eretmochelys imbricata</u></a>	Vulnerable	Species or species habitat may
Hawksbill Turtle		occur within area
<a href="#"><u>Lepidochelys olivacea</u></a>	Endangered	Species or species habitat may
Pacific Ridley, Olive Ridley		occur within area
<a href="#"><u>Natator depressus</u></a>	Vulnerable	Species or species habitat may
Flatback Turtle		occur within area

## Sharks

<a href="#"><u>Pristis zijsron</u></a>	Vulnerable	Species or species habitat may
Green Sawfish, Dindagubba, Narrowsnout Sawfish		occur within area
<a href="#"><u>Rhincodon typus</u></a>	Vulnerable	Species or species habitat may
Whale Shark		occur within area

## Plants

<a href="#"><u>Arenga australasica</u></a>	Vulnerable	Species or species habitat
Australian Arenga Palm		likely to occur within area
<a href="#"><u>Carronia pedicellata</u></a>	Endangered	Species or species habitat
		likely to occur within area
<a href="#"><u>Dendrobium mirbelianum</u></a>	Endangered	Species or species habitat
dendrobium orchid		likely to occur within area
<a href="#"><u>Dendrobium superbiens</u></a>	Vulnerable	Species or species habitat
		likely to occur within area
<a href="#"><u>Hodgkinsonia frutescens</u></a>	Vulnerable	Species or species habitat
Atherton Turkey Bush		likely to occur within area
<a href="#"><u>Huperzia phlegmarioides</u></a>	Vulnerable	Species or species habitat
Layered Tassel-fern		likely to occur within area
<a href="#"><u>Huperzia prolifera</u></a>	Vulnerable	Species or species habitat
Square Tassel-fern		likely to occur within area
<a href="#"><u>Polyscias bellendenkerensis</u></a>	Vulnerable	Species or species habitat
		likely to occur within area
<a href="#"><u>Taeniophyllum muelleri</u></a>	Vulnerable	Species or species habitat may



Minute Orchid, Ribbon-root Orchid		occur within area
Migratory Species [ <a href="#">Dataset Information</a> ]	Status	Type of Presence
<b>Migratory Terrestrial Species</b>		
<b>Birds</b>		
<a href="#"><i>Haliaeetus leucogaster</i></a> White-bellied Sea-Eagle	Migratory	Species or species habitat likely to occur within area
<a href="#"><i>Hirundapus caudacutus</i></a> White-throated Needletail	Migratory	Species or species habitat may occur within area
<a href="#"><i>Hirundo rustica</i></a> Barn Swallow	Migratory	Species or species habitat may occur within area
<a href="#"><i>Merops ornatus</i></a> Rainbow Bee-eater	Migratory	Species or species habitat may occur within area
<a href="#"><i>Monarcha melanopsis</i></a> Black-faced Monarch	Migratory	Breeding may occur within area
<a href="#"><i>Monarcha trivirgatus</i></a> Spectacled Monarch	Migratory	Breeding likely to occur within area
<a href="#"><i>Myiagra cyanoleuca</i></a> Satin Flycatcher	Migratory	Species or species habitat likely to occur within area
<a href="#"><i>Rhipidura rufifrons</i></a> Rufous Fantail	Migratory	Breeding may occur within area
<b>Migratory Wetland Species</b>		
<b>Birds</b>		
<a href="#"><i>Ardea alba</i></a> Great Egret, White Egret	Migratory	Species or species habitat may occur within area
<a href="#"><i>Ardea ibis</i></a> Cattle Egret	Migratory	Species or species habitat may occur within area
<a href="#"><i>Gallinago hardwickii</i></a> Latham's Snipe, Japanese Snipe	Migratory	Species or species habitat may occur within area
<a href="#"><i>Nettapus coromandelianus albipennis</i></a> Australian Cotton Pygmy-goose	Migratory	Species or species habitat may occur within area
<a href="#"><i>Numenius minutus</i></a> Little Curlew, Little Whimbrel	Migratory	Species or species habitat may occur within area
<a href="#"><i>Rostratula benghalensis s. lat.</i></a> Painted Snipe	Migratory	Species or species habitat may occur within area
<b>Migratory Marine Birds</b>		
<a href="#"><i>Apus pacificus</i></a> Fork-tailed Swift	Migratory	Species or species habitat may occur within area
<a href="#"><i>Ardea alba</i></a> Great Egret, White Egret	Migratory	Species or species habitat may occur within area

<a href="#"><u>Ardea ibis</u></a> Cattle Egret	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Sterna albifrons</u></a> Little Tern	Migratory	Species or species habitat may occur within area
--	-----------	--

### **Migratory Marine Species**

#### **Mammals**

<a href="#"><u>Balaenoptera edeni</u></a> Bryde's Whale	Migratory	Species or species habitat may occur within area
--	-----------	--

<a href="#"><u>Balaenoptera musculus</u></a> Blue Whale	Migratory	Species or species habitat may occur within area
--	-----------	--

<a href="#"><u>Dugong dugon</u></a> Dugong	Migratory	Species or species habitat likely to occur within area
---	-----------	--

<a href="#"><u>Megaptera novaeangliae</u></a> Humpback Whale	Migratory	Breeding known to occur within area
---	-----------	-------------------------------------

<a href="#"><u>Orcaella brevirostris</u></a> Irrawaddy Dolphin	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Orcinus orca</u></a> Killer Whale, Orca	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Sousa chinensis</u></a> Indo-Pacific Humpback Dolphin	Migratory	Species or species habitat may occur within area
---	-----------	--

#### **Reptiles**

<a href="#"><u>Caretta caretta</u></a> Loggerhead Turtle	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Chelonia mydas</u></a> Green Turtle	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Crocodylus porosus</u></a> Estuarine Crocodile, Salt-water Crocodile	Migratory	Species or species habitat likely to occur within area
--	-----------	--

<a href="#"><u>Dermochelys coriacea</u></a> Leathery Turtle, Leatherback Turtle, Luth	Migratory	Species or species habitat may occur within area
--	-----------	--

<a href="#"><u>Eretmochelys imbricata</u></a> Hawksbill Turtle	Migratory	Species or species habitat may occur within area
---	-----------	--

<a href="#"><u>Lepidochelys olivacea</u></a> Pacific Ridley, Olive Ridley	Migratory	Species or species habitat may occur within area
--	-----------	--

<a href="#"><u>Natator depressus</u></a> Flatback Turtle	Migratory	Species or species habitat may occur within area
---	-----------	--

#### **Sharks**

<a href="#"><u>Rhincodon typus</u></a> Whale Shark	Migratory	Species or species habitat may occur within area
---	-----------	--

## Other Matters Protected by the EPBC Act

Listed Marine Species [ <a href="#">Dataset Information</a> ]	Status	Type of Presence
<b>Birds</b>		
<a href="#">Anseranas semipalmata</a> Magpie Goose	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Ardea ibis</a> Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle	Listed	Species or species habitat likely to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Hirundo rustica</a> Barn Swallow	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch	Listed - overfly marine area	Breeding may occur within area
<a href="#">Monarcha trivirgatus</a>	Listed -	Breeding likely to occur within

Spectacled Monarch	overfly marine area	area
<a href="#"><i>Myiagra cyanoleuca</i></a> Satin Flycatcher	Listed - overfly marine area	Species or species habitat likely to occur within area
<a href="#"><i>Nettapus coromandelianus albigenis</i></a> Australian Cotton Pygmy-goose	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#"><i>Numenius minutus</i></a> Little Curlew, Little Whimbrel	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#"><i>Rhipidura rufifrons</i></a> Rufous Fantail	Listed - overfly marine area	Breeding may occur within area
<a href="#"><i>Rostratula benghalensis s. lat.</i></a> Painted Snipe	Listed - overfly marine area	Species or species habitat may occur within area
<a href="#"><i>Sterna albifrons</i></a> Little Tern	Listed	Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#"><i>Dugong dugon</i></a> Dugong	Listed	Species or species habitat likely to occur within area
<b>Ray-finned fishes</b>		
<a href="#"><i>Acentronura tentaculata</i></a> Hairy Pygmy Pipehorse	Listed	Species or species habitat may occur within area
<a href="#"><i>Bulbonaricus davaoensis</i></a> Davao Pughead Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><i>Choeroichthys brachysoma</i></a> Pacific Short-bodied Pipefish, Short- bodied Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><i>Choeroichthys sculptus</i></a> Sculptured Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><i>Choeroichthys suillus</i></a> Pig-snouted Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><i>Corythoichthys amplexus</i></a> Fijian Banded Pipefish, Brown-banded Pipefish	Listed	Species or species habitat may occur within area

<a href="#"><u><i>Corythoichthys flavofasciatus</i></u></a> Yellow-banded Pipefish, Network Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Corythoichthys intestinalis</i></u></a> Australian Messmate Pipefish, Banded Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Corythoichthys ocellatus</i></u></a> Orange-spotted Pipefish, Ocellated Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Corythoichthys paxtoni</i></u></a> Paxton's Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Corythoichthys schultzi</i></u></a> Schultz's Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Cosmocampus maxweberi</i></u></a> Maxweber's Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Doryrhamphus dactyliophorus</i></u></a> Ringed Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Doryrhamphus excisus</i></u></a> Indian Blue-stripe Pipefish, Blue-stripe Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Doryrhamphus janssi</i></u></a> Cleaner Pipefish, Janss' Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Festucalex cinctus</i></u></a> Girdled Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Festucalex gibbsi</i></u></a> Gibbs' Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus dunckeri</i></u></a> Red-hair Pipefish, Duncker's Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus grayi</i></u></a> Mud Pipefish, Gray's Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus macrorhynchus</i></u></a> Whiskered Pipefish, Ornate Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus mataafae</i></u></a> Samoan Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus nitidus</i></u></a> Glittering Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Halicampus spinirostris</i></u></a> Spiny-snout Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Hippichthys cyanospilos</i></u></a> Blue-speckled Pipefish, Blue-spotted Pipefish	Listed	Species or species habitat may occur within area
<a href="#"><u><i>Hippichthys heptagonus</i></u></a>	Listed	Species or species habitat may



Madura Pipefish, Reticulated Freshwater Pipefish		occur within area
<a href="#"><u>Hippichthys penicillus</u></a>	Listed	Species or species habitat may occur within area
Beady Pipefish, Steep-nosed Pipefish		
<a href="#"><u>Hippichthys spicifer</u></a>	Listed	Species or species habitat may occur within area
Belly-barred Pipefish, Banded Freshwater Pipefish		
<a href="#"><u>Hippocampus bargibanti</u></a>	Listed	Species or species habitat may occur within area
Pygmy Seahorse		
<a href="#"><u>Hippocampus histrix</u></a>	Listed	Species or species habitat may occur within area
Spiny Seahorse		
<a href="#"><u>Hippocampus kuda</u></a>	Listed	Species or species habitat may occur within area
Spotted Seahorse, Yellow Seahorse		
<a href="#"><u>Hippocampus planifrons</u></a>	Listed	Species or species habitat may occur within area
Flat-face Seahorse		
<a href="#"><u>Hippocampus zebra</u></a>	Listed	Species or species habitat may occur within area
Zebra Seahorse		
<a href="#"><u>Micrognathus andersonii</u></a>	Listed	Species or species habitat may occur within area
Anderson's Pipefish, Shortnose Pipefish		
<a href="#"><u>Micrognathus brevirostris</u></a>	Listed	Species or species habitat may occur within area
Thorn-tailed Pipefish		
<a href="#"><u>Microphis brachyurus</u></a>	Listed	Species or species habitat may occur within area
Short-tailed Pipefish, Short-tailed River Pipefish		
<a href="#"><u>Nannocampus pictus</u></a>	Listed	Species or species habitat may occur within area
Painted Pipefish, Reef Pipefish		
<a href="#"><u>Phoxocampus diacanthus</u></a>	Listed	Species or species habitat may occur within area
Pale-blotched Pipefish, Spined Pipefish		
<a href="#"><u>Siokunichthys breviceps</u></a>	Listed	Species or species habitat may occur within area
Soft-coral Pipefish		
<a href="#"><u>Solegnathus hardwickii</u></a>	Listed	Species or species habitat may occur within area
Pipehorse		
<a href="#"><u>Solenostomus cyanopterus</u></a>	Listed	Species or species habitat may occur within area
Blue-finned Ghost Pipefish, Robust Ghost Pipefish		
<a href="#"><u>Solenostomus paradoxus</u></a>	Listed	Species or species habitat may occur within area
Harlequin Ghost Pipefish, Ornate Ghost Pipefish		
<a href="#"><u>Syngnathoides biaculeatus</u></a>	Listed	Species or species habitat may occur within area
Double-ended Pipehorse, Alligator Pipefish		
<a href="#"><u>Trachyrhamphus bicoarctatus</u></a>	Listed	Species or species habitat may

Bend Stick Pipefish, Short-tailed Pipefish		occur within area
<a href="#"><i>Trachyrhamphus longirostris</i></a>	Listed	Species or species habitat may occur within area
Long-nosed Pipefish, Straight Stick Pipefish		
<b>Reptiles</b>		
<a href="#"><i>Acalyptophis peronii</i></a>	Listed	Species or species habitat may occur within area
Horned Seasnake		
<a href="#"><i>Aipysurus duboisii</i></a>	Listed	Species or species habitat may occur within area
Dubois' Seasnake		
<a href="#"><i>Aipysurus eydouxii</i></a>	Listed	Species or species habitat may occur within area
Spine-tailed Seasnake		
<a href="#"><i>Aipysurus laevis</i></a>	Listed	Species or species habitat may occur within area
Olive Seasnake		
<a href="#"><i>Astrotia stokesii</i></a>	Listed	Species or species habitat may occur within area
Stokes' Seasnake		
<a href="#"><i>Caretta caretta</i></a>	Listed	Species or species habitat may occur within area
Loggerhead Turtle		
<a href="#"><i>Chelonia mydas</i></a>	Listed	Species or species habitat may occur within area
Green Turtle		
<a href="#"><i>Crocodylus porosus</i></a>	Listed	Species or species habitat likely to occur within area
Estuarine Crocodile, Salt-water Crocodile		
<a href="#"><i>Dermochelys coriacea</i></a>	Listed	Species or species habitat may occur within area
Leathery Turtle, Leatherback Turtle, Luth		
<a href="#"><i>Disteira kingii</i></a>	Listed	Species or species habitat may occur within area
Spectacled Seasnake		
<a href="#"><i>Disteira major</i></a>	Listed	Species or species habitat may occur within area
Olive-headed Seasnake		
<a href="#"><i>Enhydrina schistosa</i></a>	Listed	Species or species habitat may occur within area
Beaked Seasnake		
<a href="#"><i>Eretmochelys imbricata</i></a>	Listed	Species or species habitat may occur within area
Hawksbill Turtle		
<a href="#"><i>Hydrophis elegans</i></a>	Listed	Species or species habitat may occur within area
Elegant Seasnake		
<a href="#"><i>Hydrophis mcdowelli</i></a>	Listed	Species or species habitat may occur within area
<a href="#"><i>Hydrophis ornatus</i></a>	Listed	Species or species habitat may occur within area
a seasnake		
<a href="#"><i>Lapemis hardwickii</i></a>	Listed	Species or species habitat may occur within area
Spine-bellied Seasnake		

<a href="#"><u>Laticauda colubrina</u></a> a sea krait	Listed	Species or species habitat may occur within area
<a href="#"><u>Laticauda laticaudata</u></a> a sea krait	Listed	Species or species habitat may occur within area
<a href="#"><u>Lepidochelys olivacea</u></a> Pacific Ridley, Olive Ridley	Listed	Species or species habitat may occur within area
<a href="#"><u>Natator depressus</u></a> Flatback Turtle	Listed	Species or species habitat may occur within area
<a href="#"><u>Pelamis platurus</u></a> Yellow-bellied Seasnake	Listed	Species or species habitat may occur within area
Whales and Other Cetaceans [ <a href="#"><u>Dataset Information</u></a> ]	Status	Type of Presence
<a href="#"><u>Balaenoptera acutorostrata</u></a> Minke Whale	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Balaenoptera edeni</u></a> Bryde's Whale	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Balaenoptera musculus</u></a> Blue Whale	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Delphinus delphis</u></a> Common Dolphin	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Grampus griseus</u></a> Risso's Dolphin, Grampus	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Megaptera novaeangliae</u></a> Humpback Whale	Cetacean	Breeding known to occur within area
<a href="#"><u>Orcaella brevirostris</u></a> Irrawaddy Dolphin	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Orcinus orca</u></a> Killer Whale, Orca	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Sousa chinensis</u></a> Indo-Pacific Humpback Dolphin	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Stenella attenuata</u></a> Spotted Dolphin, Pantropical Spotted Dolphin	Cetacean	Species or species habitat may occur within area
<a href="#"><u>Tursiops aduncus</u></a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin	Cetacean	Species or species habitat likely to occur within area
<a href="#"><u>Tursiops truncatus s. str.</u></a> Bottlenose Dolphin	Cetacean	Species or species habitat may occur within area
Places on the RNE [ <a href="#"><u>Dataset Information</u></a> ] Note that not all Indigenous sites may be listed.		

## Natural

[Ella Bay National Park \(1978 boundary\) QLD](#)

[Great Barrier Reef Region QLD](#)

## Extra Information

State and Territory Reserves [ [Dataset Information](#) ]

Cairns Marine Park, QLD

Carello Palm Swamp Conservation Park, QLD

Ella Bay National Park, QLD

Other Commonwealth Reserves [ [Dataset Information](#) ]

Great Barrier Reef Marine Park, COM

## Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

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

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

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

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

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

## Acknowledgments

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

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUcliM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

[Top](#) | [About us](#) | [Advanced search](#) | [Contact us](#) | [Information services](#) | [Publications](#) | [Site index](#) | [What's new](#)

[Accessibility](#) | [Disclaimer](#) | [Privacy](#) | [© Commonwealth of Australia 2004](#)

Last updated: Monday, 21-Jul-2008 10:56:50 EST

[Department of the Environment, Water, Heritage and the Arts](#)

GPO Box 787 Canberra ACT 2601 Australia

Telephone: +61 (0)2 6274 1111

© Commonwealth of Australia 2004



**Appendix 4:**  
**Comments on Terrestrial Vertebrate Species of**  
**Special Conservation Significance Obtained from**  
**Database Searches but Undetected in the Study**  
**Area**

The following list is compiled from Appendices 2 and 3.  
Special Status abbreviations are as follows:

**Queensland's Nature Conservation Act 1992 (NCA Status):** E = Endangered, V = Vulnerable, R = Rare, S = Special Least Concern, LC = Least Concern wildlife.

**Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Status):** CE = Critically Endangered, E = Endangered, V = Vulnerable, M = Migratory Species.

Genus Species	Common Name	NC Act Status	EPBC Act Status	Comments
<b>INVERTEBRATES</b>				
<i>Hypochrysops apollo apollo</i>	Apollo Jewel (wet tropics subspecies)	V		Species predicted to occur. See section 5.6.1
<b>AMPHIBIANS</b>				
<i>Litoria nannotis</i>	Torrent Tree Frog	E	E	Waterfall frogs occur in rainforest and wet sclerophyll forest but are usually restricted to waterfalls or cascades. Marginal habitat occurs in the study area, however no individuals were located during the 2006 or 2008 surveys and there are no database records for the region. The species is considered unlikely to occur, but may possibly occur in the foothills adjacent to the western boundary of the study site.
<i>Nyctimystes dayi</i>	Australian Lacelid	E	E	Species predicted to occur. See section 5.6.2
<b>REPTILES</b>				
	Marine Turtles	V	V and E	Predicted to occur. See section 5.6.3
<i>Coeranoscincus frontalis</i>	Limbless Snake-tooth Skink	R		Predicted to occur. See section 5.6.4
<b>BIRDS</b>				
<i>Nettapus coromandelianus</i>	Cotton Pygmy-goose	R	M	The Cotton Pygmy-goose utilises freshwater lagoons and suitable artificial waterbodies with abundant aquatic vegetation. No suitable habitat exists in the study site and the species is not predicted to occur.
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	R		Predicted to occur. See section 5.6.5
<i>Erythrorhynchus radiatus</i>	Red Goshawk	E	V	The Red Goshawk occurs in a variety of woodland and forest, preferring a mosaic of vegetation types and permanent water, particularly riverine forests. It avoids very open or dense habitats and has a very large home range (up to 200km <sup>2</sup> ). There are no database records for this species from the study area. There is no suitable habitat and the species is considered unlikely to occur in the study site.
<i>Sterna albifrons</i>	Little Tern	E	M	Predicted to occur. See section 5.6.6
<i>Rostratula australis</i>	Australian Painted Snipe	V	V, M	Predicted to occur. See section 5.6.7

APPENDIX 4 – COMMENTS ON SPECIES OF SPECIAL CONSERVATION SIGNIFICANCE OBTAINED FROM DATABASE SEARCHES BUT UNDETECTED IN THE STUDY AREA

Genus Species	Common Name	NC Act Status	EPBC Act Status	Comments
<i>Neochmia phaeton phaeton</i>	Crimson Finch	V		Crimson Finches are mainly found in eucalypt-pandanus grassy woodlands in tropical Australia, although they may also be found in disturbed areas such as parks, gardens, paddocks and road edges. There are several database records of this species for the region. Although suitable habitat exists in the study area, this species was not observed in the 2006 or 2008 surveys. It is likely the species is unable to colonise due to the barrier of the surrounding rainforest. Widening of the access road may slightly increase the possibility that the species will colonise the study site.
<b>MAMMALS</b>				
<i>Dasyurus hallucatus</i>	Northern Quoll	LC	V	Predicted to occur. See section 5.6.8.
<i>Dendrolagus lumholtzi</i>	Lumholtz's Tree-Kangaroo	R		This species is generally restricted to montane rainforest, although historically they also occurred in lowland rainforest. There is one Queensland Museum database record from Innisfail, however this is likely to be an old record. The species is considered unlikely to occur in the study area.
<i>Rhinolophus philippensis</i> (large form)	Greater Horseshoe-Bat	E	E	Predicted to occur 5.6.9.
<i>Hipposideros semoni</i>	Semon's Leafnosed-Bat	E	E	Predicted to occur 5.6.10.
<i>Saccolaimus saccolaimus nudicluniatus</i>	Bare-rumped Sheathtail-Bat	E	CE	This bat species occurs in coastal eucalypt woodlands north of Bowen. There is no suitable habitat in the study area, there are no database records and the species is considered unlikely to occur.

**Appendix 5:**  
**BAAM Terrestrial Vertebrate Species List and**  
**Locations**

**Ella Bay Integrated Resort Development: Vertebrate species list derived from BAAM surveys conducted in October 2006 and November 2008****Abbreviations**

**Data Source: BAAM** = Data collected by BAAM staff in November 2008 (X) and October 2006 (x).

**Status: EPBC:** E = Endangered; V = Vulnerable; M = Migratory. **NCA:** E = Endangered; V = Vulnerable; R = Rare; S = of Special Concern (Migratory); CS = Cultural Significance; LC = Least Concern; I = Introduced.

Unless otherwise noted, this table follows the nomenclature provided by the CSIRO List of Australian Vertebrates (Clayton *et al.* 2006) as it provides a single point of reference for all terrestrial vertebrate groups. Any notable variations in common and/or scientific names of conservation significant species are identified in the report text and as footnotes hereunder. With the exception of alterations due to subsequent taxonomic revision, species reported by sources other than BAAM are accepted at face value.

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<b>FISH</b>																	
ANGUILLIDAE																	
<i>Anguilla reinhardtii</i>	Marbled Eel			X							X						
MELANOTAENIIDAE																	
<i>Cairnsichthys rhombosomoides</i>	Cairns Rainbowfish										x		X				
<i>Melanotaenia maccullochi</i>	McCulloch's Rainbowfish					x					x						
<i>Melanotaenia splendida splendida</i>	Eastern Rainbowfish					x					x						
PSEUDOMUGILIDAE																	
<i>Pseudomugil signifer</i>	Pacific Blue-eye				X												
TERAPONTIDAE																	
<i>Leiopotherapan unicolor</i>	Spangled Perch										x						
KUHLIIDAE																	
<i>Kuhlia rupestris</i>	Jungle Perch			X	X	x	Xx				Xx						
ELEOTRIDAE																	
<i>Bunaka gyrinoides</i>	Greenback Gauvinia			X													
<i>Hypseleotris compressus</i>	Empire Gudgeon			X	X	Xx	Xx				Xx						
<b>AMPHIBIANS</b>																	
MYOBATRACHIDAE																	
<i>Limnodynastes peronii</i>	Brown-striped Frog			X				x								LC	
HYLIDAE																	
<i>Litoria bicolor</i>	Northern Dwarf Tree Frog														x	LC	
<i>Litoria fallax</i>	Eastern Dwarf Tree	X					X								X	LC	

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
	Frog																
<i>Litoria genimaculata</i>	New Guinea Tree Frog			X							X	X			x	R	
<i>Litoria gracilentata</i>	Dainty Green Tree Frog	X									X					LC	
<i>Litoria infrafronata</i>	Giant Tree Frog			X		X	X				X	X				LC	
<i>Litoria rheocola</i>	Common Mist Frog											X			x	E	E
<i>Litoria rubella</i>	Desert Tree Frog	X	X					X	X							LC	
<i>Litoria wilcoxii</i>	no common name						X				X					LC	
MICROHYLIDAE																	
<i>Cophixalus infacetus</i>	Inelegant Frog			X						X						R	
<i>Cophixalus ornatus</i>	Ornate Frog														Xx	LC	
RANIDAE																	
<i>Rana daemeli</i>	Wood Frog						X								Xx	LC	
BUFONIDAE																	
<i>Bufo marinus</i>	Cane Toad		X		X		Xx	x	x						X	I	
REPTILES																	
CROCODYLIDAE																	
<i>Crocodylus porosus</i>	Saltwater Crocodile													X	X	V	M
GEKKONIDAE																	
<i>Hemidactylus frenatus</i>	House Gecko	X													Xx	I	
<i>Lepidodactylus lugubris</i>	Mourning Gecko														X	LC	
SCINCIDAE																	
<i>Carlia rubrigularis</i>	Red-throated Rainbow-skink		X	X	X	Xx	X	Xx	Xx				X			LC	
<i>Cryptoblepharus litoralis</i>	Supralittoral Shinning-skink														X	LC	
<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink														x	LC	
<i>Cyclodomorphus gerrardii</i>	Pink-tongued Skink														X	LC	
<i>Egernia frerei</i>	Major Skink	X	X	X												LC	
<i>Eulamprus tigrinus</i>	Yellow-blotched Forest-skink				X					X						R	
<i>Lampropholis coggeri</i>	Rainforest Sunskink					X		X	X							LC	
<i>Saproscincus basiliscus</i>	no common name				X			X				X				LC	
AGAMIDAE																	
<i>Physignathus lesueurii</i>	Water Dragon			X												LC	
VARANIDAE																	
<i>Varanus varius</i>	Lace Monitor		X	X	X				X							LC	
BIODAE																	
<i>Morelia amthistina</i>	Amethyst Python														x	LC	



Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<b>COLUBRIDAE</b>																	
<i>Boiga irregularis</i>	Brown Tree Snake														X	LC	
<i>Tropidonophis mairii</i>	Freshwater Snake		X													LC	
<b>BIRDS</b>																	
<b>CASUARIIDAE</b>																	
<i>Casuarus casuaris</i>	Southern Cassowary		X	X	X										x	E	E
<b>MEGAPODIIDAE</b>																	
<i>Megapodius reinwardt</i>	Orange-footed Scrubfowl		X		x	Xx	Xx	Xx								LC	
<b>THRESKIORNITHIDAE</b>																	
<i>Threskiornis molucca</i>	Australian White Ibis														x	LC	
<b>ARDEIDAE</b>																	
<i>Ixobrychus flavicollis</i>	Black Bittern														x	LC	
<i>Bubulcus ibis</i>	Cattle Egret														Xx	S	M
<i>Egretta sacra</i>	Eastern Reef Egret														X	S	M
<b>ACCIPITRIDAE</b>																	
<i>Haliastur indus</i>	Brahminy Kite														X	LC	
<i>Pandion haliaetus</i>	Osprey														Xx	S	M
<i>Accipiter novaehollandiae</i>	Grey Goshawk								X	X					x	R	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle													X	Xx	S	M
<i>Haliastur sphenurus</i>	Whistling Kite														x	LC	
<i>Aviceda subcristata</i>	Pacific Baza														Xx	LC	
<b>BURHINIDAE</b>																	
<i>Burhinus grallarius</i>	Bush Stone-curlew														X	LC	
<i>Esacus magnirostris</i>	Beach Stone-curlew					X									x	V	
<b>HAEMATOPODIDAE</b>																	
<i>Haematopus longirostris</i>	Pied Oystercatcher					X										LC	
<b>CHARADRIIDAE</b>																	
<i>Vanellus miles</i>	Masked Lapwing														Xx	LC	
<b>LARIDAE</b>																	
<i>Sterna bergii</i>	Crested Tern														x	S	M
<b>COLUMBIDAE</b>																	
<i>Streptopelia chinensis</i>	Spotted Turtle-Dove														X	LC	
<i>Chalcophaps indica</i>	Emerald Dove														X	LC	
<i>Ocyphaps lophotes</i>	Crested Pigeon														X	LC	
<i>Geopelia placida</i>	Peaceful Dove								X						X	LC	
<i>Geopelia humeralis</i>	Bar-shouldered Dove														Xx	LC	
<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove													X		LC	

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove							X								LC	
<i>Ducula bicolor</i>	Pied Imperial-Pigeon		X		X		x	X	X						X	LC	
CACATUIDAE																	
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo			X	X										x	LC	
PSITTACIDAE																	
<i>Cyclopsitta diophthalma macleayana</i>	Macleay's Fig-Parrot				X	x	X	Xx	X						X	V	
CUCULIDAE																	
<i>Cacomantis variolosus</i>	Brush Cuckoo														x	LC	
<i>Cacomantis flebelliformis</i>	Fan-tailed Cuckoo			X												LC	
<i>Chalcites minutillus</i>	Little Bronze-Cuckoo		X				X								x	LC	
<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo		X						X							LC	
<i>Eudynamys orientalis</i>	Pacific Koel							X							Xx	LC	
<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo														X	LC	
CENTROPODIDAE																	
<i>Centropus phasianinus</i>	Pheasant Coucal						X	X	X						X	LC	
STRIGIDAE																	
<i>Ninox rufa queenslandica</i>	Rufous Owl (southern subspecies)						X									V	
CAPRIMULGIDAE																	
<i>Caprimulgus macrurus</i>	Large-tailed Nightjar													X	x	LC	
APODIDAE																	
<i>Aerodramus terraereginae</i>	Australian Swiftlet						X		X						X	R	
CORACIIDAE																	
<i>Euryostomus orientalis</i>	Dollarbird							X							Xx	LC	
ALCEDINIDAE																	
<i>Tanysiptera sylvia</i>	Buff-breasted Paradise-Kingfisher			X	X							X				LC	
<i>Dacelo novaeguineae</i>	Laughing Kookaburra		X					x							X	LC	
<i>Dacelo leachii</i>	Blue-winged Kookaburra														X	LC	
<i>Todiramphus macleayii</i>	Forest Kingfisher							x							X	LC	
<i>Todiramphus sanctus</i>	Sacred Kingfisher		X			X										LC	
<i>Alcedo azurea</i>	Azure Kingfisher					X	x					X				LC	
MEROPIDAE																	
<i>Merops ornatus</i>	Rainbow Bee-eater		X												Xx	S	M
MALURIDAE																	

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<i>Malurus amabilis</i>	Lovely Fairy-wren								x							LC	
ACANTHIZIDAE																	
<i>Sericornis frontalis</i>	White-browed Scrubwren		X		X											LC	
<i>Sericornis magnirostra</i>	Large-billed Scrubwren												X			LC	
<i>Gerygone magnirostris</i>	Large-billed Gerygone			X		Xx	X								X	LC	
<i>Gerygone palpebrosa</i>	Fairy Gerygone					Xx	Xx	x	x				X			LC	
MELIPHAGIDAE																	
<i>Xanthotis macleayana</i>	Macleay's Honeyeater				X							X				LC	
<i>Lichenostomus flavus</i>	Yellow Honeyeater														X	LC	
<i>Meliphaga notata</i>	Yellow-spotted Honeyeater	X	X		X	Xx	Xx	Xx	x	X		X				LC	
<i>Meliphaga gracilis</i>	Graceful Honeyeater		X		X	Xx	X	Xx	Xx							LC	
<i>Philemon buceroides</i>	Helmeted Friarbird					x		x	X						X	LC	
<i>Ramsayornis modestus</i>	Brown-backed Honeyeater														X	LC	
<i>Myzomela sanguinolenta</i>	Scarlet Honeyeater			X												LC	
<i>Myzomela obscura</i>	Dusky Honeyeater							x	X							LC	
PACHYCEPHALIDAE																	
<i>Pachycephala simplex</i>	Grey Whistler			X												LC	
<i>Colluricincla megarrhyncha</i>	Little Shrike-thrush		X	X	X	x	x	x	x	X		X	X			LC	
DICRURIDAE																	
<i>Rhipidura rufifrons</i>	Rufous Fantail				X								X			S	M
<i>Rhipidura leucophrys</i>	Willie Wagtail														Xx	LC	
<i>Dicrurus bracteatus</i>	Spangled Drongo			X	X	X	X		X			X			x	LC	
<i>Monarcha leucotis</i>	White-eared Monarch			X												LC	
<i>Monarcha trivirgatus</i>	Spectacled Monarch		X	X					x			X				S	M
<i>Monarcha melanopsis</i>	Black-faced Monarch														x	S	M
<i>Grallina cyanoleuca</i>	Magpie-lark														X	LC	
<i>Myiagra alecto</i>	Shining Flycatcher					x									X	LC	
ARTAMIDAE																	
<i>Cracticus quoyii</i>	Black Butcherbird	X				Xx	Xx	Xx	Xx				X			LC	
<i>Gymnorhina tibicen</i>	Australian Magpie														x	LC	
<i>Strepera graculina</i>	Pied Currawong					X										LC	
<i>Artamus leucorhynchus</i>	White-breasted Woodswallow														Xx	LC	
CAMPEPHAGIDAE																	
<i>Coracina tenuirostris</i>	Cicadabird					x									X	LC	

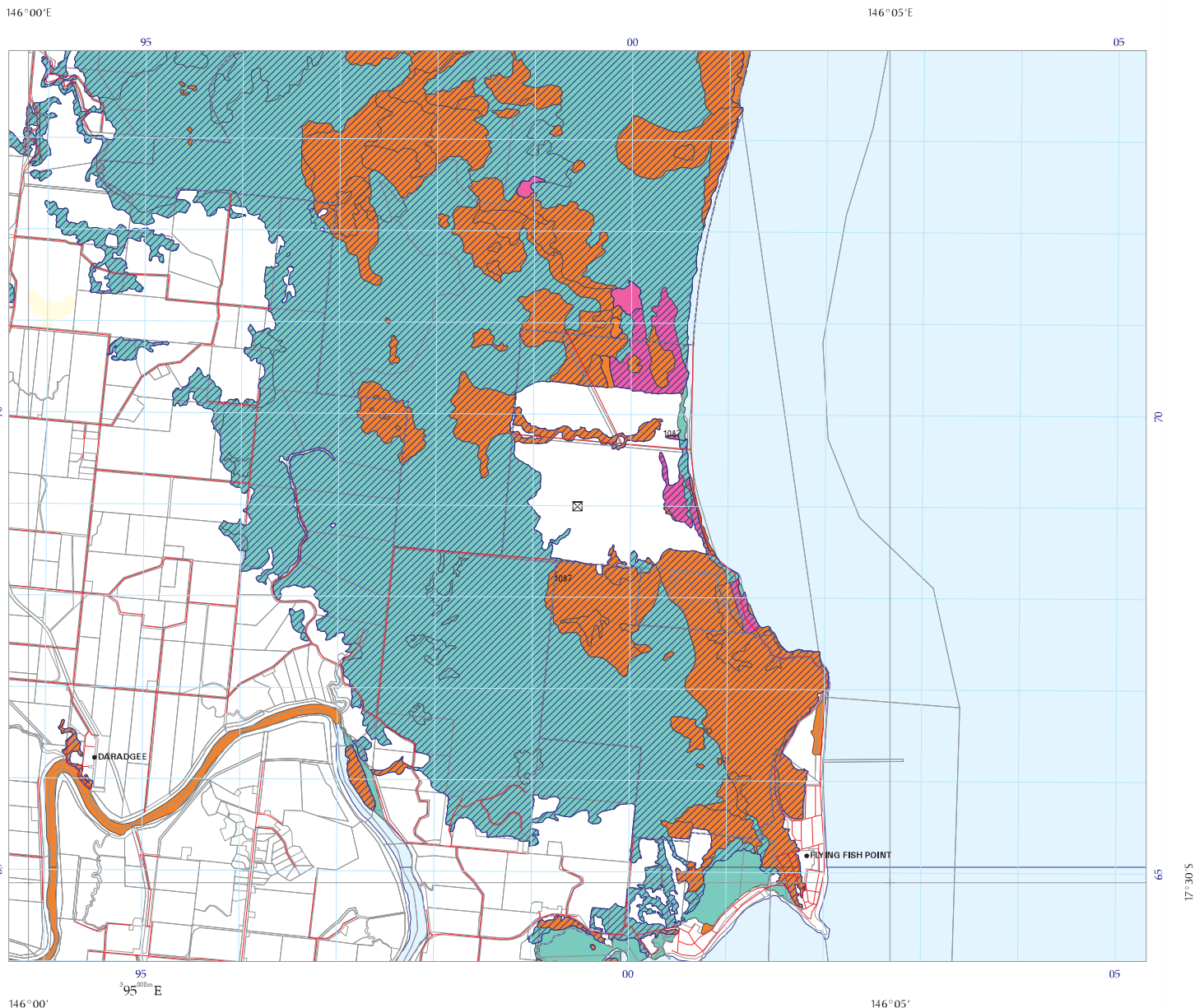
Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike														Xx	LC	
<i>Coracina papuensis</i>	White-bellied Cuckoo-shrike														Xx	LC	
<i>Lalage leucomela</i>	Varied Triller	X	X	X	X	x	Xx	Xx	Xx				X			LC	
<b>ORIOLIDAE</b>																	
<i>Sphecotheres vieilloti</i>	Australasian Figbird			X	X	x	Xx	X	x						X	LC	
<i>Oriolus flavocinctus</i>	Yellow Oriole		X												Xx	LC	
<b>CORVIDAE</b>																	
<i>Corvus orru</i>	Torresian Crow														X	LC	
<b>STURNIDAE</b>																	
<i>Aplonis metallica</i>	Metallic Starling		X	X	X		Xx	x							X	LC	
<i>Acridotheres tristis</i>	Common Myna														X	I	
<b>HIRUNDINIDAE</b>																	
<i>Hirundo neoxena</i>	Welcome Swallow														Xx	LC	
<b>ZOSTEROPIDAE</b>																	
<i>Zosterops lateralis</i>	Silvereye				X				Xx						X	LC	
<b>SYLVIIDAE</b>																	
<i>Cisticola exilis</i>	Golden-headed Cisticola														X	LC	
<b>DICAEIDAE</b>																	
<i>Dicaeum hirundinaceum</i>	Mistletoebird								X						X	LC	
<b>NECTARANIIDAE</b>																	
<i>Cinnyris jugularis</i>	Olive-backed Sunbird	X	X	X	X	x	X		Xx						X	LC	
<b>MOTACILLIDAE</b>																	
<i>Anthus australis</i>	Australian Pipit														Xx	LC	
<b>ESTRILDIDAE</b>																	
<i>Lonchura castaneothorax</i>	Chestnut-breasted Mannikin														X	LC	
<b>MAMMALS</b>																	
<b>TACHYGLOSSIDAE</b>																	
<i>Tachyglossus aculeata</i>	Short-beaked Echidna														X	CS	
<b>DASYURIDAE</b>																	
<i>Antechinus flavipes rubeculus</i>	Yellow-footed Antechinus (north-east Queensland subsp.)						Xx									LC	
<b>PERAMELIDAE</b>																	

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
<i>Isodon macrourus</i>	Northern Brown Bandicoot				X		X									LC	
<i>Perameles nasuta</i>	Long-nosed Bandicoot					X										LC	
PETAURIDAE																	
<i>Dactylopsila trivirgatus</i>	Striped Possum										X					LC	
MACROPODIDAE																	
<i>Macropus agilis</i>	Agile Wallaby					Xx	Xx	x	x						X	LC	
PTEROPODIDAE																	
<i>Pteropus conspicillatus</i>	Spectacled Flying-fox	X		X											Xx	LC	V
RHINOLOPHIDAE																	
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe-Bat							x	x							LC	
EMBALLONURIDAE																	
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-Bat															LC	
<i>Taphozous australis/georgianus</i>	Sheathtail-Bat species					x										LC	
MOLOSSIDAE																	
<i>Chaerophon jobensis</i>	Northern Freetail-Bat															LC	
<i>Mormopterus beccarii</i>	Beccari's Freetail-Bat					x										LC	
<i>Tadarida australis</i>	White-striped Freetail-Bat					x										LC	
VESPERTILIONIDAE																	
<i>Miniopterus australis</i>	Little Bentwing-Bat					x	x									LC	
<i>Miniopterus schreibersii</i>	Common Bentwing-Bat						x									LC	
<i>Nyctophilus bifax/gouldii</i>	Long-eared Bat species					x	x									LC	
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat															LC	
<i>Myotis macropus</i>	Large-footed Myotis						X									LC	
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat															LC	
<i>Vespadelus pumilis</i>	Eastern Forest Bat					x										LC	
MURIDAE																	
<i>Hydromys chromogaster</i>	Water Rat		X													LC	
<i>Melomys cervinipes</i>	Fawn-footed Melomys	X		X	X	X	Xx	x	Xx		X					LC	
<i>Uromys caudimaculatus</i>	Giant White-tailed Rat			X	X	Xx	x		X							LC	
<i>Mus musculus</i>	House Mouse					x										I	
<i>Rattus sp.</i>	Rat species	X	X		X			X									
<i>Rattus leucopus</i>	Cape York Rat						x									LC	
LEPORUDAE																	
<i>Oryctolagus cuniculus</i>	Rabbit														X	I	

Family Genus Species	Common Name	R1	R2	R3	R4	T1	T2	T3	T4	Ta1	Ta2	Ta3	Ta4	Ta5	Inc	NC ACT	EPBC Act
SUIDAE																	
<i>Sus scrofa</i>	Pig					x	Xx	x	x							I	



## **Appendix 6: Regional Ecosystem and Essential Habitat Mapping**

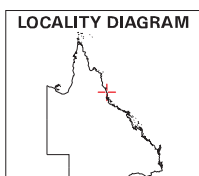


## VEGETATION MANAGEMENT ACT ESSENTIAL HABITAT MAP

Requested By: ADAM@BIODIVERSITY.TV  
Date: 04 Nov 08 Time: 10.03.11

Centered on point position:

Latitude: -17.4628 Longitude: 146.0531 (decimal degrees)



2003 Remnant endangered regional ecosystem

Dominant

Sub-dominant

2003 Remnant of concern regional ecosystem

Dominant

Sub-dominant

2003 Remnant not of concern regional ecosystem

Non-remnant

Plantation Forest

Dam or Reservoir

2003 Remnant Vegetation Cover (RVC)

Vegetation Management Act Essential Habitat Area identified as essential habitat by the EPA for a species of wildlife listed as endangered, vulnerable, near threatened or rare under the *Nature Conservation Act 1992*.

Vegetation Management Act Essential Habitat Species Records

Roads

© MapInfo Australia Pty Ltd 2006

Bioregion boundary

National Park, Conservation Area State Forest and other reserves

Cadastral line

The maximum spatial error of parcels extracted for this map from the Digital Cadastral Data Base (DCDB) range from: 14m to 251m at a 95% confidence level. Property boundaries shown are provided as a locational aid only.

Towns

Coordinate entered

Labels for Vegetation Management Act Essential Habitat are centred on the area of interest (1.1km surrounding and including a Lot on Plan or 2.2km around the selected coordinates). Labels relate to the attached species list.

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. The extent of remnant regional ecosystems as of 2003, depicted on this map is based on rectified 2003 Landsat TM imagery (supplied by SLATS, Department of Natural Resources and Water).

### Disclaimer:

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

All datasets are updated as they become available to provide the most current information as of the date shown on this map.

Additional information is 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.nrw.qld.gov.au/vegetation](http://www.nrw.qld.gov.au/vegetation) or contact the Department of Natural Resources and Water.

Digital regional ecosystem data is available in shapefile format, for Lot on Plans from [www.epa.qld.gov.au/REDATA](http://www.epa.qld.gov.au/REDATA) or from the Queensland Herbarium for larger areas.  
Email: [regional.ecosystem@epa.qld.gov.au](mailto:regional.ecosystem@epa.qld.gov.au)